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Joaquim Miranda Sarmento

Taxation in Finance and Accounting

An Introduction to Theory and Practice



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Joaquim Miranda Sarmento

Taxation in Finance and Accounting

An Introduction to Theory and Practice

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*To my daughters Madalena and Catarina, my
Wife Alexandra and the memory of my
parents.*

*To all my students who help me to improve my
classes and write this book*

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About the Book

Taxation is becoming more and more relevant for firms' and managers' decisions, mainly due to the impacts of Taxation on firms' and projects' performance, profitability, and value. This book provides an introductory overview of Taxation in the fields of Finance and Accounting. It covers several fundamental topics of Taxation, such as income, corporate and value-added Tax, tax planning and management, international taxation, EU tax harmonization, and transfer prices. This book intends to provide the reader with an understanding of these topics' main concepts and principles, regardless of specific country contexts in law. With this book, readers should understand the fundamentals of Taxation at a conceptual and practical level. Using theory and practical examples, cases and exercises, readers will understand Taxation at a broader level without being concerned about country-specific issues.

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1.1 Taxation

"To tax and to please, no more than to love and to be wise, is not given to men."

Edmund Burke

Sir Humphrey: Taxation isn't about what you need.

Jim Hacker: Oh, what is it about then?

Sir Humphrey: Prime Minister, the Treasury doesn't work out what it needs to spend and then think about how to raise the money.

Jim Hacker: What does it do then?

Sir Humphrey: It pitches for as much as it think it can get away with, and then thinks about what to spend it on.

Yes Prime Minister, 'The Smokescreen'

Then the Pharisees went out and laid plans to trap him in his words. They sent their disciples to him along with the Herodians. "Teacher," they said, "we know you are a man of integrity and that you teach the way of God in accordance with the truth. You aren't swayed by men, because you pay no attention to who they are. Tell us then, what is your opinion? Is it right to pay taxes to Caesar or not?"

But Jesus, knowing their evil intent, said, "You hypocrites, why are you trying to trap me? Show me the coin used for paying the tax." They brought him a denarius, and he asked them, "Whose portrait is this? And whose inscription?"

"Caesar's," they replied.

Then he said to them, "Give to Caesar what is Caesar's, and to God what is God's."

When they heard this, they were amazed. So they left him and went away.

In Matthew 22:15-22

Nowadays, taxation has become a day-to-day topic in our lives. As the Americans say, "*there are only two things certain in life: death and taxes.*" One becomes absorbed by the subject of taxes everywhere and at all times. This is true for individuals in both their private and professional lives, as it is for organizations,

and firms in particular. Taxation exists for our personal income, for a firm's profits, for almost every sale of goods and services, for our wealth and property assets, and indeed for almost all of the transactions and contracts that we carry out.

Taxation is probably as old as community life and civilization itself. When mankind abandoned nomadism some 10,000 years ago and started to build villages which then evolved into towns and cities, the specialization of functions led to the creation of governments. To start with, the government was firstly a military and defensive function, which later evolved to include other roles as governments required revenues, which were mainly collected through different forms of taxation.

Some see taxation as a necessary good, such as Oliver Wendell Holmes, the former Justice of the United States Supreme Court, who once stated: "*Taxes are what we pay for a civilized society.*" However, others are opposed to high levels of taxation, including the Nobel Prize winner for Economics, Milton Friedman, who argued that people only accept taxes because they have no idea that they are paying them, especially as governments managed to persuade citizens that such taxes would be paid by others, rather than themselves ("*Congress can raise taxes because it can persuade a sizable fraction of the populace that somebody else will pay.*"). Another opponent of high taxes was the 40th President of the United States, Ronald Reagan. A strong supporter of supply-side economics and the reduced role of government, he said: "*The government's view of the economy can be summed up in a few short phrases: If it moves, tax it. . . if it keeps moving, regulate it. . . and if it stops moving, subsidize it.*" Even though just about all of us would like to say the same as Snoopy: "*Dear IRS, I am writing to you to cancel my subscription. Please remove my name from your mailing list,*" in effect taxes are needed, and are likely to always be a part of our lives and activities.

Over the last decades, governments around the world have expanded their functions and the size of their role, especially in the case of the OECD countries. These functions have evolved from being sovereign functions such as defense, justice, security, and diplomacy, to increasingly becoming social functions (such as education, health, pensions, or culture), public investment in infrastructures (from sanitation and energy to transports), and also regulation and market supervision functions of (especially those with "market failures," as is discussed in Chap. 3, such as banking, insurance, telecommunications, energy, and transport, among others).

This evolution of governmental functions led to a substantial increase in public expenditure by governments all around the world. As can be seen from Fig. 1.1 (which shows the level of government expenditure as a percentage of GDP for 2019—before the notable increase of public expenditure caused by the COVID-19 pandemic crisis), in 2019 most OECD governments have expenditure levels greater than 40% of GDP. Countries such as France, Finland, Belgium, or Norway even spent more than 50% of GDP on the public sector, although the OECD average is around 42.5%, and the level of expenditure of the United States was only 38% in 2019, with that of Ireland being as little as 24.6%.

The trend over the last decades has been for growth in government and increased pressure in terms of public expenditures. Figure 1.2 presents the variation in government expenditure as a percentage of GDP from 2007 to 2019. It can be

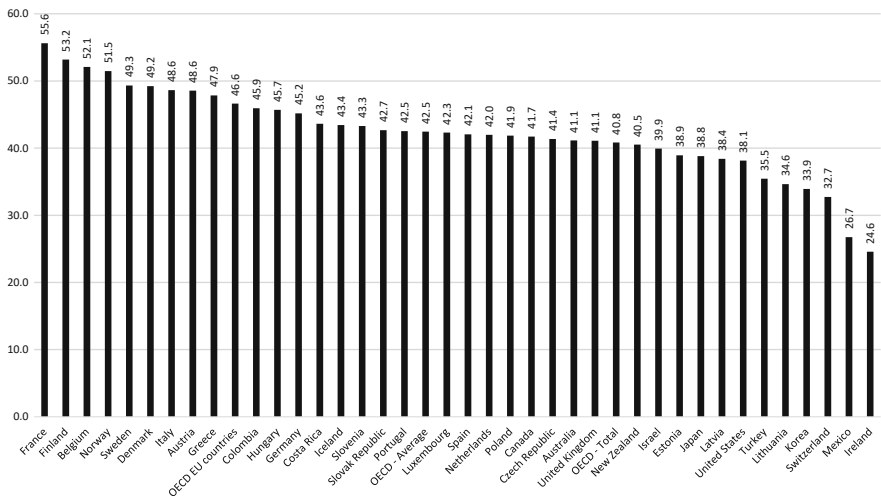


Fig. 1.1 Government expenditure as a % of GDP (2019). Source: The Author, based on OECD data

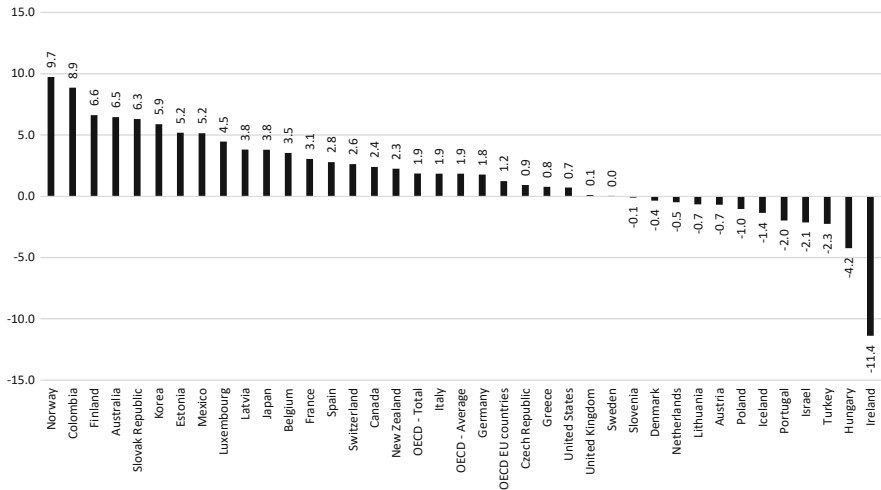


Fig. 1.2 Government expenditure as a % of GDP (variation from 2007 to 2019). Source: The Author, based on OECD data

seen that over a period of just 12 years most countries increased their level of public expenditure by at least 2 percentage points of GDP. Indeed, very few countries managed to reduce their level of public expenditure as a percentage of GDP during the decade 2010–2020.

This pressure on public expenditure led governments to increase taxation. Figure 1.3 presents government tax revenue as a percentage of GDP in 2019 (once again

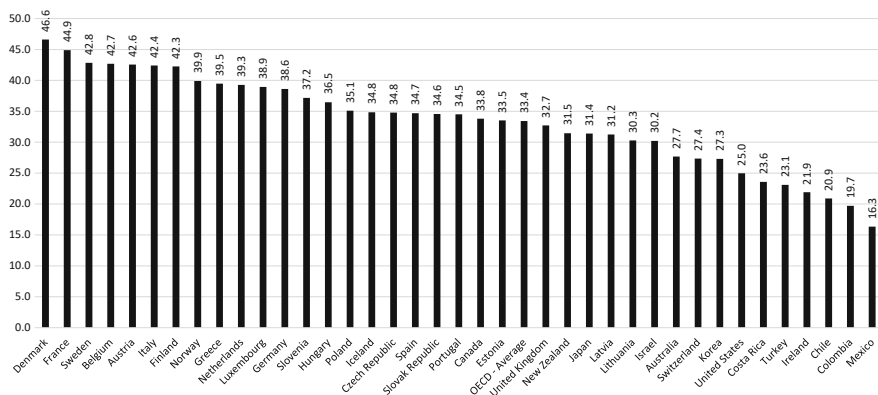


Fig. 1.3 Government tax revenues as a % of GDP (2019). Source: The Author, based on OECD data

before the COVID-19 crisis—which led to an expansion in the role of governments, although at the time it was not known whether this was to be permanent, or just transitory). It can be seen that most countries levy taxes according to the level of their expenditure (although it is always difficult to assess whether a specific country is following to the letter the philosophy of the above-mentioned comment by Sir Humphrey, where the Treasury collects as much revenues as it can, and then considers how to spend it, or whether the opposite is the case, where governments define their expenditure requirements depending on the magnitude of their roles in such society, and then levy taxes in accordance with the amount that is required to almost cover such expenditures—with the difference being the fiscal deficit, which in turn increases the level of public debt). In Fig. 1.3, it can be seen that most governments collect more than 30% of GDP in taxes, with this level surpassing the 35% and even the 40% level (with Denmark beating records, with 46.6% of GDP being raised through taxes). The OECD average is approximately 34%.

Figure 1.4 presents tax revenue variation from 1995 to 2019. Naturally, the growing increase in public expenditures was followed by an increase in taxation. Most countries saw their tax collection increase more than 2% points of GDP, although several experienced increases four or five times greater, or even more.

However, as tax collection was insufficient to cover the demanding increase in public expenditures, governments around the world registered public deficits and thus increased their public debt, particularly at the OECD level. Even before the COVID-19 pandemic crisis (which led to an increase in public debt in most countries of between 10 and 20 p.p. of GDP in 2020 and 2022), the level of public debt in most countries was already extremely high, particularly as the preceding period had been one of prolonged peace. Indeed, during this period several countries registered their highest level of public debt as a percentage of GDP since World War II, including the United States. Figure 1.5 shows the level of public debt as a percentage of GDP for 2019, where it can be seen that several countries already had levels of public debt greater than 100% of GDP (these levels are now even larger, as a result of the

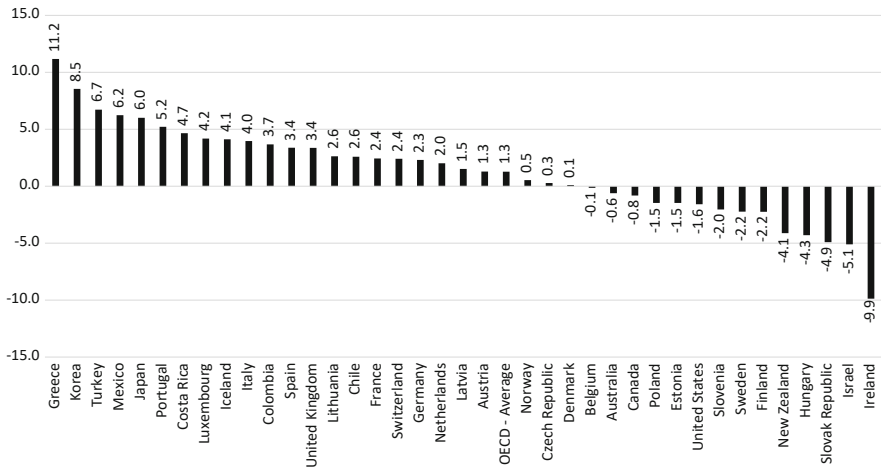


Fig. 1.4 Government tax revenues as a % of GDP (variation from 1995 to 2019). Source: The Author, based on OECD data

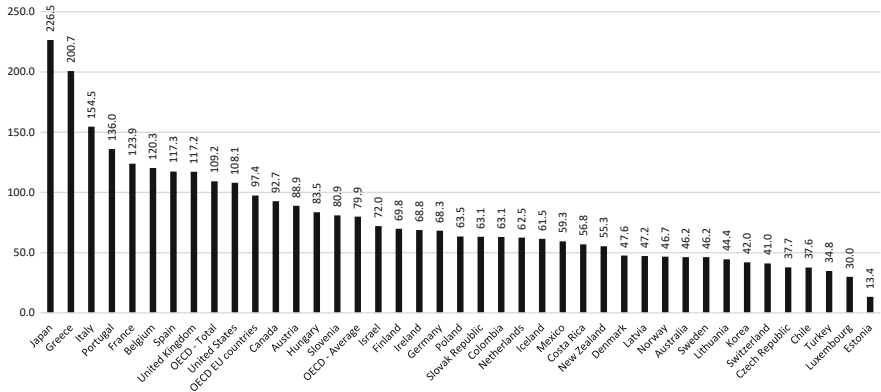


Fig. 1.5 Government public debt as a % of GDP (2019). Source: The Author, based on OECD data

above-mentioned strong increase in public debt in all countries that has been experienced over the last three years). The OECD average is around 72% of GDP. When considering that the Maastricht Treaty of 1992 established a fiscal limit of 60% of GDP for public debt in the European Union, as well as the provisions of the SGP (the Stability and Growth Pact), it can be seen that most Eurozone countries already registered values above the stipulated limit in 2019. Naturally, despite being followed by an increase in tax collection, the increasing levels of public expenditure led to higher fiscal deficits and the resultant strong increases in public debt during the past few decades. Figure 1.6 shows the increase in the level of public debt from 2007 to 2019. Most of the countries under analysis saw their level of public debt increase by 20–50 percentage points of GDP, although countries such as Greece and Spain

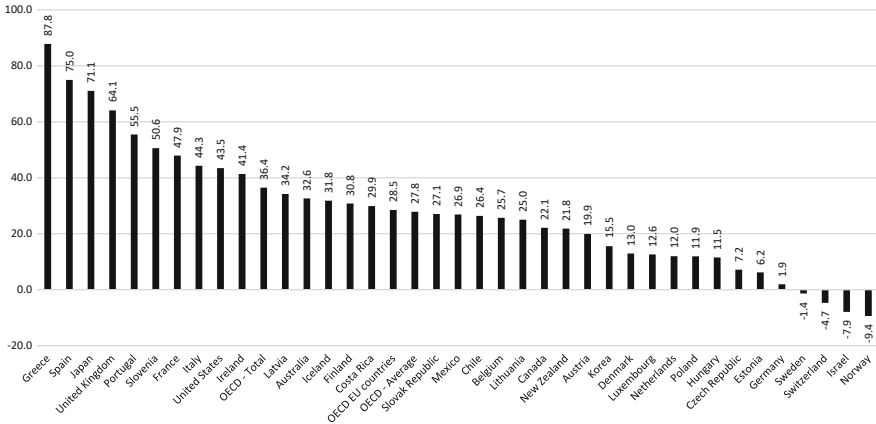


Fig. 1.6 Government public debt as a % of GDP (variation from 2007 to 2019). Source: The Author, based on OECD data

almost doubled their public debt as a percentage of GDP. The 2008 financial crisis (and the 2010–2012 sovereign debt crisis in the case of the EU) had the effect of creating strong pressure on the fiscal balance of several EU countries, particularly the southern European Eurozone countries. The advent of the COVID-19 pandemic made this situation even worse.

The prospect for 2022 and the following years do not promise to be favorable, bearing in mind the increase in public debt caused by the COVID-19 crisis, inflationary pressure, the raising of interest rates, and the war in Ukraine (August, 2022).

The combined effect of these factors is that taxation will continue to play a key role in the global economy and for society as a whole, with a resulting increase in pressure to increase taxes and collect more revenues on the one hand, while there will be pressure from tax competition and harmonization on the other hand, which will reduce the tax burden. Non of us will be able to do as Snoopy did, and simply ‘cancel their IRS submission!

Nevertheless, in the end, the situation is virtually the same as Jean Baptist Colbert once put it: “The art of taxation consists in so plucking the goose as to get the most feathers with the least hissing.”

This book is about taxation within the context of the subjects of Finance and Accounting. As it is primarily aimed at a worldwide audience, details regarding the specific tax system of countries are avoided (although examples have sometimes been used, particularly from the United States). As the title infers, this book should be regarded as merely being an introduction to taxation.

The main objective of this book is to provide the reader with an introduction to and overview of taxation, especially for students of Finance and Accounting. Each chapter briefly explains the main points, as each chapter could in theory be a book in itself. Indeed, in some cases, certain topics described in the chapter warrant the publication of a complete book to cover all the related content. Readers should not expect a detailed explanation of each topic covered, but should rather expect the

following three explanations: first, a wide range of topics which cover almost all the relevant points regarding the subject of taxation (even though the Author admits that some points may have been left out, as is often the case); second, this is a book that focusses on explaining the conceptual framework of each topic as a support for students of Finance and Accounting all over the world, without entering into the specifics of each country's tax laws, and, as its title implies, it should accordingly be seen to be an introduction to taxation (therefore, readers who require specific details regarding their own country's tax laws should consult other books and materials); and, third, this book has purposely been written in a clear and accessible way, which avoids the use of more technical terms, on the understanding that readers will benefit from the ensuing more simplified explanation (this approach is based on the Author's positive feedback from his lectures at ISEG—Lisbon School of Economics and Management, and the resultant performance obtained).

Chapter 2 covers the main concepts of taxation, providing the reader with a sufficient knowledge base to be able to understand the rest of the book. Chapter 3 presents taxation from the economic point of view and asks the questions: What are the impacts of taxes in macroeconomics, in microeconomics, and also on the behavior of economic agents? Chapter 4 presents taxation from the accounting perspective and addresses how firms account for the different aspects of taxation in their financial statements. Chapter 5 presents taxation from the Corporate Finance point of view, and analyses how taxation affects the three major Corporate Finance decisions regarding: Investment, Finance, and Dividends. Chapter 6 presents the fundamentals of personal income tax (where, once again, the specifics of each country's tax legislation are not described in detail) and proceeds to examine how income tax functions. Chapter 7 carries out the same exercise for corporate tax, while Chap. 8 presents the main issues concerning corporate tax management and planning. Chapter 9 presents the concept of Value-Added Tax (VAT) and examines how VAT works and describes its main rules, and explains that VAT is almost fully harmonized for EU countries and that the United States has no VAT, but rather a sales tax. Chapter 10 presents the issue of international double taxation and Chap. 11 addresses the important topic of transfer prices (which is strongly harmonized at the OECD level). Chapter 12 covers the topic of EU harmonization, concentrating on two proposals that are under debate at the time of writing: the CCCTB (Common Consolidated Corporate Tax Base) and the FTT (Financial Transactions Tax).

The Author has high expectations that this book will be useful for those readers who are starting out on their journey to learn about taxation and would stress again that this work should be seen as being an introductory book about taxation, which is primarily aimed at students of Finance and Accounting. The subject of taxation goes well beyond that which is described in detail in this book!

Have fun!

2.1 The Definition of Taxation and Taxes

The Organization for Economic Cooperation and Development (OECD) defines tax as being “compulsory unrequited ¹ payments to general government.” ² The word comes from the Latin word *taxare*, which means to evaluate, estimate, or assess. However, as mentioned by Pistone et al. (2019), most jurisdictions do not define tax in their legal system. Taxes are different from duties, levies, tariffs, and charges (all of which have differences between them). A tax can be defined as a non-reimbursable (definitive) one-sided asset benefit which is required by law in favor of a legal person (under public law), without a sanction, in order to meet collective needs. A tax is therefore a compulsory charge (i.e., it is not voluntary), which is imposed by law and is used for public purposes and is not related to a specific service or provision of a good (Lymer & Oats, 2020).

The main characteristics of taxes are the following: (1) They are defined by law, according to the country’s constitution; (2) A tax is a compulsory payment, due by the taxpayers (individuals or organizations) that are liable to pay it, where the refusal to pay is an offence/crime, which is punishable by law; (3) Taxes are unilateral and definitive, with no direct benefit/compensation for the taxpayer, irrespective of the motive of the tax; (4) There is no sanction associated with the payment of the tax (i.e., no direct quid-pro-quo exists between the taxpayer and the public authority); (5) Tax revenues are collected to pay for the government’s public expenditure; and (6) Taxes are regular and periodical.

¹Taxes are unrequited in the sense that the benefits provided by government to taxpayers are not normally in proportion to their payments (OECD).

²According to the National Accounts ESA, 2010, general government is defined as: “The general government sector (S13) is composed of all those institutional units that are non-market (non-producer), whose output is for individual or collective consumption, and which are financed by mandatory payments of units from the other sectors, or those that are involved in the redistribution of income and wealth” (see Sarmento, 2018 for more details).

There is a major difference between taxes and fees/fines/levies. The former are levied on individuals and firms, without representing any sanction and without an associated direct service (i.e., there is no clear and direct link between the payment of the tax and the provision of goods and services to the taxpayer), and without the granting of any special rights or privileges. Taxpayers are compelled by law to pay taxes and are obliged to do so, even though they might not necessarily receive any direct benefits in return. Fees can be defined as being a compensation for the receipt of benefits by a person/entity which is established by law as being revenue for a legal person, such as remuneration for the provision of individual services, the use of property in the public domain, or the removal of a legal limit on the activities of individuals. In legal terms, the fundamental element of distinction is the existence or not of a return on the part of the active subject of the relationship. It is this unilateral nature of the tax and the bilateral nature of the fee that differentiate them both. Taxes are due when an event is subject to an obligation and consists of the mere disclosure of a certain contributory capacity. Fees, on the other hand, are due in return for the provision of a specific activity that confers a benefit for the individual taxpayer. There is a difference between a compulsory fee and a tax, as while tax is due by those who are within the scope of the provision of the tax rule and fees are only paid by those who request the individual provision of a service. In other words, in the case of a fee there is an assumption of an element of willingness, which is lacking in the cases of tax (see Duff, 2004 for more details on this).

Taxation law is the legislation that governs a person's liability to pay taxes to the government. It covers the rules that establish the incidence of tax (i.e., who and what is subject to tax), the tax base, and also extends to the rules relating to the administration and enforcement of the tax system, including those that regulate the collection and enforcement of taxes (Barkoczy, 2016). Governments design taxes, however, the entire tax structure has to conform to legal terms, in the form of a tax code or a tax statute (Shome, 2021). It is this tax code/law that regulates both the application of the tax to the taxpayer and also the action of the tax administration.

The main principles of taxation are the following:

Legality: Taxes are created by laws, and in most countries taxes are the responsibility of parliaments (at least with regard to the principle factors of incidence, tax rates, tax benefits, and taxpayer's rights and duties), following the principle of "no taxation without representation" (Magna Carta of 1215, and the Petition of Rights of 1628) and the principle of Roman law define in the Latin expression: "nullum tributum sine lege" (no taxation without law). The principle of the legality of taxation is defined as being the rule that stipulates that no tax can be levied on a person or entity without that tax having been provided for by statute (i.e., by an act of law that is then adopted by the legislative power). The corresponding legal basis must be compatible with the principle of the rule of law and provide adequate guarantees, inter alia procedural guarantees, against arbitrary interference by the public authorities.

General: Taxes have to be general, in the sense that they do not benefit or prejudice any specific taxpayer. This does not mean that taxes cannot penalize or benefit

specific groups in the cases of an explicit reason which just applies to a specific group in general terms. According to Vanistendael (1996), this exception has two aspects. One is procedural, as the law must be applied completely and impartially with regard to the status of the taxpayer (with no preferential or discriminatory treatment based on criteria such as race, gender, or religion). The other is substantive, as taxpayers in equal circumstances must be treated equally, especially with regard to the form of tax benefits (which is discussed in detail in Chap. 8), although taxpayers in different circumstances are to be treated differently (e.g., income level—which should be based on the income capacity principle—disability, age, source of income, or residence, etc.). As discussed in Chap. 3, consumption of certain goods (e.g., tobacco, liquor, vehicles, or fuel) is subject to higher taxes than other goods, due to their negative impact (externalities) on health or pollution. But in such cases, all consumers of those goods are more heavily taxed. Another example is that most countries concede tax benefits for the disabled, whereby that specific group of people is entitled to the same tax benefit.

Contributory (income) capacity: This principle has two functions: a guaranteed function whereby only taxpayers with the ability to contribute are subject to taxation, and a solidarity function, based on the principle that all those who have that capacity are liable to pay taxes to the extent of their capacity. The term contributory capacity means the economic capacity to be able to satisfy the relevant tax obligations, taking into account the personal situation of each taxpayer. This principle is autonomous or independent of the principle of tax equality.

Tax equality: Individuals are equal in the eyes of the law. This principle prohibits arbitrary discrimination under tax law and its corollary is the principle of the generality of taxation and the principle of uniformity regarding the taxation of wealth. However, this does not mean that taxes cannot differentiate according to income capacity or personal conditions, albeit such differentiation has to be applied equally to all those subject to this condition. Once again, any tax benefit for the disabled applies to all those with such a medical condition.

Functional efficiency of the tax system: In addition to contributing to the satisfaction of the financial needs of the Government, the tax system must also strive for the fair distribution of wealth and income and the reduction of social inequality.

Annuity: The collection of taxes has to be authorized annually by parliament. Tax laws can only have effect for one fiscal year, although this does not mean that all tax laws and dispositions have to be voted on every single year, although every year Parliament is statutorily obliged to authorize government to levy taxes. In most countries, this is known as the fiscal (budget) principle, rather than just a tax principle, in the sense that also applies to public expenditure.

Fairness: In this principle, the tax authorities must act with “fair-play,” meaning that they are prohibited from taking unfair advantage when assessing the amount of taxpayers’ liabilities or other obligations. According to this principle, equality must always be applied in the settlement of specific cases, as well as in the limited cases where the law grants the tax administration a certain margin of free

assessment in determining the tax base. Taxpayers are accordingly entitled to know the details of the law (the law has to be published in the Official Journal before it becomes effective) and be notified (of the legal basis) of any tax administration decision and they always have the right to appeal such decisions in the Courts of Law. Furthermore, tax administration must be bound by its interpretation of the law as applied to a taxpayer's particular situation. However, in certain cases, the tax administration can enforce some actions subject to Court authorization if it has reasonable suspicion that the taxpayer is planning to destroy evidence or carry out any action that is liable to jeopardize the tax process.

Protection of good faith: According to this principle, in cases where there is a certain margin of free discretion, it is understood that the tax administration is normatively bound to act within the limits of good faith, and must also take into account the good faith of the taxpayers.

Non-retroactivity: This principle is analyzed in more depth later in this chapter and is based on the assumption that tax laws do not apply to any event that occurred before the law was approved and officially published.

As referred by Shome (2021), the design of a tax and a tax law might be clear, however, its application depends substantially on the tax administration regarding issues such as the methods by which taxpayers are assessed to pay the taxes and how the tax administration collects them. These methods must be transparent, and the rules must be audited and the taxes should be revised by the tax administration with respect to the extent of the application of tax administration decisions, how the tax administration deals with its own errors, and how focussed it is on collecting revenues. A tax administration must be focussed on not only taxpayers' duties, but also their rights, as well as how it is organized and how its officials behave (in terms of power, corruption, and the pressure to collect revenues), how taxpayers can litigate, how bureaucratic the procedures and processes are, and the use of technology (Shome, 2021).

According to Pistone et al. (2019), various theories justify taxation, such as the emergency theory (to finance specific situations), the benefit theory (whereby everyone is obliged to contribute to the government, as it is the government that collects benefits—at least for security and defense), the social contract theory (that everyone should contribute to the common welfare), and the sacrifice theory (whereby everyone should contribute according to their capacity). However, as the above authors state, taxes nowadays are a regular issue, in that they have become the main source of revenues for governments (indeed, as seen in Chap. 1, governments worldwide have substantially increased their expenditure over the last decades, resulting in large increases in taxation).

2.2 Characteristics of a Tax System

Each country's tax system is grounded on certain basic principles and the tax structure tends to be similar (Smith, 2015). Almost all countries around the world, especially at the OECD level, have in place an income tax for individuals and a corporate tax for firms, a VAT or a sales tax based on consumption, and also taxes on specific goods such as fuel, tobacco, and liquor, as well as taxes on wealth and real estate. Nevertheless, even though there has been a certain degree of harmonization of taxes over recent years (which is discussed below and further in Chap. 6 on income tax and in Chap. 7 on corporate tax, as well as in Chap. 9 on VAT, Chap. 10 on double international taxation, and Chap. 12 on transfer prices), strong differences exist between countries and legal systems with regard to different aspects of each tax in addition to this common basic framework.

A good tax system is characterized by some basic features, which are unrelated to the level of taxation (both tax burden and tax effort are discussed in Chap. 3). As mentioned by Pistone et al. (2019), despite being enacted by the law, a tax should be subject to limits of application in order to avoid the erosion of capital, which would have the undesired effect of decreasing future incomes. Furthermore, taxes should not exceed the needs of public funding and the cost of collecting a tax should not be greater than the revenues associated with the tax in question (even if there is a justification for such a tax).

Accordingly, the basic principles that every tax system should follow are the following:

Neutrality: Taxes should be neutral and equitable and should not be seen as distorting economic decisions to the minimum (as changes in price can trigger varying changes in supply and demand should there be no tax in place). Taxes should not create any advantage/disadvantage for a transaction/investment or any other decision of economic agents (although such a principle need not be adhered to should the intention be to create an incentive to reduce/increase a specific case). Neutrality is accordingly extended to inward/outward transactions (for all investments and export of capital with regard to their origin, be it domestic or foreign, which should all be taxed subject to the same conditions) (Pistone et al., 2019). The desired effect is to promote efficiency by means of the optimal allocation of resources in the economy, whereby the tax system generates revenues and at the same time attempts to minimize benefitting or prejudicing any specific economic choice. The same principles should be applied to all taxes and to all areas of economic activity, even though certain specific features exist that need to be addressed.

Efficiency, certainty, and simplicity: Compliance costs should be reduced to the minimum (this includes not just the costs for the Tax Administration and the taxpayers, but also those of third party entities when they are acting as a representative—tax substitute—for collecting taxes or are responsible for providing necessary information for tax enforcement and compliance, such as banks/insurance firms and firms in general) and tax laws should be clear and easy

to comprehend. The objective of these laws should be not just reducing aggressive tax planning and tax fraud to the minimum, but principally to guarantee a clear understanding of obligations and entitlements and thus facilitate the ability of taxpayers to make optimized decisions. The rate of each tax that every taxpayer has to pay must be certain and not arbitrary. Complexity will increase inequality and will thus create greater incentives for tax avoidance.

Effectiveness and fairness: This concerns paying the right amount of tax at the correct specific time, avoiding double taxation and unintentional non-taxation, and reducing tax evasion, as a complement to the previous principle (efficiency, certainty, and simplicity). This is represented by horizontal equity (i.e., taxpayers with similar conditions should pay a similar amount of taxes, although, as mentioned by Pistone et al. (2019), this becomes more complex when considering different forms or sources of income) and by vertical equity (in the case where taxpayers pay more tax as their income increases, as described in Chap. 6 regarding proportional income tax and a progressive tax rate).

Flexibility: Tax systems should be flexible and enable a dynamic reality, mainly because the economic environment is constantly changing, particularly with regard to technology and commerce. While being required to collect necessary revenues, the tax system also needs to be able to adapt itself to new conditions and realities. This means that the structural features of the system should be durable in a changing policy context, yet flexible and dynamic enough to enable governments to respond to change. Furthermore, as discussed in Chap. 3, taxation plays an important role in maintaining economic stabilization. A flexible tax system enables the ability to change taxes in response to the economic cycle and economic shocks.

Equity (equitable): The tax system needs to address the issues of equality, both horizontally and vertically. Taxes are not just for collecting revenues, as they also have an important function of reducing inequality, as discussed in Chap. 3.

Adequacy: Taxes must provide sufficient revenue to provide for the level of public expenditure and the demand for public services and needs to be adequate to ensure that the growth of revenues is in line with the growth of expenditures and the economic level.

Stability: A tax system should be consistent and stable over time (although some minor changes should be made every year, particularly to reflect the impact of inflation and increases in wages and salaries), otherwise it will create uncertainty among taxpayers and increase the costs of tax compliance, which in turn leading to economic distortions and inefficiencies.

Productivity and Sufficiency: A good tax system should generate sufficient revenues for the public expenditure level of the country. Nevertheless, it should not collect more than is necessary from the economic agents to finance public needs and should not represent an unsustainable burden in relation to the economic capacity of the country (i.e., level of development, the ability to generate wealth, income per capita, and income distribution inequality). Tax burden and tax effort are discussed in Chap. 3.

Coherence: The tax system must be coherent across all the different taxes. This means that taxes need to fulfil objectives without any contradiction (e.g., a government that decides to tax fuel substantially to protect the environment and reduce emissions and pollution cannot offer tax benefits for polluting vehicles), however, the tax mix should contemplate different taxes with different objectives. If the government is federal, with regional and local authorities playing an important role in taxation, then taxes across central, regional, and local government should not be seen as competing, but rather as complementing. Coherence is also needed to ensure that the majority of the tax burden is not skewed to a specific group or area of activity. Furthermore, the tax system should be stable over time and taxes should be designed to achieve a maximum tax base. The broader the base, the more coherent the tax system will be (Pistone et al., 2019) and in addition, it should also be coherent with international taxation to comply with tax harmonization (see below).

Transparency: It should be easy for stakeholders and taxpayers to find relevant information regarding the tax system and also tax revenues and expenditures, along with other data, statistics, and information.

Minimization of costs: The tax system must be designed to be simple and effective, and should therefore have low administrative costs, both for the government and for the taxpayer. The amount of resources (time and money) that taxpayers have to spend to fulfil all their tax obligations should be reduced to the minimum, without jeopardizing the level of revenues and other related principles. The administration of taxes should also bear in mind the costs expended by the government in collecting the revenues (the collection cost/tax yield).

Confidentiality: Taxpayers must be secure in knowing that all information regarding themselves (both individual and firms) is confidential and that effective data protection is in place, particularly for sensitive information (e.g., the source and level of income or medical expenses in the case of individuals, or any information that could give competitors an advantage in the case of firms).

Legitimacy: Besides the issue of legality which provides the formal legitimacy for taxes, taxes also need informal legitimacy, in the sense that they are accepted by the population as a whole. As referred to by Pistone et al. (2019), while governments can legislate any kind or type of taxation, and tax that has no nexus or reasonable justification leads to informal illegitimacy which renders it hard to enforce and inequitable.

2.3 Sources of Tax Law

Taxation law is the body of law that establishes the right of a government to collect taxes and also the rules that taxpayers are subject to. As seen above, the first characteristics of a tax is to be legal, in other words to be created by law in accordance with the requirements of the national constitution for the approval of laws. No tax can be levied except under the authority of a law—which is embedded in the Constitution in many countries. Each Constitutional system determines to

what extent the passing of tax laws is a competence of Parliament and stipulates what can be delegated to the executive powers (i.e., central, regional, and local governments).

Taxation law, therefore, covers the rules that establish the incidence of tax and the tax base. It also extends to the rules governing the administration and enforcement of the tax system, including rules for the collection and recovery of tax. Tax laws are becoming more and more intricate (tax codes can easily attain hundreds of pages, and the total tax legislation of a country can add up to thousands or even tens of thousands of pages, if all the laws, instructions, and court decisions, etc. are included), as they have to account for more and more facts in a very complex world. Furthermore, once a new tax law is approved and enacted, it is common for legislators to have to amend it alter due to the discovery of loopholes (i.e., cases that the tax should have forecast, but failed to do so), or because at a later stage it becomes evident that a certain specific issue was not sufficiently addressed or designed. In addition, the drive to limit tax avoidance has obliged tax laws to be more and more detailed and complex (once again to avoid loopholes).

According to Vanistendael (1996), the fundamentals of the tax legal framework are that a tax can only be levied if a lawfully enacted statute so provides, that a tax must be applied impartially, and that revenue raised by a tax can only be used for lawful public purposes and not for the private ends of the power/s to be. The rule of law contemplates that these principles are enforced by independent courts.

In most countries, the first source of law for taxes is the Constitution. Each country's Constitution establishes the legal limits of taxation and defines the competence of Parliament, and what can be delegated to the government. Furthermore, the Constitution can determine several other aspects of taxation.

The next layer of rules after the Constitution is normally that of international treaties and agreements enacted by Parliament. These treaties and agreements have to be in accordance with the dispositions of the Constitution, although they can bypass national legislation. As is discussed in more detail in Chap. 10 on international double taxation, if one country has a double taxation agreement (DTA) in force with another country, then taxpayers who receive incomes in both countries will be subject to such a DTA, rather than the domestic tax code (both for income and corporate tax).

The next layer consists of each country's own system of taxes, where each tax usually has its own Code of Law. Each tax code law details the rules and dispositions that governments are entitled to adhere to when applying the tax in question and it establishes the incidence and exemptions of the tax, the definition of which taxpayers are subject to that specific tax, the tax period, the rules followed to calculate the taxable base, the tax rates, and the tax benefits and obligations, among other relevant issues.

Furthermore, each country has its own administrative regulations and internal directives for tax administration. In federal countries, regional or local laws can also be part of the taxation law system (Livingston & Gamage, 2010). Indeed, as mentioned by Pistone et al. (2019), "*Tax culture in a jurisdiction also plays a part*

in the manner in which tax is imposed in a state and whether the state will be able to justify the tax to the persons it affects.”

In the specific case of the United States, the procedures for the enactment of tax legislation are the same as those for any other federal legislation, with the exception being that all revenue measures are constitutionally required to be introduced in the House of Representatives. These procedures include deliberations by the House Ways and Means Committee, the Senate Finance Committee, and the Joint Conference Committee.

Finally, the application of the law is mainly a role reserved for the tax administration and courts of law (although, unlike civil law, doctrine is not a source of law—although it can have some influence in the legislating body and in the Courts). Taxpayers return a tax declaration in most countries (for each specific tax, for a period, or for an event), with or without resorting to professional assistance (from accountants and lawyers) and the tax administration then receives and analyses each declaration and calculates the amount of tax to be paid. In the first instance, litigation between the taxpayer and the tax administration is usually resolved in accordance with tax administration procedures. In most countries, tax administrations have separated departments whose function is to analyze claims and litigation arising from any divergence between the taxpayer and the tax authority that stipulated the amount of taxes to be paid. Once the tax administration has made its final decision, taxpayers can apply to the Courts, as well as to legal tax arbitration centers in most countries. The Courts not only decide litigation between taxpayers and the tax administration, but they also create precedents. In other words, once a higher Court makes a decision, this affects all future decisions made by the lower Courts (although this can vary from country to country).

2.4 Classifications of Taxes

There are several classifications of taxes.

Taxes can be *national, regional, or local*, depending on who collects the tax, and also on who benefits from the revenues. Taxes collected from central governments can also be regional or local, if the main decisions regarding those taxes are made by the regional/local authorities (which are usually also democratically elected) and the revenues received are part of their budget. In the majority of cases, regional and local taxes are collected by the national tax administration for questions of simplicity, lower cost, and the capacity to enforce and collect the revenues.

Taxes can be classified as *direct or indirect*. Direct taxation are those taxes that apply directly to the taxpayer's income capacity or to the taxpayer's assets. This is the case of personal income tax (which applies to the income of every individual—see Chap. 6), corporate income tax (that applies to the profits of firms—see Chap. 7), or the taxes on real estate or taxes on wealth, where each individual pays according to the value of the assets they own. Indirect taxation is one that is not related to the individual capacity to pay, but with a specific event, such as consumption or another. Taxes on consumption (VAT, sales tax, or excise tax) or stamp tax are all examples

of indirect taxation. This distinction is also referred to as *taxes on income and property* and *taxes on consumption and production*. Income taxes are levied on net income (i.e., from labor and capital) over an annual tax period, consumption taxes operate as a levy on expenditure relating to the consumption of goods and services, which is imposed at the time of the transaction.

Direct taxes have some advantages, such as reducing inequality and focussing on the personal situation of each taxpayer. The disadvantages of direct taxes are the potential for higher costs on tax administration and tax compliance and a higher potential for tax evasion. Indirect taxes on the other hand have as advantages of being economically neutral, more stable, with the simple collection of revenues, but have disadvantages, such as the potential to increase inequality, together with the fact that revenues are more cyclical/more subject to economic cycle fluctuations (see Chap. 3 for more details).

Taxes can be *periodical or single*. Periodical taxes are those that are repeatedly levied over a certain time period. In the case of income and corporate tax (and also taxes on real estate ownership), such a period is a full year. In the case of VAT, the period is usually monthly or quarterly. Single taxes are those that are based on a single event, such as the case of a stamp tax on a contract, excise tax on a consumption, or a tax on buying a property. They are only levied on an event one single time.

Taxes can be a *“lump sum” or a tax rate*. “Lump sum” taxes mean a single payment, which is not based on a tax capacity, but rather on an equal value for each taxpayer (which tends to be uncommon in taxes, but very common in fees). For taxes based on a tax rate, the amount of the tax base is multiplied by a tax rate percentage (or several), with the tax rate being proportional, progressive, or regressive (see more in Chaps. 3 and 6).

2.5 Taxable Event

A taxable event is the concept of the action/transaction that results in taxes owed to the government. The taxable event is the moment when the tax obligation is generated and by definition implies applying the taxes in time. Each type of tax defines the moment for the tax event. For instance, the moment for applying income tax is usually on the last day of the tax period. In the case of VAT, it is the moment of transaction of the good or service. Such a moment defines the taxpayer’s situation with regard to the tax law.

2.6 Applying Taxes on Time

The application of taxes in time is a fundamental issue in taxation. This is mainly because in most cases tax declarations are delivered the year after the tax period (e.g., income and corporate tax), but also because tax administration and court decisions are made several years after the occurrence of the events.

Therefore, the application of taxes in time follows the principle of non-retroactivity.³ This means that tax laws cannot be applied retroactivity in time, which means that tax laws only produce an effect for the future. They can only produce retroactive effects if the results are more favorable for the taxpayer. The rational is that taxpayers should be able to make economic decisions with full knowledge of their tax consequences and that it is unfair to apply tax consequences for an investment or other economic decision that differs from the tax treatment at the time the decision was made (Thuronyi, 1996). According to this author, in most countries, the principle of non-retroactivity is observed not as a legally binding principle (except for a few special cases), but as a principle of tax policy that the legislature follows as it considers appropriate.

A tax law is considered retroactive when it affects transaction or income that have been closed already, sometime in the past, before the approval of the law in question. It will have a merely retrospective effect when it affects future transactions or legal positions that have not yet been closed (Thuronyi, 1996).

Nevertheless, in some cases the tax law does have some retroactive effects which the Constitutional order in most countries tend to accept. This is the case when governments announce an increase in excise taxes or consumptions taxes and it is also applicable to sale of stocks. In this latter case, it is even arguable whether the effect is retroactive, as in most cases the tax is due at the moment of consumption and not the moment of production. But even in some cases, it is the moment of production that is applicable, and thus such stocks would probably be subject to the new tax rate. It is also important to analyze whether the moment the new tax rule was approved and published was before or after the tax event. Should income tax be due on the 31 of December of the current year, then any change in the income tax law implemented during the year is, in most cases, legally acceptable, with no retroactive effects. Suppose that the Government decides to increase the income tax rate for year $t + 1$. The most common practice would be to approve such an increase in Parliament during year t (i.e., the year before), implementing such a change on 1 January of $t + 1$. However, in most cases, it is also possible to increase the tax rate during the year $t + 1$, as the tax event (the moment that defines the tax rules and the individual condition of each taxpayer) is the last day of the year (i.e., 31 of December).

Furthermore, regulations and other normative acts interpreting tax legislation are not applied from the moment that they are produced, but rather from the application of the tax law in question.

In some countries, it is also possible (and under certain conditions) to apply the new tax law from the moment that the bill was announced and not the moment the bill was approved and officially published. Nevertheless, such practice usually requires certain legal circumstances and also the fact that such application ensures that taxpayers do not avoid the new tax rules. The moment the government announces a change in the tax law, taxpayers have the incentive to change their

³In the United States and the United Kingdom you may find some exceptions to this principle.

behavior and decisions to adapt to such change. In such cases, it is usually accepted that the public trust of the taxpayer has not been violated.

2.7 Applying Taxes in Jurisdiction

Each country defines its own set of tax rules (the tax system and the tax law), despite harmonization at several levels, particularly in the OECD countries and in the EU member-states (for income tax and corporate tax main concepts at the OECD level, for VAT at the EU level, for transfer prices and international double taxation at the OECD level, etc.). However, the respective tax is applied in a specific jurisdiction, and naturally one country's law only applies to that country's legal territory. This is the jurisdictional limits of their respective tax laws. Almost all countries adopt worldwide (residence-based) jurisdictional rules (which will be discussed in more detail in Chap. 6). This approach focusses on the taxpayer's place of residence, with taxpayers being taxed on their domestic and foreign sources of income, with foreign taxpayers being taxed by their local sources of income (once again, more detail on this will be provided in Chap. 6 and also in Chap. 10 on the international double taxation issue). The overriding rationale is that there is a link between the taxpayer and the taxing jurisdiction.

In addition, there is also the specific case of CFC rules (controlled foreign companies). These rules are the base for taxation of profits by non-resident firms that are owned by resident shareholders and are categorized as anti-avoidance rules (and also as an extension of the tax incidence and tax base). They guarantee that such income is not exempted from taxation or is only taxed on repatriation (e.g., under a worldwide tax system with a deferral regime). CFC rules require some or all of the foreign firm's profits to be included in the income of the resident shareholder, and thus can also have the effect of protecting the tax base of the source country by discouraging investments that erode its tax base or that are designed to shift profit to low-tax jurisdictions.

2.8 Tax Enforcement

Enforcement (both the enforcement of laws and the enforcement of judgment/Courts of Law) means compelling taxpayers to adhere (or at least, to obey) all the provisions in the tax laws of the respective country (Andreoni et al., 1998; de La Feria, 2020). Enforcement is, therefore, the key issue in enhancing tax compliance, particularly if taxpayers are not fulfilling their tax obligations (Tanko, 2015). Law enforcement is related to the penalties and probability of detection, which is critical for tax evasion and the tax gap, as will be seen later. The perception that others can/are evading their taxes can increase the likelihood that a person also decides to evade paying taxes.

Another issue regarding the interpretation of tax law is the "Rule of Law." According to the IMF: "*Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the*

quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence” (Kaufmann et al., 1999; Skaaning, 2010). However, the way that the Rule of Law is concretized can provide taxpayers with certainty or uncertainty (Pistone et al., 2019). Accordingly, the interpretation of the law is made by the Tax Administration (as most countries enact regulations and instructions), but mainly by Courts of Law. Naturally, this is strongly linked with the principle of legality, as discussed above.

2.9 Tax Incidence

There are two concepts of tax incidence. A legal concept—the tax legal incidence, and the economic concept—the tax economic incidence (we will address the issue of economic incidence in Chap. 3).

The legal tax incidence (which is also called tax base or statutory tax incidence, i.e., the statutory incidence of a tax refers to the distribution of tax payments based on the legal obligation to remit taxes to the government) is the main structure of a specific tax and provides the answer to two fundamental questions:

1. *What is the activity (income/consumption/wealth/asset/contract/transaction/other) subject to this tax (Real incidence)?*
2. *Who is the entity (tax person) (individual or firm/organization) subject to this tax (Personal incidence)?*

In this way, the tax incidence shows the “scope” or the “universe” of a specific tax. If a specific fact does not qualify for the incidence of a specific tax, then it will not be subject to that specific type of taxation, leading to two consequences (it is important to stress that one fact may not lead to the obligation to pay a certain tax and yet will be subject to other tax). The first consequence is that the fact is not the justification for paying that specific tax, while the second is that there is no obligation to declare the fact under such tax obligations.

Regarding the real incidence, each tax determines (in the tax code) the calculation of the value of the tax base, and whether it is gross or net. Gross means that the full amount (in currency) of the value of the activity is taxed, whereas net means that some sort of deduction is allowed (to account for expenses or other features that need to be considered for that specific tax).

Concerning the personal incidence (taxpayers will be discussed next), it is important also to consider the possible existence of withholdings, as the tax can be paid directly by the taxpayer. Nevertheless, it can be collected by a third party that delivers (in name of the taxpayer) such revenue to the tax administration. Let us now examine two examples: the first is when a firm paying salaries deducts from the gross salary the amount of income tax retained on a monthly basis (which the individual will later use in their income tax declaration to deduct the amount of tax to be paid) and then delivers this amount to the Tax Administration; the second is when a bank pays interest, but only transfers the net value of such interest to the holder’s bank

account, retaining the respective income/corporate tax (depending whether the account holder is an individual or a firm) as well as any stamp tax due, which is usually also applied to such transactions—in effect, both taxes are collected by the bank that is subsequently delivered to the tax administration. This principle also applies to the case of VAT, which is a tax on the consumption of final users, but is collected throughout the economic cycle, with each VAT taxpayer delivering to the tax administration the amount of tax according to the added value that was created during the economic cycle (see Chap. 9—VAT).

As referred to by Fullerton and Metcalf (2002), the economic tax incidence is the study of who bears the economic burden of a tax and how the economic incidence changes both the behavior of economic agents and the equilibrium in prices. It also analyses the impact of taxes on the distribution of welfare. The authors provide the following example for the difference between statutory and economic incidence: the statutory burden of the payroll tax in the United States is shared equally between employers and employees, yet microeconomics supports the evidence that the tax borne is entirely supported by employees (as will be seen in Chap. 3).

2.10 Tax Exemptions

Within tax incidence, there is also “tax exemption.” Tax exemptions are facts or entities (“tax persons”) who are subject to tax (i.e., they fill the conditions of real and personal incidence of that specific tax), however, they are entitled to an exemption (total or partial). Such cases can be for social, economic or political reasons, and exemptions can be either total (with no tax payment) or partial (just a part of the value of the event is taxable). Therefore, a fact that is subject to the incidence of a specific tax, but with an exemption, also has two consequences: first, it does not pay that specific tax or pays just a part, and, second, it usually has the obligation to declare the fact. Nevertheless, tax exemptions are related to, yet different from tax deductions, tax allowances, or tax credits (Lerch, 2004) (tax deductions, allowances, and credits are discussed in Chap. 8).

2.11 Taxpayers/Tax Persons

Each tax has a statutory personal incidence, as mentioned above, determining “who pays the tax.” This is the concept of taxpayers (also sometimes called tax persons), who are the legal entities (individuals or firms/organizations) liable to pay the tax and who are penalized if it is not paid. Taxpayers can be individuals or firms, and they can be resident or non-resident (the issue of residence will be discussed in Chap. 10). But taxpayers can also be “transparent entities” (also known in the United States as Partnerships), which are partnerships of several partners (professionals) of a specific area (in most countries such areas are defined in the income and corporate tax law for purpose of defining the taxpayer and are usually lawyers, accountants, auditors, and medical staff, among other “liberal” professionals). Transparent

entities are treated as a firm for VAT purpose and are subject to corporate tax for the calculation of the tax base. However, in most countries the tax base is split among the partners, with those individual taxpayers paying income tax, rather than the transparent entity paying corporate tax. The form of Permanent Establishments also exists in the case of firms, which is discussed in Chap. 7.

2.12 Tax Period and Tax Season

The tax period is the tax principle that is based on the accounting principle of specialization of periods. The main function of the tax period is to define what tax base is to be considered for a certain period of time. Each tax has its own tax period. In the cases of income and corporate tax, it is usually for a full year. This means that for income tax, incomes are considered according to such a tax year. In most countries this full year is the civil year (1 of January to 31 of December). In this case, taxpayers pay income tax on the income that they earn between 1 of January and 31 of December. Firms pay corporate tax based on the difference between their revenues and costs during the same period. However, some countries adopt a tax period that is different from the civil year. For instance, in the United Kingdom the tax period starts on the 6 of April each year and ends on the 5 of April the following year. The tax period in Australia starts from 1 of July to 30 of June. In addition, the tax season regards the time period when taxpayers (individuals or firms) prepare their financial statements and submit their tax returns. Each country has a specific tax season for each tax.

2.13 Tax Base and Tax Amount

Two other important concepts that need to be considered are the Tax base and the Tax amount. The Tax base (also called Taxable Income or Taxable Profit in the case of income or corporate tax, respectively) is the amount to which the tax rate (or rates) is applied, in other words it is the income/profit/value of the transaction or asset that is used to determine the tax due (in effect the tax amount, i.e., the effective amount of tax due to be paid by the taxpayer). The tax base is the total amount of income, property, assets, consumption, transactions, or other economic activities subject to taxation by a tax authority. Here is an example:

Suppose an individual earns a gross annual income of 100k. Income tax allows for a deduction of 20k. This means that the tax base of such an individual is 80k.

The tax liability is the amount of tax to be paid/supported by the taxpayer.

$$\text{Tax Liability} = \text{Tax Base} \times \text{Tax Rate}.$$

Using the previous example:

If the tax rate is 40%, this means that the tax amount will be 32k.

2.14 Tax Rates

Tax rates are the percentage (%) of a specific tax applied to the tax base (a certain amount of income/profit/value of transaction of goods or services/value of asset or contract, etc.). This is the percentage that results in the calculation of the tax amount.

The issue of tax rates is examined in more detail in Chap. 6 concerning income tax. For now, it is important to explain the difference between nominal, effective, and marginal tax rates.

Nominal tax rates (also called statutory tax rates) are the rates previewed in the tax law for a specific tax. The nominal tax could be a single tax rate (e.g., most countries have a single corporate tax rate—see Chap. 7; or Denmark has a single VAT rate—see Chap. 8), or it could be several tax rates. According to Slemrod and Bakija (2017), the nominal tax rate is legally defined and when it is applied to the taxable income it determines a country's tax collection.

The Effective tax rate is the taxes paid as a percentage of the total income/profit/value (the Tax base). According to several authors (Li et al., 2016; Watson, 2015; Phillips et al., 2004), it is a common measure to calculate the tax volume of firms, and also to evaluate tax planning efficacy and assess and control tax evasion practices (Kafkalas et al., 2014; Chiarini et al., 2013).

This tax rate is not observed in the law, but can be calculated as follows:

$$\frac{\text{Tax}}{\text{Total income/profit/value}}$$

The effective tax rate can be lower than the nominal/statutory rate due to several issues: tax exemptions and tax deductions, the application of several tax rates (such as, for instance, in a progressive income tax—see Chap. 6), or by a surcharge of costs in the case of corporate tax. It is also possible (but less usual) for the effective tax rate to be higher than the nominal rate. This could happen if penalties regarding incomes or costs are added, or in the case of corporate tax, in the form of a partial (or zero) deduction of certain costs. In some of the literature, the effective tax rate is also referred to as the average tax rate. The difference from the effective tax rate is that the former is calculated based on taxable income, whereas the latter is calculated based on the total income, as has been explained above.

Some studies have analyzed the relationship between the nominal and the effective tax rate. For instance, Dias and Reis (2018) calculate the effective tax rate by using the ratio between the value of the tax paid over the result before tax. These authors found that the effective rate increases equally, but with a slower growth. However, this method is less robust when taking into account the value of the nominal tax rate, which shows that firms have the ability to manage their results in order to pay less tax.

Marginal tax rate is the tax rate that an additional unit of income or profit is subject to. A progressive income tax has several brackets of income with different tax rates (see Chap. 6), which means, for example, that a person with an annual income of 30 k is currently subject to a tax rate of 25%. If the income increases what is the tax rate? If the tax bracket is not surpassed, then the additional income will continue to be taxed at 25%. However, if the bracket is surpassed, then the additional income will be subject to the tax rate of the next bracket.

Here is an example:

Assume a progressive income tax with 3 brackets: up to 20k a year is exempt; from 20k to 60k is subject to a 20% tax rate; above 60k is subject to a 35% tax rate. In this case, an individual earning less than 20k is subject to a marginal tax rate of zero until their salary attains a limit of 20k. If the income increases above this bracket, then the marginal tax rate will be 20%. This means an individual with an income of 25k a year pays 1,000 of tax $[20k \cdot 0\% + 5k \cdot 20\%]$. In this case, any additional income will be taxed at 20% (up until 60k). Once the income increases above 60k, the marginal tax rate will be 35%.

Finally, it is also important to consider the marginal effective tax rate. This measures the amount of tax that arises when a firm decides to undertake an incremental unit of activity, representing the effective tax rate that such additional income or profits will be subject to.

2.15 Tax Expenditures

Tax expenditures represent the amount of tax that is not collected by government, due to exemptions, tax benefits, exclusions, deferrals, special tax rates that are lower than the statutory rate, etc. They deliberately reduce the tax burden on certain economic activities or taxpayers (Fuest & Riedel, 2009). There is a vast economic literature on the models and effects of tax expenditures (see, for instance, Saez, 2004; Burman et al., 2008; Poterba, 2011).

Several motives exist for a government to create such instruments that generate a tax expenditure: it could be for social reasons (income redistribution—in the form of income tax deductions for health, education, and housing; a lower VAT rate for essential goods—such as food goods), to incentivize investment (tax deductions or tax exemptions for Capex in the case of corporate tax), to promote greater tax competitiveness (increasing the tax deduction of specific costs related with IT, R&D, marketing or others in the corporate tax rate), or to correct market failures. Supporters of tax expenditures point out that it is efficient to encourage certain kinds of economic behaviors, rather than using direct expenditures to achieve similar objectives (Saez, 2004).

Nevertheless, tax expenditures also come with some criticism: not just because they reduce revenues, but also because they can be perceived as lacking in transparency and accountability, which is difficult to control. They also tend to perpetuate along time. It is difficult to bring such benefits to an end, as in most cases governments do not establish a time limit for the application of such an instrument

when creating tax benefits or other instruments related to tax expenditures (for instance, 5 or 10 years), or set a criterion to end the instrument (reduction/increase in x% of an indicator). The main reason for this is that it could be politically averse for the government to make such a decision. Furthermore, the group that benefits from such a reduction in tax payments will fiercely oppose any move to bring the instrument to an end, as the general population that supports it will, most likely, be indifferent. This reflects the problem of the “interest group theory” (see McCormick & Tollison, 2012 for more details on this). In addition, tax expenditures are more vulnerable to capture by lobby groups or even to corruption (Fuest & Riedel, 2009) and they also led to a more complex tax system.

2.16 Tax Avoidance and Tax Evasion

This topic will be examined in more detail in Chap. 8. However, at this stage, some fundamental concepts are useful. According to Hanlon and Heitzman (2010), tax avoidance can be defined as being the reduction of explicit taxes, reflecting all transactions that have an impact on a firm’s tax liability. As referred by Atwood et al. (2012), this is the difference between the firm’s “unmanaged tax amount” (the home-country statutory corporate tax rate times pre-tax earnings before exceptional items) and its “managed tax amount” (current taxes paid). Tax avoidance reflects how aggressively managers pursue strategies that reduce taxes paid (Dyreng et al., 2008). However, this does not necessarily imply that firms are engaging in improper behavior, as managing tax costs is a necessary and appropriate component of a firm’s long-term strategy (Atwood et al., 2012).

According to International Transparency, tax evasion can be defined as “*the illegal non-payment or under-payment of taxes, usually by deliberately making a false declaration or no declaration to tax authorities.*” The main difference between tax avoidance and tax evasion is that the former is legal (saving taxes within the boundary of law), while the latter is illegal (saving taxes by breaking/not abiding by the law) (Sandmo, 2005, provides an extensive literature review on this topic, see also Skinner and Slemrod (1985), Slemrod (2007), and Alstadsæter et al. (2019) for an extensive analysis of tax avoidance and tax evasion in the economic theory).

As mentioned by Al-Karablieh et al. (2021), several countries have low audit rates and low fines with a reasonable risk aversion, however, they do not experience much tax evasion (or at least, tax evasion could be much higher than that empirically observed). This is due mainly to the social norm that creates a sentiment in people that makes them unwilling to cheat, but also because the probability of being detected is higher than the audit rate, due to third-party reporting. This issue will be discussed further in Chap. 8.

2.17 Tax Gap

Tax gap can be defined as “*the difference between the tax that taxpayers should pay and what they actually pay on a timely basis*” (Gemmell & Hasseldine, 2012). Other definitions can be found in Giles (1997, 1999), which calls it “*hidden economy*” or “*hidden income*.” According to Mazur and Plumley (2007), the tax gap should not be synonymous with “underground economy” and there is a strong overlap (the authors provide a discussion on the estimation and methodology of the tax gap; also see more in Raczkowski, 2015 or Raczkowski & Mróz, 2018). The tax gap is also related to the effective tax rate (ETR) versus nominal tax rate, together with the issue of the book-ETR and the cash effective tax rate (CETR, measured as cash tax paid over pre-tax earnings) (Barros & Sarmento, 2020). According to Plumley (2005), the tax gap consists of three main parts: non-filing (failure to file a return), underreporting (of income and also overstating of deductions), and underpayment (failure to fully pay reported taxes owed).

When analyzing the determinants of tax revenue, Castro and Camarillo (2014) concluded that the tax gap, as measured by the difference between tax capacity and tax revenue, tends to remain stable over time across the 34 countries of OECD over the period of 2001–2011. This could be due to the fact that the characteristics of the taxation systems of these economies did not significantly change over the period under analysis. In addition, for OECD countries, Raczkowski and Mróz (2018) found that the level of tax gap is mainly determined by country effects and is highly correlated with the level of GDP, as well as with the level of taxation (the results were similar for Europe in Raczkowski, 2015).

2.18 Tax Administration

Tax administration represents the unit of government that has a multiple role: the verification of tax returns or a claim for credit, rebate, or refund; the investigation, assessment, determination, litigation, or collection of tax liability of any person; the investigation or prosecution of a tax-related crime; and the enforcement of a tax statute. According to the European Commission, the tax administrations of EU Member States are either organized as separate agencies or are integrated into/subordinate to the Ministry of Finance. In almost half of the EU countries, the tax and customs authorities are merged. The European Commission also provides a useful tool for tax administration evaluation and performance, the TADAT—the Tax Administration Diagnostic Assessment Tool. The OECD (2021) provides an extensive database of 59 tax administrations.

2.19 Administrative Tax Procedures

Tax procedures are the power given to tax administrations to enforce the collection of taxes, based on the tax laws of the country (which must follow the defined principles and characteristics for a tax system, as described above). The main goal of tax procedures from the perspective of the tax administration is to ensure the collection of tax revenues. However, such power is subject to limits and to “checks and balances.” The Tax administration is limited by law in its own actions and limited by courts that can always overturn their decisions. Tax administration powers are not discretionary, although they have some capacity to interpret tax laws and current regulations and instructions. However, such an interpretation can always be overturned by Parliament by means of the Law and the Courts through legal decisions.

As mentioned by Pistone et al. (2019), tax procedures can be divided into two main groups: the procedural rules designed to determine the tax assessment and audits and the judiciary review of tax administration acts. These authors also provide a detailed explanation of the boundaries of both groups. Tax procedures must always be based on fairness and the legal protection of taxpayers. Fairness is compliance with the law, which not only provides the Tax Administration with instruments to collect the taxes, but also gives rights to taxpayers in their defense. Tax procedures, therefore, have to be based on four principles (Pistone et al., 2019): proportionality (between the means and results from tax administration); the prohibition of double jeopardy (whereby taxpayers cannot be asked to defend themselves more than once); the right to be heard (taxpayers have the right to be heard in defense in every procedure enacted by the tax administration); and the right to not self-incriminate.

Tax procedures have several stages: the first is tax rulings (i.e., the moment that precedes the taxpayer providing information); this is followed by the tax assessment (the procedure that establish the conditions and the amount of tax to be paid by the taxpayer); the third stage (which usually only occurs for a small proportion of taxpayers) are tax audits (this is the stage where the Tax Administration can carry out a validation of the facts that led to the tax assessment and eventually correct the amount of taxes to be paid by the taxpayer); the fourth stage only occurs when a tax audit occurs and the Tax Administration orders that an additional amount of tax has to be paid (tax notices must contain all the relevant information about the audit and the decision and the legal basis, together with an explanation of the taxpayer’s rights to appeal the decision, where a failure regarding one of these issue will lead Courts to declare the nullity of the decision) through the issue of a tax notice, whereby in the case of the taxpayer not accepting the decision, another stage occurs, namely litigation (which can be through Tax Administration reviews, judicial appeals in Court, or tax arbitration); the final stage is the tax collection or refund/reimburse (the moment that the taxpayer pays the tax or is entitled to a refund and the Tax Administration pays such a refund to the taxpayer). There is, however, a difference between a refund and reimbursement. Refunds are related to those taxpayers who pay an excessive amount of taxes and are automatically due a refund by the Tax Administration. This is the case of income tax (see Chap. 6), where taxpayers pay

(directly or most commonly through collection by third parties) income tax during the year, which they can deduct in their income tax declaration. If the amount paid during the year is lower than the tax, there is still an additional payment to be made. If it is the opposite (the payments during the year exceed the income tax), then there is a refund. Reimbursements on the other hand are based on the request by the taxpayer, an example being VAT (see Chap. 9), whereby if the taxpayer has more VAT to deduct than VAT charged to their clients, then the taxpayer is due a VAT credit and can ask for a reimbursement (although such reimbursement is not automatically due—not only does it have to be asked for by the taxpayer, but it also requires an administrative procedure and it is subject to validation by the Tax Administration).

Finally, non-compliance with tax procedures by the taxpayer is an infringement, which gives rise to a sanction. Such a sanction could be monetary or, in the last resort, a prison sentence if a crime was committed. These infringements can range from a failure to deliver (or providing false/omitting information) a tax declaration and/or omitting to pay the tax, to failing to keep accounting ledgers with the intention to falsify accounts or invoices (in the case of invoices, this includes the failure to issue invoices when selling goods or services).

2.20 Tax Competition

Tax competition consists of a government's decision to lower taxes (through, but not exclusively, by reducing tax rates) in order to increase competitiveness, attract investment (and normally FDI—Foreign Direct Investment), incentivize the location of certain activities and certain production of goods and services, and attract skilled human resources and human capital (Leibrecht & Hochgatterer, 2012—where the authors also provide an extensive literature review on this topic, together with Genschel & Schwarz, 2011) (see also Keen & Konrad, 2013 for an excellent overview of tax competition economic theory).

Over the last decades, particularly since the 1990s, there has been a strong tax competition among countries resulting from globalization, the IT revolution, the decontrol of capital, trade liberalization, and the financialization of the economy (Keen & Konrad, 2013). This is particularly true in the cases of corporate tax (which will be discussed in more detail in Chap. 7). This competition is often called “bottom to the race,” in the sense that countries reduce their corporate tax rate further and further to levels that are considered to be substantially low. Furthermore, should any one country reduce its corporate tax rate, this then provides the incentive for the other countries (particularly the major competitors) to reduce their levels of taxes even further, in a spiral toward low rates (Rota-Graziosi, 2019).

2.21 Tax Harmonization

“Tax harmonization is generally understood as a process of adjusting tax systems of different jurisdictions in the pursuit of a common policy objective” (Kopits, 2002). The main source of tax harmonization among countries is the OECD Convention (Organisation for Economic Co-operation and Development) (Calderon, 2007; Ault, 2013). Despite a strong level of tax competition over the last decades, particularly since the 2008 financial crisis, there has been a noticeable effort towards tax harmonization, particularly between more developed countries (Europe, the United States, and other OECD members).

The main driver for tax harmonization around the globe is the OECD Model Tax Convention (on Income and on Capital). This is a model for countries to conclude bilateral tax conventions (double taxation agreements, see below and Chap. 10) and it plays a crucial role in removing tax-related barriers to cross-border trade and investment. The OECD Model also provides a means for settling the most common problems that arise in the field of international double taxation on a uniform basis (OECD, 2017a).

International double taxation is the levy of comparable taxes in two (or more) States on the same taxpayer for the same subject matter and for identical periods. Its harmful effects on the exchange of goods and services and movements of capital, technology, and persons are so well known that it is scarcely necessary to stress the importance of removing the obstacles that double taxation presents to the development of economic relations between countries. It has long been recognized among the member countries of the OECD that it is desirable to clarify, standardize, and confirm the fiscal situation of taxpayers who are engaged in commercial, industrial, financial, or any other activities in other countries through the application of common solutions to identical cases of double taxation by all countries. This is the main purpose of the OECD Model Tax Convention on Income and on Capital, which provides a means of settling the most common problems that arise in the field of international juridical double taxation on a uniform basis. When concluding or revising bilateral conventions, these should conform to this Model Convention. The topic of international double taxation is covered in Chap. 10 of this book, although some of the definitions are referred to here.

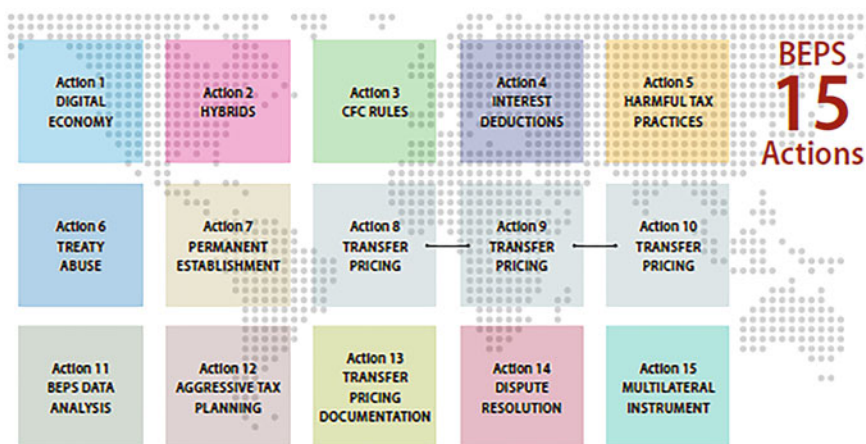
The Double Tax Treaties constitute an important instrument for international tax laws. In the absence of the international harmonization of legislation with the objective to establish the taxation of incomes earned between different entities in different countries, all earnings of residents of other countries would be subject to taxation in this country and also in their country of origin, giving rise to double taxation. This potential double taxation can only be remedied through establishing agreements between states, with the main purpose of avoiding double taxation. Accordingly, these agreements enable incomes earned in a certain country by a foreign citizen who originates from a country that has signed a tax agreement with that country to be taxed at a lower rate.

The OECD has also been developing a strong harmonization process known as BEPS (Base Erosion and Profit Shifting).⁴

BEPS refers to tax planning strategies that exploit gaps and mismatches in tax rules to artificially shift profits to low or no-tax locations where there is little or no economic activity or to erode tax bases through deductible payments, such as interest or royalties. Although some of the schemes used are illegal, most are not. BEPS is of major significance for developing countries, due to their heavy reliance on corporate income tax, particularly from multinational enterprises. Profit shifting is an idea where firms operating in foreign countries can swap profit from operations in one country to a tax haven country. A tax haven is a country or area where income tax is levied at a lower rate. Firms opt to shift their profit to avoid large tax rates and in order to retain a larger proportion of their earnings.

According to the OECD, business operates internationally, and thus governments must act together to tackle BEPS and to restore trust in domestic and international tax systems. BEPS practices cost countries 100–240 billion USD in lost revenue annually, which is the equivalent of 4–10% of the global corporate income tax revenue. Working together in the OECD/G20 Inclusive Framework on BEPS, 141 countries and jurisdictions are implementing 15 Actions to tackle tax avoidance, to improve the coherence of international tax rules, to ensure a more transparent tax environment, and to address the tax challenges arising from the digitalization of the economy.

Overview of the 15 Action BEPS package (source: OECD, 2017b).



Action 1: Addresses the tax challenges of the digital economy and identifies the main difficulties that the digital economy poses for the application of existing

⁴ According to OECD information: "As of 4 November 2021, 137 countries and jurisdictions joined a new two-pillar plan to reform international taxation rules and ensure that multinational enterprises pay a fair share of tax wherever they operate."

international tax rules. It develops detailed options to address these difficulties, taking a holistic approach and considering both direct and indirect taxation.

Action 2: Works on neutralizing the effects of hybrid mismatch arrangements and develops model treaty provisions and recommendations for the design of domestic rules to neutralize the effect (e.g., double non-taxation, double deduction, and long-term deferral) of hybrid instruments and entities.

Action 3: Works to strengthen the rules for controlled foreign corporations and develops recommendations for the design of rules for controlled foreign firms.

Action 4: Works on limiting base erosion via interest deductions and other financial payments and develops recommendations regarding best practices in the design of rules to prevent base erosion through the use of interest expense, for example, through the use of related- and third-party debt to achieve excessive interest deductions or to finance the production of exempt or deferred income and other financial payments that are economically equivalent to interest payments.

Action 5: Works to counter harmful tax practices more effectively, taking into account transparency and substance, revamps the work on harmful tax practices with the priority being the improvement of transparency, including compulsory spontaneous exchange on rulings related to preferential regimes and on requiring substantial activity for any preferential regime.

Action 6: Works on preventing treaty abuse and develops model treaty provisions and recommendations for the design of domestic rules to prevent the granting of treaty benefits in inappropriate circumstances.

Action 7: Works on preventing the artificial avoidance of permanent establishment status and develops changes to the definition of a permanent establishment in order to prevent the artificial avoidance of permanent establishment status in relation to BEPS, including through the use of commissionaire arrangements and specific activity exemptions.

Actions 8–10: Works to assure that transfer pricing outcomes are in line with value creation, including working on (i) intangibles, by developing rules to prevent BEPS by moving intangibles among group members, (ii) risks and capital, by developing rules to prevent BEPS by transferring risks among, or allocating excessive capital to, group members, and (iii) other high-risk transactions through developing rules to prevent BEPS by engaging in transactions which would not, or would only very rarely occur between third parties.

Action 11: Works to establish methodologies to collect and analyze data on BEPS and the actions to address it, develops recommendations regarding indicators of the scale and economic impact of BEPS, and ensures that tools are available to monitor and evaluate the effectiveness and economic impact of the actions taken to address BEPS on an ongoing basis.

Action 12: Works on requiring taxpayers to disclose their aggressive tax planning arrangements and develops recommendations for the design of mandatory disclosure rules for aggressive or abusive transactions, arrangements, or structures, taking into consideration the administrative costs for tax administration and business, while drawing on the experiences of the increasing number of countries that have such rules.

Action 13: Works to re-examine transfer pricing documentation and develops rules regarding transfer pricing documentation to enhance transparency for tax administrations, taking into consideration the compliance costs for business.

Action 14: Works on making dispute resolution mechanisms more effective and develops solutions to address obstacles that prevent countries from solving treaty-related disputes under MAP, including the absence of arbitration provisions in most treaties and the fact that access to MAP and arbitration can be denied in certain cases.

Action 15: Works on developing a multilateral instrument to modify bilateral tax treaties and provides an analysis of the tax and public international law issues related to the development of a multilateral instrument to enable countries to implement measures developed in the course of the work on BEPS and to amend bilateral tax treaties.

With regard to tax harmonization at the European level, this topic is discussed in Chap. 12 of this book. Such tax harmonization is mainly obtained by the approval of EU Directives which specifically regard taxation issues (on VAT, corporate tax, etc.). However, the major EU principle on taxation is the belief that there is no need for an across-the-board harmonization of Member States' tax systems, with the exception of VAT and Excise tax, owing to freedom of trade and the movement of goods and services. Provided that they respect EU rules, Member States are free to choose the tax systems that they consider most appropriate and according to their preferences. In addition, any proposal for EU action in the area of tax needs to take into account the principles of subsidiarity and proportionality. There should only be action at EU level only if the action by individual Member States cannot provide an effective solution. In fact, many tax problems simply require better coordination. The main priority for tax policy is that of addressing the concerns of individuals and businesses operating within the Internal Market by focusing on the elimination of tax obstacles to all forms of cross-border economic activity, in addition to continuing the fight against harmful tax competition.

2.22 Environmental Taxes

In recent years, due to the increasing concern regarding the impacts of environmental and climate change, there has been a strong interest in the taxation of those activities and goods that harm the environment, both by polluting and by negatively impacting climate change (such as CO₂ emissions—greenhouse gases). Taxation can play a role in defending the environment in two ways: first, by penalizing activities and goods that are perceived as being negative to the environment, such as the case of taxing industries that are more pollutant and also of increasing taxation on goods such as fuel, vehicles, plastics, and non-renewable electricity such as gas or coal or; and, second, providing tax benefits for firms to invest in decarbonization or by reducing the level of tax on environmentally-friendly goods (e.g., electric and hybrid cars). Such taxation is mainly a form of Pigouvian taxes (Pigou, 1920) (the specific

topic of Pigouvian taxes is described in Chap. 3), as they incorporate the negative externalities of pollution in the price of goods (the specific issue of taxation and externalities is also described in Chap. 3).

The European Union's definition of environmental taxes states: "*an environmentally related tax' means a tax whose tax base is a physical unit (or a proxy of a physical unit) of something that has a proven, specific negative impact on the environment, and which is identified in "ESA 95 as a tax."*"⁵ Countries around the world have been adapting their tax structure to reflect such environmental concerns, but this is particularly true at the EU level (Fodha et al., 2018).

Environmental taxes have additional benefits, besides the protection of environment, but are also subject to potential criticism (Määttä, 2006; Fullerton et al., 2008; Buchholz & Rübbelke, 2019). They can be an alternative source of revenues, instead of income or corporate taxes and they provide an incentive for more efficiency in the use of inputs and raw materials. Additionally, they also incentive innovation toward the practice of production with less pollution and a greater ecological impact. They are also a form of regulation for market failure and negative externalities. By reducing pollution, they increase the quality of life and health of citizens (Williams III, 2002), however, they also pose some concerns. They can impact differently across countries, particularly in the field of energy. Countries with more renewable sources of energy can have a strong advantage in industry (and countries with lower standards of environment and climate change measures may also have a competitive advantage). Furthermore, the short and long-term impacts on economic growth are not clear. Environmental taxes also tend to be regressive (see Chaps. 3 and 6 for the concept of regressivity on taxes), as they impact more on low-level income groups, an example being the heavy taxation of fuel in localities with few alternatives to public transport. This type of taxation represents a higher burden for people with less income. Finally, environmental taxes can have intergenerational distribution effects (Bovenberg & Heijdra, 1998; Hassan et al., 2020) and can also create distortion in firms' decisions and investments.

There are several studies on the impact of such taxation in economic terms (see, for instance, Bosquet, 2000; Elkins & Baker, 2001; Scrimgeour et al., 2005; Fullerton et al., 2008; Freire-González, 2018; Niu et al., 2018; Shahzad, 2020, and also Yip, 2018 and Hafstead & Williams III, 2018 on the specific topic of this taxation's impact on the labor market). Some studies argue that it is possible to obtain a double dividend: an improvement in both environmental and economic conditions by imposing an environmental tax and by receiving recycling revenues as a way of reducing other pre-existing taxes. However, Freire-González (2018) found more evidence that such taxes and reforms result in an environmental dividend, rather than an economic one.

⁵Regulation (EU) No 691/2011 of the European Parliament and of the Council of 6 July 2011 on European environmental economic accounts.

2.23 Taxation and Ethics

Most of what has been described in this chapter has the issue of Ethics and Moral as a common thread (in the sense of normative behavior) in taxation. There is a moral basis for Taxation (Meredith, 2008; Alm & Torgler, 2011). The principles and characteristics of a tax system are based on ethical grounds. As referred to by Van Brederode (2020), tax laws are a subset of public law (and of laws in general), and are consequently affected by the ethical and moral conceptions of laws in general. Taxes also lead to a concern about the nature of government and its relation with citizens (individual rights and privacy versus government powers), together with issues concerning property rights (Alm & Torgler, 2006). Furthermore, the objectives of taxation, the principles and characteristics of taxation, and the tax system itself (and each individual tax) need to be grounded in the ethics and moral of that society, as is the capacity of the tax administration to enforce tax laws and possess coercive powers, as well as the level and distribution of the tax burden and the use of such revenues in public expenditures (Alm et al., 1992; Van Brederode, 2014, 2020). For instance, it would be absurd to introduce a very unfair tax in a country such as Denmark, which already has a strong rule of law and a low level of corruption. It would also be illogical to see a country such as Belgium invest most of its tax revenue in military expenditure. Ethical grounds also impact strongly on tax evasion and fraud (Kirchler, 2007) (which will be discussed in more detail in Chap. 8).

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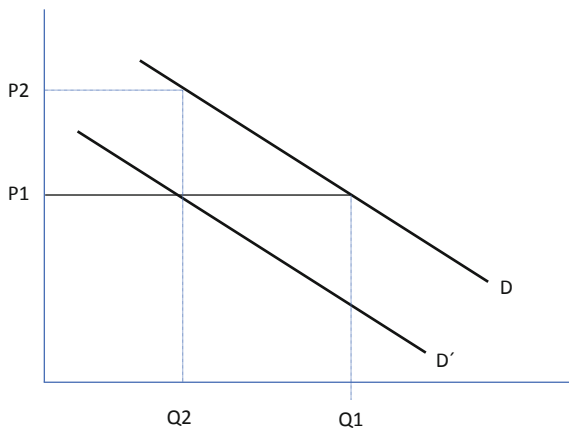
3.1 Taxation on Demand and Supply

One main issue concerns the impact of taxes on the prices of goods and services. The theory of economic tax incidence characterizes the effect on the economic equilibrium of a change in taxes, measuring the utility of agents before and after the tax change. The utility here means that in a world without taxes, consumers and producers behave in reflection of their preference—or utility—functions. The function of all consumers represents the demand market and the function of all producers (or suppliers) represent the supplier market.

Microeconomics explains that in a perfect competition market, demand and supply are in equilibrium (the intersection of the demand and supply curve). However, taxes can alter such equilibrium. If one assumes a general tax that is constant by unit of production, the effects will be different, according to whether the tax is charged to the consumer or to the producer. In the former case, demand reduces (moving from Q_1 to Q_2 as price increases from P_1 to P_2 , with $P_2 = P_1 + T$) (Fig. 3.1). In the latter case, when the tax is charged to producers, the quantity offered decreases (S_1 moves to S_2 , as P_1 increases to P_2). It can thus be seen that the effect is equal, which is an understandable mistake that is often made by public decision makers and general public. They tend to consider taxation on firms to be a reduction on profits without affecting consumers' well-being. But in fact, in most markets, the impact is similar, whether the taxation is charged to producers or to consumers. The legal incidence of the tax has no particular effect on the economic

This chapter only intends to describe the issue of taxes in Economics (Macroeconomics and Microeconomics). Readers who are not familiar with these topics themselves should read such literature as Samuelson and Nordhaus (2018) for both of them, or Blanchard et al. (2017) and Pindyck and Rubinfeld (2018) for Macroeconomics, and Frank and Cartwright (2010) and Acemoglu et al. (2021) for Microeconomics, among others.

Fig. 3.1 Effect of taxes on demand and supply



incidence of the taxation, which does not mean that the share of the tax burden is equal, but just that the legal incidence has no impact on such a burden.

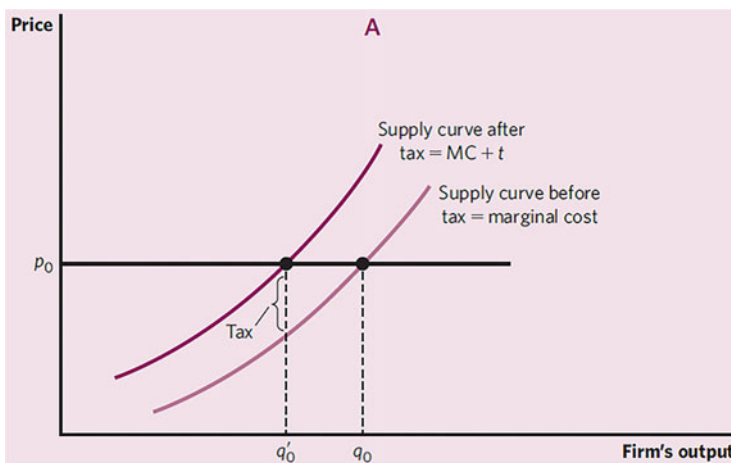
As has been seen in Chap. 2, there is a difference between statutory and economic incidence. Statutory incidence concerns who is legally responsible/liable for the tax. The economic incidence concerns who bears the cost of the tax. This means that in some cases the liability falls on one taxpayer, but the economic cost falls on another. Taxes can affect the demand or supply in markets for goods and services, as well as labor and capital. This means that taxes can change prices, wages, and interest rates. In all these cases, the effect can be that governments decide to tax one group (the legal incidence) but end up imposing the tax burden on another group (the economic incidence).

Generally speaking, the impact of taxes on the overall equilibrium is an increase in prices (Frank & Cartwright, 2010). Taxes (and subsidies) change the slope and the position of the budget line of consumers (which the budget restriction reduces or increases) and in turn, this changes the prices charged to the consumers. Such a change leads to an increase in the marginal rate of transfer, which becomes higher than the marginal rate of substitution, especially in the case of taxes applying to a specific product (or a set of products). Consumption decisions are based on the gross price, however, producers' decisions are based on the net price. Taxes, just like subsidies (which has the opposite effect), alter the required conditions for efficiency. In fact, all taxes generate distortions (at least for consumption, if not for production, as will be seen in the chapter on VAT—Chap. 9), but not to the same magnitude. In the interest of efficiency (and tax neutrality, which leads to minimum distortion), less distortion is attained through a fixed tax, where each individual pays the same amount. However, fixed-rate tax considerably harms the poorest, leading to greater inequality and it is very regressive.

Analyses of the economic incidence of taxes on consumption (e.g., VAT, which is a tax on a good) combine the identification of the producer's new wage, the ratio of the gross wage to the consumer price, and the interaction with the demand and supply curve. A tax on goods increases the consumer price as the demand for the

good becomes less elastic and also has the effect of reducing the producer prices as the supply of the good becomes less elastic. In turn, when the demand and supply become more elastic, the effect is to reduce the quantity of all the goods sold.

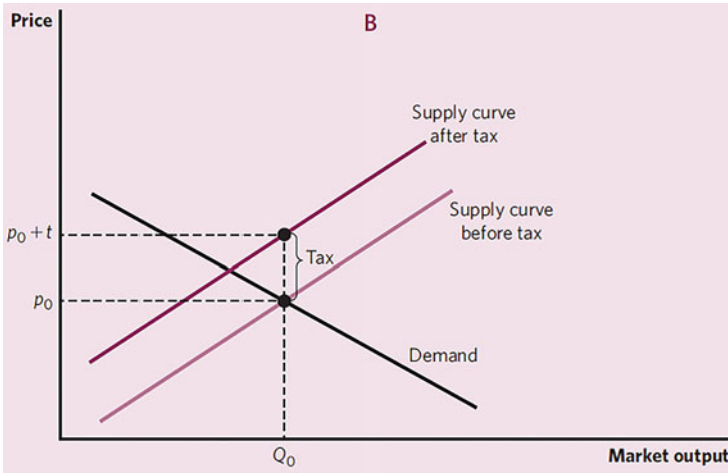
In a market with perfect equilibrium, the imposition of a tax produces the results described by the figure below, where if the firm produces at the level at which price equals the marginal costs, then the firm supports the tax (i.e., the economic tax incidence). This way, the amount that the firm is willing to supply at the price p_0 is reduced. For any p_0 price, the firm supplies a lower quantity. In effect, tax increases the marginal cost of production and the output supplied is reduced from q_0 to q'_0 (Stiglitz & Rosengard, 2015).



Source: Stiglitz & Rosengard, 2015

Source: Stiglitz & Rosengard, 2015

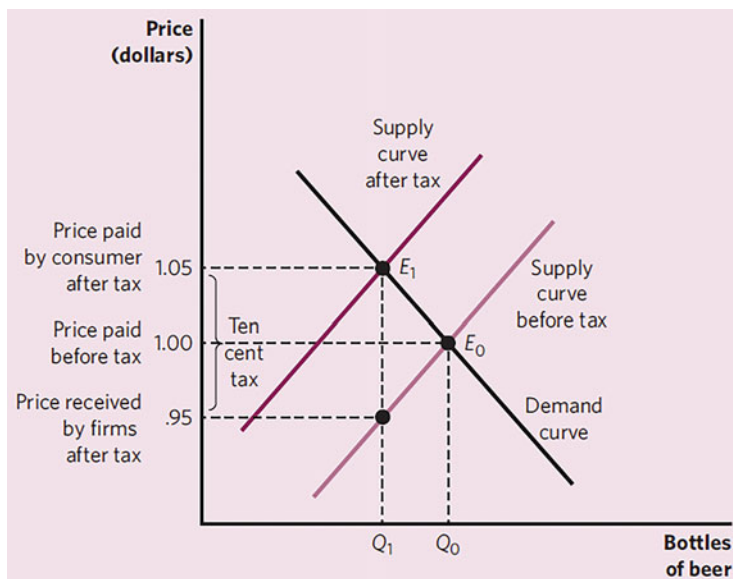
For each price the market is willing to supply less (as the supply curve shifts to the left), or, equivalently, the price required to elicit a given supply for the market is higher, by an amount that is exactly equal to the tax. The amount of this shift is easy to determine. If t is the tax rate, then the net amount received by the firm when the price is $p_0 + t$ after the tax is the same as it would have received if the price was just p_0 before the tax, i.e., the quantity that each firm is thus willing to supply at the price $p_0 + t$ after the tax is the same as it would have been willing to supply at the price p_0 before the tax. The supply curve is shifted up by the amount of the tax (Stiglitz & Rosengard, 2015).



Source: Stiglitz & Rosengard, 2015

Source: Stiglitz & Rosengard, 2015

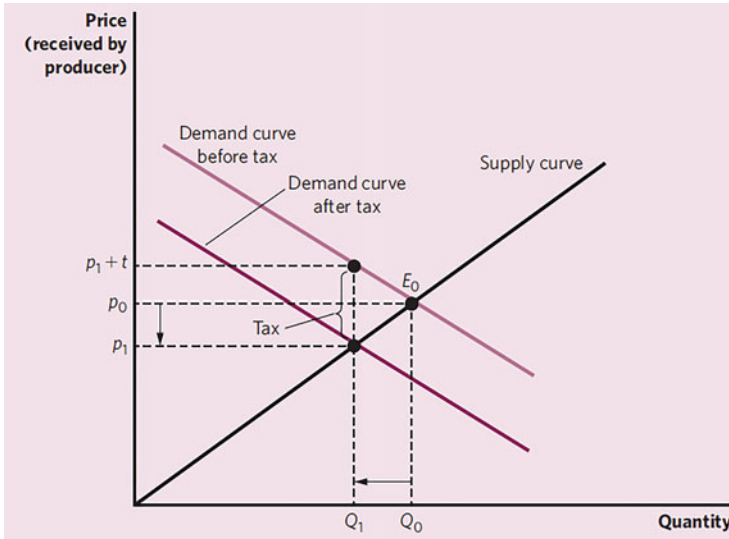
Concerning the impact of the tax on prices and outputs, where the market is in equilibrium before taxes, with Q produce at p each. If the tax is per unit, then the supply curve shifts up by the amount of the tax, and the price rises accordingly. The tax is nominally imposed on producers, but consumers are forced to pay a part of the increased cost in the form of higher prices. In most cases, producers cannot shift the entire cost of the tax to consumers because as the price rises, the quantity demanded falls. Each firm now receives a higher price, albeit with an additional cost of the tax, which thus reduces the firm's income. Firms produce less than before the tax, but more than they would have done so if consumers had not bear part of the additional cost (Stiglitz & Rosengard, 2015).



Source: (Stiglitz & Rosengard, 2015)

Source: Stiglitz and Rosengard (2015)

But what if consumers bear the full amount of the tax? As seen below, at a new point of equilibrium, the tax on consumers is now represented by a downward shift in the demand curve, by the equivalent amount of the tax. That is to say, if the producer receives p_I , then the consumer must pay $p_I + t$ and the level of demand is Q_I , just as it would have been if in the before-tax situation producers had charged $p_I + t$. Thus, there is no impact on whether government legally imposes the tax on producers or consumers, or not (Stiglitz & Rosengard, 2015).



Source: (Stiglitz & Rosengard, 2015)

Source: Stiglitz and Rosengard (2015)

If the tax is borne by the producers there are two situations that the tax will be falling under producers (with a perfectly inelastic supply curve and a perfectly elastic demand curve), with a perfectly inelastic supply curve, then the price does not rise and the full burden of the tax is borne by the producers. With a perfectly elastic demand curve (a horizontal demand curve) the price does not rise either and the entire burden of the tax falls on producers. Furthermore, if the tax is borne by the consumers there are two situations that the tax will be falling under consumers (with perfectly elastic supply curve and with a perfectly inelastic demand curve): with a perfectly elastic supply curve (a horizontal supply curve), the price then rises by the full amount of the tax, with the entire burden of the tax falling on consumers. With a perfectly inelastic demand curve, the price rises by the full amount of the tax with the entire burden of the tax falling on the consumers. The incidence of a tax imposed on a perfectly elastically supplied factor is always fully shifted and the demand curve is shifted down by the amount of tax, with the price set by producers remaining equal. If the tax is levied in a monopoly market, then the price paid by consumers rises by exactly half the tax due to linear demand and horizontal marginal cost curves. In these cases, consumers and producers share the burden of the tax and with constant elasticity demand curves, the price rises by more than the tax (Stiglitz & Rosengard, 2015).

The welfare loss (measured in monetary units) that is created by a tax over and above the tax revenue generated by the tax is called “excess burden” or “deadweight burden” (Feldstein, 1999; Gruber, 2016; Blomquist & Simula, 2019). The welfare loss is measured as being the change in consumer plus producer surplus, minus the

tax collected (which is the area defined by the triangle in the figure below). This determines the inefficiency of a tax, in the sense that it measures the change in the behavior of the consumers and producers due to the tax (in order to avoid the tax). This is caused by the inefficient consumption of individuals and firms alike and production choices in order to just avoid or reduce taxation. On the contrary, if taxation does not change such consumption and production decisions (i.e., it does not change the quantities consumed and produced), then the tax has no efficiency costs.

General equilibrium models consider the effects on related markets of a tax imposed on just one market.

Another example is provided by taxing the real estate market. For most countries impose a tax on the transaction of real estate. In some countries, this real estate tax is paid by the buyer, where in such a case, the tax can affect demand, as buyers know that they have to add the tax to the sale price of the house. In other countries, it is the seller who pays the tax, in which case the tax can affect supply, as the seller knows that it must deduct the cost of the tax from the sale price. Legally, it is clear who has the responsibility to pay the real estate tax, however economically it is not clear who actually supports the cost. If real estate market were a perfect market, then the tax would have no distortion and the price of the house would account for the cost of the tax, regardless of who is responsible for delivering it to the government.

Referring to the work of Atkinson and Stiglitz (1980), Fullerton and Metcalf (2002) divide taxpayers into five groups in terms of economic tax incidence: (1) the impact of taxes on consumers as opposed to producers, where a partial equilibrium diagram can identify both the loss of consumer surplus and the loss of the producer surplus resulting from a tax; (2) a specific tax analysis that can impact on relative demands for different factors and the returns for those factors (such as capital, labor, or land); (3) a measure of economic well-being of individuals, in order to analyze the progressivity of a tax or a tax system; (4) the regional incidence of taxes; and (5) the intergenerational effects of taxes.

A good example is provided by Varian (2014), which assumes a tax on apartment, where each landlord pays 50 \$/year on taxes for each apartment. In this case, the equilibrium price remains unchanged, as the supply curve does not change and the number of apartments remains equal (a different case would be if the tax were solely on the apartment for rent, where a very high tax could lead to some owners preferring not to put the apartment on the market) and the demand curve does not change either. If landlords were already charging the maximum price, then the effect of the tax is just to reduce their disposable income as they will support the full cost of the tax. If not, then prices increase. How much of a tax is passed on to consumers is mainly a function of the steepness of demand and supply curves, where if the supply curve is horizontal, all taxes are borne by the consumer and if it is vertical, then all taxes are borne by the producer (Frank & Cartwright, 2010).

The “Ramsey taxation mode” (Ramsey, 1927) (see, for instance, Sandmo, 1976 or Wilson, 1991), where the government taxes more those productive factors that are more rigid in terms of demand or supply, as the marginal impact is lower, generating more revenues at the expense of a minimum reduction in economic efficiency. An

optimal tax system is one that is designed to minimize the excess burden of taxation (the “deadweight loss of taxation”¹) (Holcombe, 2005).

Taxes play a relevant role in establishing market equilibrium. An example on the effects of taxes in such an equilibrium of prices and quantities is as follows:

Suppose a certain market where the supply and demand functions are (p is price, q is quantity):

$$Q_d = 180 - 70p$$

$$Q_s = 90 + 50p$$

The initial (pre-tax) market equilibrium is provided by:

$$90 + 50p = 180 - 70p$$

$$p = 0.75$$

$$Q = 127.5$$

If the government introduces a tax of $t = 0.5$ per unit, this implies a new supply curve, namely:

$$Q_s = 90 + 50 * (p - 0.5)$$

The new market equilibrium is now:

$$90 + 50(p - 0.5) = 180 - 70p$$

$$p_1 = 0.96$$

$$Q_1 = 113$$

The deadweight loss of taxes is thus:

$$L = [\frac{1}{2} (Q - Q_1) * t] = \frac{1}{2} * (127.5 - 113) * 0.5 = 3.7$$

$$\text{Consumer loss} = [\frac{1}{2} (p_1 - p) (Q + Q_1)] = [\frac{1}{2} (0.96 - 0.75)(127.5 + 112.8)] = 25.3$$

$$\text{Producer's surplus} = [\frac{1}{2} * (Q + Q_1) * (p - (p_1 - t))] = 34.9$$

$$\text{Government revenues} : Q * t = 113 * 0.5 = 56.5$$

Therefore, the total surplus (25.3 + 34.9) is equal to the sum of the deadweight loss and government revenues (3.7 + 56.5) = 60.2.

¹Note that a doubling of the tax rate more than doubles the deadweight loss.

The issue of tax elasticity also needs to be addressed.² This concept is based on a change in tax revenues due to a change in the tax rate. How much tax revenues will increase if the tax rate increases by 1 p.p.? When assessing tax elasticity for consumption taxes, this is naturally related to the elasticity of demand and supply due to an increase in prices (as final consumers end up paying more for each good or service, as the consumption tax has increased for both VAT and sales tax, which leads to higher prices on consumption). If the tax revenue increases with the increase in the tax rate, this results in the market being relatively inelastic (where the opposite results in a market being relatively elastic). A good example is an increase in tobacco tax, for as most consumers do not reduce their level of consumption of tobacco (but habitually reduce other types of consumption to accommodate the increase in price of this product in their income constraint line), this leads to an increase in tax revenues.

Tax elasticity can be calculated as:

$$\frac{\Delta \text{tax revenue}}{\Delta \text{tax rate}}$$

3.2 Taxation and Labor Supply

The impacts of taxes on labor supply are twofold: higher taxes rates can create incentives for people to choose leisure rather than opt to work additional hours (Blundell, 1992). Assume an individual earning a medium/high income (in the cases of an individual who earns a low income, such an income alone may not be sufficient to guarantee a good standard of living, as tax rates will be low), with a marginal tax rate, for instance, of 60% or 70% (considering that salaries are usually subject to not only to Personal Income Tax, but also to Social Security payments). Any increase in income will be taxed at that 60%-70% marginal tax rate, meaning that such an increase in income will only represent 30%–40% in terms of disposable income (income after taxes). In this case, the individual might not prefer to spend more hours working and additionally, such additional hours have a higher opportunity cost (where the more hours working the higher the opportunity cost of working additional hours). Furthermore, if the income is already medium/high, then the additional income may not represent additional consumption (the marginal propensity of consumption may be close to zero), but just more savings. As any economic good, money also flows according to the law of decreases marginal utility, meaning that any additional income (which is already strong reduced by taxes) will have a low marginal utility. However, the opposite can also occur when consumers feel that the substitution effect compensates for the additional working hours. However, as mentioned by Blanchard et al. (2017), as tax rates increase, some consumers start

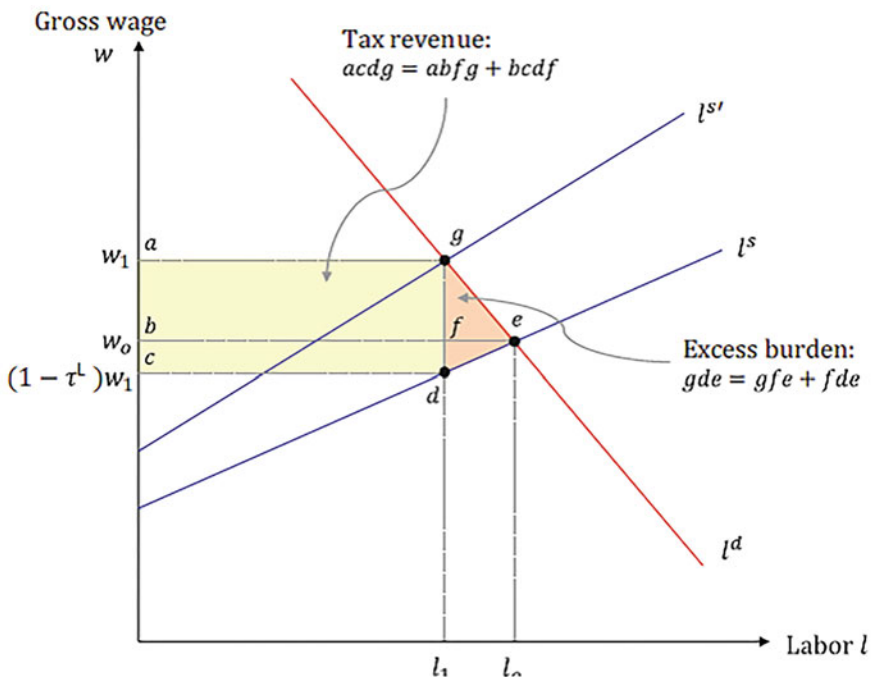
² Another concept is the “Tax buoyancy,” which is the relationship between GDP growth and tax revenue growth (i.e., the responsiveness of tax revenue growth to changes in GDP).

to work fewer hours—or stop declaring part of their income—and thus the tax base decreases.

If t is the marginal tax rate (the “bracket”—see Chap. 6 on Income Tax), then each additional unit of income (I) will be taxed at the marginal rate and the net income will then be $(1 - t) \cdot I$. This is called the “Laffer curve,” whereby when tax rates attain a higher enough level, a further increase in tax rates can actually lead to a decrease in tax revenues. The inverted curve (in the U-inverted shape) shows the amount of tax revenues that are associated with the different levels of the income tax rate, where after a specific point of tax rate, the tax base reduces (as individuals have less incentive to work and generate income—or more incentives to evade taxation) which consequently reduces the total amount of income tax revenues.

In a demand–supply equilibrium labor market, the effect of a tax on labor is to shift the demand curve for labor downwards. A tax on labor leads to lower wages and a lower level of employment. Who effectively pays the tax depending on the elasticity of demand and supply for labor? Most economists consider that the supply of labor is relatively inelastic—that is to say, it is almost vertical—then most of the tax burden falls on workers, regardless of the legal imposition of the tax.

The figure below shows that it does not matter who is legally responsible for the tax, as the economic incidence can be different from the legal incidence (see Chap. 2), however, income tax and social security payments are normally a burden for the worker. Individual labor supply is a function of net wages after taxation and labor demand is a function of gross wages.



Source: Burkhard (2019)

Source: Burkhard (2019)

If the demand for labor is rigid (assuming a horizontal line), then if there is no taxation, the supply of labor is L_1 , with taxation being L_2 , then the effect of tax is $L_2 < L_1$ (Varian, 2014). This means that less labor will be supplied at each wage level. The amount of tax revenues is calculated by $T = t * w * L$, with t being the tax rate, w the wages, and L the amount of labor supply.

Interestingly, in the opinion of Edward Prescott (the 2004 winner of the Nobel Prize in economics) (Prescott, 2004), “*virtually all of the large differences between U.S. labor supply and those of Germany and France are due to differences in tax systems.*” This is due to the fact that Europeans pay higher tax rates and European tax rates have increased substantially over the last decades (Mankiw & Ball, 2011).

Another topic concerns minimum wage laws. Most countries impose a minimum salary for social reasons, imposing a minimum value that enables those who work to escape extreme poverty. However, this can create distortions in the labor market, as for some workers (the unskilled and inexperienced) the minimum wage can be above the equilibrium level of the labor market. If this is the case, then the minimum wage has the effect of reducing the quantity of labor demanded by firms that employ such workers (and therefore has the effect of increasing unemployment and of reducing those wages above the minimum wage). Some economists argue that a negative income tax in the form of a tax credit for such workers (see Chap. 6 for more details) enables salaries to be in equilibrium, and that it will not affect employment and salaries (although it reduces government tax revenues).

3.3 Taxation and Efficiency

As mentioned in Chap. 2, the main discussion among economists is between efficiency and justice (in the sense of equality). This is critical for taxation. For taxes affect economic efficiency and income redistribution (Samuelson & Nordhaus, 2018). Economists discuss how taxes impact incentives for individuals and firms, as well as how they both respond to different marginal tax rates. Each tax decision has to be weighted and should be a compromise between two fundamental objectives: equity and economic efficiency. The definition of a tax policy naturally depends on the weight that each government decides to give to equity or to efficiency. If the government’s decision is to favor equality, then there is a cost in terms of economic efficiency that must be accepted, and vice versa.

Consumption taxes that use a “broad base incidence” are usually considered to be those that generate less distortion in terms of the effects of taxation on efficiency. This occurs mainly because a tax such as VAT does not impact on producers’ decisions (as is seen in Chap. 9, VAT is economically neutral for the producers in terms that do not affect the cash flow of the transaction—even though it may affect the overall performance of the firm, as an increase in VAT will increase prices, leading to less demand and/or less supply, which in turn leads to less profits). However, even VAT creates a distortion for individual decisions in terms of final consumers.

Naturally, income and corporate tax generate more distortions in both individuals' and firms' decisions. However, in some cases, the original purpose of a tax can be exactly to create distortions. An example is the case of a tax whose goal is to create an incentive for less consumption of a specific product, e.g., a tax on plastic bags, where this tax has the effect of increasing the price of plastic bags to motivate individuals to reuse plastic bags (instead of simply throwing them away) or to migrate to more environmentally friendly options, such as paper or other materials bags.

3.4 Macroeconomic Effects of Taxation

The basic economic function is GDP (Gross Domestic Product), which can be calculated in three different ways:

1. $GDP = \text{sum of the value-add of each economic agent (usually firms)}$.
2. $GDP = \text{Salaries} + \text{Rents} + \text{Interests} + \text{Profits}$.
3. $GDP: (Y) = C + G + I + \text{Exp} - \text{Imp}$, where:
 - C is consumption—taxes reduce disposable personal income, affecting the level of consumption. Households decide which part of their disposable income is for consumption and how much is destined for savings. Each individual has a marginal propensity to consume (this is the amount by which consumption changes when disposable income increases by one unit of currency).
 - G is government spending—the acquisition of goods and services, together with government transfers (which is the opposite of taxes). An increase in government purchases can impact on the interest rate level (which is called “crowding-out” or “crowding-in”—for a detailed explanation of this see, among others: Eckel et al. (2005); Blanchard (2008); Mankiw and Ball (2011); as referred to by Mankiw and Ball (2011): “*a tax cut lowers T , raises disposable income ($Y - T$), stimulates consumption, and reduces national saving. (Even though some of the tax cut finds its way into private saving, public saving falls by the full amount of the tax cut; in total, saving falls.*”).
 - I is investment—where both firms and households purchase various investments, often goods (e.g., firms increase their stock of capital and replace depreciated stock; individuals buy houses or other non-current assets). The level of investment depends on the interest rate (which in turn is impacted by the taxation of interest).
 - Exp is exports, and Imp is imports.

Economic activity directly affects taxes, through what economist call “automatic stabilisers.” If the economic cycle is in the expansion curve, then the tax revenues will naturally increase as firms sell more (generating more VAT and excise taxes, and also more profits, which in turn increases corporate tax revenues) and employment also increases (generating more salaries, which in turn increase income tax

revenues and more social security's contributions). On the other hand, when the economic cycle is in recession, tax revenues will naturally decrease. Based on this behavior, a government's deficit is also calculated as structural deficit (which is also called a cyclically adjusted budget deficit). This is the deficit (or the global balance) when the economy operates at its natural level of output and employment (Sarmiento, 2018).

Taxes alter the equilibrium of the economy (such impacts are usually called "general equilibrium effects," which impact the demand and supply curves, as well as the IS and LM curves in the IS-LM model).

Such effects have important distributional consequences on capital, interest rates, labor, and inequality, among others (Stiglitz & Rosengard, 2015). Such effects sometimes occur in the medium-long term, as taxation does not always have an immediate impact, and at other times such impacts can be felt before the tax change actually occur, just by the fact that the tax policy was announced. These are known as "announcement effects," or "impact effects." An announcement concerning the future tax treatment of an asset has an immediate impact on the value of the asset (see, for instance, the impact of such announcements on dividends—Miller & Scholes, 1982).

Policy changes (and in this case, policy changes in the fiscal and tax policy) can be seen in the IS-LM model. A tax cut stimulates consumer spending, leading to an expansionary shift in the IS curve. If there is no change in monetary policy, the shift in the IS curve leads to an expansionary shift in aggregate demand, which in turn leads to a higher level of output and lower unemployment in the short term. On the other hand, in the medium/long term, prices adjust and the economy returns to the natural level of output, which in turn leads to a higher aggregate demand, which results in higher price levels (Mankiw & Ball, 2011).

But do taxes have an effect on economic activity? The Ricardian equivalence (the Ricardo-Barro proposition)³ argues that consumers assume that a tax cut will mean a tax increase in the future. The present value of individual wealth is not affected and if the government reduces savings (increasing deficit), the private sector will increase savings, leading to no change in consumption or in the overall savings of the economy. However, as pointed out by Blanchard et al. (2017), rational expectations and the fact that tax cuts are not usually subject to announcements on future tax increases, which lead to those deficits and public debt having an economic impact.

³The Ricardo-Barro proposition is as follows: for a given amount of public expenditure, the replacement of taxes with debt does not have any effect on global demand or on interest rate. As debt only defers taxes to the future, taxpaying consumers anticipate the increase of future taxes and react to the tax decrease by increasing their savings through investing in public debt securities. Therefore, as private savings increase at the same amount as the budgetary deficit, the interest rate thus remains unchanged. The deficit does not cause any reduction of the pace of the accumulation of capital stock, nor the deterioration of the external accounts and the public debt does not affect private sector wealth. In terms of the effects on the economy, financing public expenditure through public debt is equivalent to financing the economy through taxes (see Barro (1974, 1989); Barro and Redlick (2011); Buchanan (1976); Marinheiro (2001, 2008)).

The author suggests that: *“deficits have long-run adverse effects on capital accumulation, and in turn, on output, does not imply that fiscal policy should not be used to reduce output fluctuations. Rather, it implies that deficits during recessions should be offset by surpluses during booms, so as not to lead to a steady increase in debt.”* As referred to by Mankiw and Ball (2011), President George W. Bush reduced taxes in 2001 to help end the recession, although the tax cuts also contributed to the re-emergence of budget deficits.

Another issue concerns inflation, which can be perceived as a tax (a “hidden tax,” which is also called an “inflation tax,” which is charged because the government prints money to finance both expenditures and deficits). Inflation is in effect a tax on holding money (which is also called “seigniorage,” i.e., the revenue raised by the government through printing money), as inflation devaluates the value of existing money, as the government is printing new money. It is also important to consider that several tax dispositions do not account for inflation and that in other cases such taxes are simply adjusted for inflation on a yearly basis (for instance, the brackets of the tax rates in income tax—see Chap. 6).

Personal income is calculated as the national income (GNP—gross national product, which differs from GDP, as it adds to GDP the net receipts of overseas remittances from earnings, property income and net taxes, less subsidies on production) minus indirect business profits and taxes and net interests, plus dividends and government transfers. Income received by individuals (households) is subject to taxes and social security payments. Personal income after taxes is called “disposable personal income.”⁴

Higher taxes on capital have the effect of depressing capital accumulation and of reducing income per capita, while taxes on investment income or other policies that discourage investment have the effect of depressing growth. In turn, tax and subsidy policies and market structures may affect physical capital accumulation, human capital investments, and technological progress (Acemoğlu, 2009). However, investors tend to look less at the extent of taxes in a specific country if such a country offers other attractive business-enabling and market conditions, such as macroeconomic stability, a large consumer market (in both quantity and level of income), higher levels of education and human capital value, the quality of infrastructures, the sophistication of the financial system, and the level of R&D and innovation, among other factors.

3.5 Fiscal Policy

Fiscal policy is defined as the policy of the government revenues and expenditures required to perform several public activities, such as social benefits and market intervention. Tax policy is a part of fiscal policy (a subset of fiscal policy), which just

⁴It should also be noted that consumption taxes and a wage taxes have exactly the same effect on an individual’s budget constraint.

concerns the revenue side, and particularly tax revenues (including fines, levies, fees, and social security payments, among other coercive revenues).

Traditionally, one of the various functions assigned to the government is the responsibility for supplying public services (e.g., Health, Education, and Social Services), as well as the construction of infrastructures (roads, bridges, and railways, among others). The reason why the government provides these services lies in what is known as “market failures.” Although these goods and services are often not profitable from a financial point of view, they are provided on account of their positive externalities and consequently they provide another type of advantage that is not measured by the profit or the financial value that they create, namely social benefits, e.g., the reduction of illiteracy, the improvement of the population’s health conditions, or the reduction of accidents. Although all these benefits have an economic value, this value cannot always be expressed in monetary terms, as it is not always translated into directly associated revenues, e.g., a road that reduces the traveling time of people and goods, and at the same time accidents, will have a positive impact on the quality of life of those who use that route, yet it will not have a direct measurable financial impact on the road itself. Additionally, it is the government’s responsibility to ensure universal access to certain goods and services, such as Health and Education, as the alternative of directly burdening citizens with these costs would result in the exclusion of the less-favored part of the population. In the case of infrastructures, due to the fact that they usually imply large investments, the respective return from such investments only occurs in the long term, and, as such, it is difficult for the private sector to implement such infrastructures. Furthermore, the investment and implementation of this type of service is crucial for economic development, welfare, and quality of life, as well as for the correction of inequalities, be they social or regional. With respect to “market failures, government intervention can thus be defined as being the provision of public goods ⁵ (e.g., defense, safety, and public illumination), positive externalities (e.g., education, health, or basic infrastructures), negative externalities (which are associated with special customs duties, such as a tax on tobacco or on petroleum products), and also for reasons of imperfect competition or inequality (e.g., regulation and supervision).

Musgrave (1959, 1985, 1997) postulates that fiscal policy has three main functions, based on the intention that fiscal policy is the use of public expenditures and revenues by governments to influence the economy by changing the allocation of resources used to supply goods and services, which thus compensates market failures with the objective to increase welfare and/or promote growth. For as fiscal policy influences the allocation of resources in the economy, it is a tool that can be used for macroeconomic stabilization (together with monetary policy). Fiscal policy can also be used for the objective of income redistribution.

⁵In economic theory, public goods are distinguished from private goods (even if they are provided by public entities) by two characteristics: (1) non-rivalry, that is to say, the additional consumption by one more individual does not create marginal costs, in other words, the marginal cost of one more individual consuming the good is zero; and (2) non-excludable, that is to say, the consumption by one individual does not lead to the exclusion of other individuals.

The first function is the “allocation function,” whereby the government intervenes in the allocation of resources for the provision of those goods and services that are not efficiently and satisfactorily provided by the market, thus satisfying social needs. The allocation function is the provision of goods and services (i.e., public goods or private goods that are supplied by public entities), the correction of economic agents’ behavior through the use of taxes and subsidies in such a way that they ensure that the external effects of their activities are incorporated in their decisions, and also the regulation of certain activities and sectors.

The second function is the “distribution function,” through which income distribution is corrected. This function implies that certain goods, albeit of a private nature, must be provided by the government, which are designated as “merit goods” and “primary goods”. The distribution function accordingly implies equal access to primary and merit goods and it is characterized by two senses and a double objective: on the one hand, it reduces inequalities in income distribution, and, on the other hand, it ensures universal (or almost universal) access for certain goods.

The third and last of Musgrave’s function is the “stabilisation function,” which aims to use fiscal policy as an instrument of economic policy, targeting employment, price level stability, economic growth, and the equilibrium of the balance of payments.

Fiscal policy is the policy directed toward government spending and taxation (Boyes & Melvin, 2013), which means that taxation and the tax system is a part of the fiscal policy of a country. The main objective of taxes is to collect revenues for the government to finance its expenditures. However, as discussed below, taxes can also be used to stimulate private investment and to reduce unemployment, mitigate the effects of inflation, and provide social objectives, such as the reduction of poverty and inequality, the promotion of charitable contributions and philanthropy, or encourage corporations to carry out R&D or other activities that increase common welfare.

3.6 Revenues and Expenditures

The fiscal balance refers to the deficit or surplus in the National Accounts. It is determined by all revenues and expenditures, excluding those financial revenues and expenditures related to public debt (except interest, which counts for the global balance). In this way, the global balance constitutes the net lending/net borrowing from the general government.

A revenue transaction is one that increases net worth and has a positive impact on net lending (+)/borrowing (−). Government revenue is usually dominated by compulsory levies imposed by government in the form of taxes and social contributions. For some levels of government, transfers from other government units and grants from international organizations are a major source of revenue. Other general categories of revenue include property income, sales of goods and services, and miscellaneous transfers other than grants.

These definitions are from ESA 2010 (see Sarmento, 2018 for more detail):

Current taxes on income, wealth, etc., (D.5) cover all compulsory, unrequited payments, in cash or in kind, levied periodically by the general government and by the rest of the world on the income and wealth of institutional units, and some periodic taxes which are assessed neither on that income, nor on that wealth. Current taxes on income, wealth, etc. are divided into: (a) taxes on income (D.51); (b) other current taxes (D.59).

Taxes on income (D.51) consist of taxes on incomes, profits, and capital gains. Such taxes are assessed on the actual or presumed incomes of individuals, households, corporations, and NPIs. They include taxes on holdings of property, land or real estate when these holdings are used as a basis for estimating the income of their owners. Taxes on income include: (a) taxes on individual or household income, examples being income from employment, property, entrepreneurship, pensions, etc., and includes taxes deducted by employers, for example, pay-as-you-earn taxes. Taxes on the income of owners of unincorporated enterprises are also included; (b) taxes on corporate income or profits; (c) taxes on holding gains; (d) taxes on winnings from lotteries or gambling, which are payable on the amounts received by winners as distinct from taxes on the turnover of the producers that organize gambling or lotteries, which are treated as taxes on products.

Other current taxes (D.59) include: (a) current taxes on capital which consist of taxes payable on the ownership or use of land or buildings by owners, and current taxes on net wealth and on other assets, for example jewellery—except for the taxes mentioned in D.29 (which are paid by firms as a result of engaging in production) and those in D.51 (income taxes); (b) poll taxes, which are levied per adult or per household, independent of the level of income or wealth; (c) expenditure taxes, which are payable on the total expenditures of persons or households; (d) payments by households for a licence to own or operate a non-business-related vehicles, boats or aircraft, or for licences for recreational hunting, shooting, or fishing, etc. The distinction between taxes and the purchase of services from government is defined according to the same criteria as those used in the case of payments made by firms, namely if the issue of licences involves little or no work on the part of government, with these licences being granted automatically on payment of the amounts due, where it is likely that they are simply a device to raise revenue, even though the government may provide some kind of certification or authorization in return; when in such cases their payment is treated as being a tax. However, if the issue of licences by the government is managed as a proper regulatory function (such as auditing the competence or qualifications of the person concerned), the payments made are treated as purchases of governmental services rather than the payment of taxes, unless the payments are clearly out of all proportion to the cost of providing the services; (e) taxes on international transactions, for example, overseas travel, foreign remittances, and foreign investments, except those payable by producers and import duties paid by households.

Current taxes on income, wealth, etc. do not include the following: (a) inheritance taxes, death duties, or taxes on gifts between living persons, which are all deemed to be levied on the capital of the beneficiaries and are shown under the heading of capital taxes (D.91); (b) occasional or exceptional levies on capital or wealth, which are also recorded as capital taxes (D.91); (c) taxes on land, buildings or other assets owned or rented by firms and used by them for production, with such taxes being “other taxes on production” (D.29); (d) payments by households for the following licences: driving or pilot’s licences, firearm licences, and fees paid to the government, such as museum or library admissions, garbage disposal fees, payments for passports, airport fees, and court fees, which are in most cases treated as “purchases of services rendered by government,” if they satisfy the criteria set out in point. Excluded are: licences for the use of vehicles, boats, or aircraft, or licences for recreational hunting, shooting, or fishing, which are taxed as services (Paragraph 4.79).

The total value of the taxes includes interest charged in arrears of outstanding taxes and fines imposed by taxation authorities if there no data is available to independently estimate such interest and fines. This value includes charges imposed in connection with the recovery and assessment of outstanding taxes, less the amount of any rebates conceded by the central government as a matter of economic policy and any refunds made as a result of overpayments.

Taxes on production and imports (D.2) consist of compulsory, unrequited payments, either in cash or in kind, which are levied by the general government, or by the institutions of the European Union in respect of the production and importation of goods and services, the employment of labor, the ownership or use of land, and buildings or other assets used in production. Such taxes are payable irrespective of the profits made. Taxes on production and imports are composed of the following components: (a) other taxes on production (D.29); and (b) diverse taxes on products (D.21), namely: (b.i) value-added type taxes (VAT) (D.211), (b.ii) taxes and duties on imports, excluding VAT (D.212), such as import duties (D.2121) and taxes on imports excluding VAT and duties (D.2122), (b.iii) taxes on products, except VAT and import taxes (D.214).

Taxes on products (D.21) are taxes that are payable per unit of a given good or service that is produced or transacted. The tax may be a specific amount of money per unit of quantity of a good or service, or it may be calculated as a specified percentage of the price per unit or value of the goods and services produced or transacted. Taxes assessed on a product, irrespective of which institutional unit pays the tax, are included in taxes on products, unless they are specifically included under another heading.

A value-added type tax (VAT) is a tax on goods or services collected in stages by the entities involved and which is ultimately charged in full to the final purchaser. This heading comprises the value-added tax which is collected by the central government and which is applied to national and imported products, as well as other deductible taxes applied under similar rules to those governing VAT. All value-added type taxes are hereinafter referred to as “VAT.” The common feature of VAT is that producers are obliged to pay to the government only the difference

between the VAT on their sales and the VAT on their purchases for intermediate consumption and gross fixed capital formation. VAT is recorded net in the sense that: (a) outputs of goods and services and imports are valued excluding invoiced VAT; (b) purchases of goods and services are recorded inclusive of non-deductible VAT. VAT is recorded as being borne by purchasers, not sellers, and then only by those purchasers who are not able to deduct it (i.e., household consumers and as firms may deduct VAT). The majority of VAT is recorded as being paid at final use, mainly on household consumption. For the total economy, VAT is equal to the difference between total invoiced VAT and total deductible VAT.

Taxes and duties on imports excluding VAT (D.212) comprise compulsory payments levied by the general government or the institutions of the European Union on imported goods, excluding VAT—in order to admit them to free circulation in the economic territory—and on services provided to resident units by non-resident units.

Taxes on products, except VAT and import taxes (D.214), consist of taxes on goods and services that become payable as a result of the production, export, sale, transfer, leasing, or delivery of those goods or services, or as a result of their use for own consumption or own capital formation. This heading includes, in particular: (a) excise duties and consumption taxes (other than those included in taxes and duties on imports); (b) stamp taxes on the sale of specific products, such as alcoholic beverages or tobacco, and on legal documents or cheques; (c) taxes on financial and capital transactions, payable on the purchase or sale of non-financial and financial assets, including foreign exchange. These taxes become payable when the ownership of land or other assets changes, except as a result of capital transfers (mainly inheritances and gifts), and they are treated as taxes on the services of intermediaries; (d) car registration taxes; (e) taxes on entertainment; (f) taxes on lotteries, gambling, and betting, other than those on winnings; (g) taxes on insurance premiums; (h) other taxes on specific services, such as hotels or lodging, housing services, restaurants, transportation, communication, and advertising; (i) general sales or turnover taxes (excluding VAT type taxes), which include: manufacturers' wholesale and retail sales taxes, purchase taxes, and turnover taxes; (j) profits of fiscal monopolies which are transferred to the State, except those exercising a monopoly over the imports of a given good or service (included in D.2122). Fiscal monopolies are public enterprises that have been granted a legal monopoly over the production or distribution of a particular kind of good or service in order to raise revenue, rather than further the interests of public economic or social policy. When a public enterprise is granted monopoly powers as a matter of a deliberate economic or social policy because of the special nature of the good or service or the technology of production, for example, public utilities, post offices and telecommunications, and railways, such a monopoly is not considered as a fiscal monopoly; and lastly (k) export duties and monetary compensatory amounts collected on exports.

Other taxes on production (D.29) consist of all taxes that enterprises incur as a result of engaging in production, independent of the quantity or value of the goods and

services produced or sold. Other taxes on production may be payable on the land, fixed assets, or labor employed in the production process, or on certain activities or transactions.

The taxes on production and imports paid to the institutions of the European Union include the following taxes which are collected by national governments on behalf of the institutions of the European Union: receipts from the common agricultural policy (e.g., levies on imported agricultural products, monetary compensatory amounts levied on exports and imports, sugar production levies, and the tax on isoglucose, which is a co-responsibility tax on milk and cereals); receipts from trade with third countries (e.g., customs duties levied on the basis of the Integrated Tariff of the European Communities—TARIC).

Net social contributions are the actual or imputed contributions made by households to social insurance schemes to make provision for social benefits to be paid out. Net social contributions (D.61) consist of: employers' actual social contributions (D.611), plus employers' imputed social contributions (D.612), plus households' actual social contributions (D.613), and plus households' social contribution supplements (D.614), less social insurance scheme service charges (D.61SC). The social insurance scheme service charges are the service fees charged by the units administering the schemes. These are included in this heading as part of the calculation for net social contributions (D.61) and they are not redistributive transactions, but rather part of output and consumption expenditure. Employers' actual social contributions (D.611) correspond to flow D.121.

Employers' actual social contributions are paid by employers to social security schemes and other employment related social insurance schemes designed to secure social benefits for their employees. As employers' actual social contributions are made for the benefit of their employees, their value is recorded as one of the components of employees' compensation, together with wages and salaries in cash and in kind. Social contributions are then recorded as being paid by the employees as current transfers to the social security schemes and other employment related social insurance schemes. This heading is split into two categories: (a) employers' actual pension contributions (D.6111), which corresponds to flow D.1211; and (b) employers' actual non-pension contributions (D.6112), which corresponds to flow D.1212.

Employers' imputed social contributions (D.612) are in effect the counterpart to social benefits (less eventual employees' social contributions) that is paid directly by employers (i.e., it is not linked to employers' actual contributions) to their employees or former employees, as well as other eligible persons.

Total sales of goods and services consist of market output (P.11) and payments for non-market output (P.131), as well as output for own final use (P.12), except when they are used for the market/non-market test (see Paragraph 20.30). Most of the output produced by the general government consists of goods and services that are not sold, or that are sold at prices that are not economically significant and thus the distribution of a non-market output does not accord with the concept of revenue. For goods and services, only actual sales and some specific imputed sales are included as revenue. The government's market output (P.11) comprises:

(a) the market output of market establishments included in government, such as a weapons factory that is owned by the Ministry of Defence, or canteens set up by government units for their employees that charge economically-significant prices; (b) secondary market products sold by non-market establishments, which are sometimes referred to as “incidental sales,” such as those arising from research and development contracts between public universities and corporations, or publications sold by government units at economically significant prices. The above-quoted “incidental sale” are distinct from the token museum entrance fees paid by visitors, which are usually partial payments for non-market output (P.131).

Property income (D.4) accrues when the owners of financial assets and natural resources place them at the disposal of other institutional units. The income payable for the use of financial assets is called investment income, while that payable for the use of a natural resource is called rent. Property income is the sum of investment income and rent.

Property incomes are classified as follows:

- (a) interest (D.41),
- (b) distributed income of corporations (D.42): (1) dividends (D.421); (2) withdrawals from income of quasi-corporations (D.422);
- (c) reinvested earnings on foreign direct investment (D.43);
- (d) other investment income (D.44): (1) investment income attributable to insurance policy holders (D.441); (2) investment income payable on pension entitlements (D.442); (3) investment income attributable to collective investment fund shareholders (D.443);
- (e) rents (D.45).

Interest (D.41) is property income receivable by the owners of a financial asset for putting it at the disposal of another institutional unit. It applies to the following financial assets: (a) deposits (AF.2); (b) debt securities (AF.3); (c) loans (AF.4); (d) other accounts receivable (AF.8).

Dividends (D.421) are a form of property income to which owners of shares (AF.5) become entitled as a result of, for example, placing funds at the disposal of corporations. Raising equity capital through the issue of shares is a way of raising funds. In contrast to loan capital, equity capital does not give rise to a liability that is fixed in monetary terms and neither does it entitle the holders of shares of a corporation to a fixed or predetermined income. Dividends are the distribution of profits by corporations to their shareholders or owners. Dividends also include (a) shares issued to shareholders in payment of the dividend for the financial year. However, the issue of bonus shares are not included, which represent the capitalization of own funds in the form of reserves and undistributed profits and give rise to new shares to shareholders in proportion for their holdings; (b) the income paid to the general government by public enterprises which are recognized as being independent legal entities that do not constitute a corporate enterprise; (c) income generated by non-observed activities which are transferred to the owners of corporations which participate in such activities for their private use. Dividends

(D.421) exclude super-dividends (see Dividends, “Super-dividends,” and “Interim dividends”).

3.7 Deficit and Debt

According to the National Accounts and the ESA2010 classification, deficit and debt is defined as:

Deficit: Consists of the “net lending/net borrowing” concept, which is defined according to the ESA 2010, adjusted for the operations with swaps. It is also referred as the “Fiscal Balance,” which refers to the deficit or surplus in the National Accounts and is determined by the revenues and expenditures, excluding those financial revenues and expenditures related to the public debt (except interest, which counts for the global balance). Accordingly, the global balance constitutes the net lending/net borrowing from the general government, corresponding to the balance of the B9 account of the general government.

Debt: is defined as the total consolidated value of financial gross debt from the general government, at the nominal value.

Several fiscal indicators can thus be calculated as:

$$\text{Fiscal Balance (FB)} = \text{revenues} - \text{expenditures (includes interest)}$$

$$\text{or : FB} = \text{Savings from public sector (Sg)} \\ + \text{Capital revenues} - \text{Capital expenditures, where Sg is the current revenue} \\ - \text{current expenditure}$$

$$\text{Primary Balance (PB)} = \text{revenues} - \text{primary expenditures (excludes interest)}$$

or:

$$\text{PB} = \text{Revenues} - (\text{Expenditures} - \text{interest}) \Leftrightarrow \text{Revenue} - \text{Expenditure} + \text{Interest}$$

$$\text{PB} = \text{Global Balance} + \text{Interest}$$

$$\text{PB} = (\text{Revenue} - \text{Expenditure}) - r * B,$$

where r is the average interest rate and B the value of public debt

$$\text{Current Balance (CB)} : \text{revenue} - \text{current expenditure (excludes investment, that is to say, the capital expenditures)}$$

or:

$$\begin{aligned} \text{CB} &= \text{Revenue} - (\text{Expenditure} - \text{Capital Expenditure}) \\ \Leftrightarrow \text{CB} &= \text{Revenue} - \text{Expenditure} + \text{Capital Expenditure} \end{aligned}$$

$$\text{CB} = \text{Global Balance} + \text{Capital Expenditure}$$

Naturally, there is a two-way relationship between deficit and public debt, where on the one hand, an increase in deficit corresponds, *ceteris paribus*, to an increase in debt, and on the other hand an increase in debt leads to higher interest costs for servicing public debt, which, *ceteris paribus*, leads to a larger budget deficit.

How do the dynamics of the deficit and debt work? Assuming a country that has neither a deficit nor any debt, what happens in Year 1, which is the year when a deficit is generated, either as a result of an increase of the expenditure, or a tax cut, which results from:

$$\text{Deficit} = rB_{t-1} + G_t - T_t$$

where B_{t-1} is the public debt of the previous year, r is the average interest rate of that debt, with G_t being the public expenditure and T_t the amount of revenue. It can be noted in Blanchard et al. (2017), that the author uses the real interest rate for r , and not the nominal interest rate, given the effect of inflation on the deficit value (in this way an “inflation-adjusted deficit” is obtained). However, it is necessary to use the nominal interest rate for the calculation of the nominal deficit.

Thus, assuming that there is no acquisition of financial assets, the deficit can also be measured as:

$$\text{Deficit} = B_t - B_{t-1}$$

where:

$$B_t - B_{t-1} (\text{debt variation}) = rB_{t-1} (\text{interests}) + G_t - T_t (\text{primary balance})$$

from where:

$$B_t = (1 + r) B_{t-1} + G_t - T_t$$

That is to say, the debt at t represents the effect of the interest in the debt at $t - 1$, plus the primary balance. It can be noted that the public debt is a stock, while the budgetary deficit is a flow.

Assuming a country without a deficit, with no public debt, and that that country generates a deficit of 100 at year t , resulting from a revenue of 1000 and an expenditure (primary) of 1100. If it is also assumed that the deficit is financed at 5%, with a maturity of 2 years and that over the following years the primary expenditure remains *ceteris paribus*, the following deficit evolution of the public debt and the net and gross financing needs would occur (NFN and GFN, respectively):

		Year t	Year $t + 1$	Year $t + 2$	Year $t + 3$	Year $t + 4$
1	Revenue	1000	1000	1000	1000	1000
2	Primary expenditure	1100	1100	1100	1100	1,100
3	Interest expenditure	0	5	10.25	15.75	21.55
4 = 2 + 3	Total expenditure	1100	1105	1110.25	1115.75	1121.55
5 = 1 - 4	Deficit (without the acquisition of financial assets)	-100	-105	-110.25	-115.75	-121.55
6 = 5	NFN	100	105	110.25	115.75	121.55
7 = 5 + reimbursements	GFN	100	105	210.25	220.75	331.80
8	Public debt	100	205	315.25	431	551.55

It can be verified that although the budgetary deficit only increases in a reduced way (in function of the increase of interest), the GFN grows significantly as the debt incurred in the previous years has to be paid. With no primary positive balances available to face these commitments, only the issuance of new debt can enable the payment of the previous debt that matures (“roll-over”). Even with the average maturities of the European countries being slightly more than the 2 years of the previous example, this factor has been one of the largest restrictions of the fiscal policy, especially in the eurozone.

By definition, if one ignores monetary financing, then the absolute amount of public debt (D), in monetary units, in year t is equal to the debt in the previous period, plus the budgetary deficit in year t and any deficit–debt adjustments, which may be expressed as:

$$D_t = DEFP_t + r_t D_{t-1} + D_{t-1} + AJ_t$$

where $DEFP$ is the primary deficit (i.e., before debt interest payments), r is the nominal implicit debt interest rate, and AJ is the deficit-debt adjustment. All figures are expressed at current prices. This represents the public sector fiscal restriction from a dynamic perspective. Dividing by nominal GDP, where the rate of growth is g , we obtain:

$$d_t = d_{t-1} \frac{1 + r_t}{1 + g_t}$$

where the lowercase letters represent the output ratios. Using this expression, it is possible to calculate the value of the debt in period t , based on the fact that the following are all known: debt in $t - 1$ the primary fiscal balance, the output growth rate, and also the deficit-debt adjustment in year t .

A country tax regime is a key policy instrument and may have a positive (but also negative) impact and influence on investment and competitiveness. The quality of the tax system, the transparency and stability of the tax law, the low level of the costs of tax compliance, and the quality of the tax justice are key factors on the impact of the tax policy. Despite the relevance of fiscal and tax policy in the economic policy of a country, governments face several limitations.

One of the main limitations is the level of economic development of the country in question. Countries with less economic development (known as “emergent

economies”) have to accommodate less revenues (as their income and consumption per capita are lower than that of advanced economies), with the need for higher public investment, particularly with regard to infrastructures. These countries usually have a younger population, meaning that social security and health costs are lower, but nevertheless they need to increase their spending on education and job training. Tax policy can be a powerful tool for attracting foreign investment and for boosting the competitiveness of the economy. Another limitation is the tax competition and tax harmonization that the country is subject to. OECD countries, as discussed in Chaps. 10 and 11, are subject to substantial tax harmonization, which implies that tax competition is less prevalent. This is even more so in the case of the EU countries, as is seen in Chap. 12, European Union tax harmonization is higher than that of the OECD. Finally, it is also important to consider the fiscal restrictions on the public deficit and debt, where countries with higher levels of public expenditure and/or high levels of public debt have less fiscal space to reduce taxes and instead tend to use taxation as a competitive factor.

3.8 Taxation and (In)Equality

As seen in Chap. 2, one of the main principles of taxes is the ability to pay, whereby the amount of taxes paid by each individual should be related with each one’s personal ability to pay such taxes from their income and personal wealth. Accordingly, based on the principles of benefits, as well as the ability to pay, taxes are also supposed to consider the matter of “equity”/equality (which in this context equates to “fairness,” Pistone et al. (2019). However, the authors also stress that this is a ‘fluid’ concept, which depends on such factors as the country’s culture and political system, and how important the redistribution of wealth is for its citizens.

Accordingly, taxes, particularly income tax, should be concerned with horizontal and vertical equality (for more detail, see for instance, Ordower, 2005 or Finocchiaro Castro & Rizzo, 2014).

Horizontal equality means that those who are in equal conditions should be taxed in an equal way. This represents horizontal equality in terms of individual conditions, as well as in terms of taxation for the same benefit (e.g., for public services provided to each and every citizen). Equal income with the same individual conditions should represent the same amount of taxes to be paid. Equal income should bear the same taxation, although this could be difficult if income is derived from different sources, or is deferred in time.

Vertical equality also refers to how to tax people with different levels of income. Although they are taxed differently, it is necessary to consider how the tax system should be structured regarding that difference. Should it be more progressive or less progressive? As explained in the chapter on income tax (Chap. 6), in terms of taxation, this can be regressive, proportional, progressive with a “flat rate,” or just plain progressive. Most countries use a progressive income tax system (although lately some countries have adopted a “flat rate”). However, overall, despite having a progressive income tax, a tax system also needs to be proportional (especially in the

case of corporate tax) and sometimes even regressive (as is discussed in the chapter on VAT and excise taxes).

Inequality can be calculated by using several indicators, with probably the most relevant one being the gini index (the World Bank described this indicator as follows: “*The Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.*”).

Similar to any other inequality indicator, the gini index must be observed before considering taxes and social payments and after taxes and social payments. As income tax tends to be progressive (see Chaps. 2 and 6), which means that the gini index after taxes will be lower (less inequality). Social payments (as they tend to benefit lower income people) also reduce the score of the gini index, and thus generate less inequality.

It is also important to consider how large the tax burden is and how it is distributed across the different groups of individuals according to their levels of income. Analyses normally consider how much each decile of income is responsible for tax revenues or with regard to a specific tax revenue. For instance, how much income tax is paid by the bottom 10% of the income decile and how much is paid by the top 10% of the income decile? Does the same apply to VAT⁶ or excise taxes, or for the overall tax revenues of a country? Naturally, the opinion regarding the distribution of taxes across income levels is mainly a morale judgement. For instance, how much taxes the “rich and poor” should pay is mainly a matter of the morale judgement of each individual. However, as governments are elected, such decisions are translated in each country by majority vote.

Finally, tax progressivity can have unintended effects in times of inflation, as inflation tends to increase nominal incomes, without exercising any relevant change in real incomes. However, as tax brackets in the income tax (see Chap. 6) are fixed in nominal values, this has the effect of increasing substantially the amount of income tax paid by individuals, which can increase the tax burden and reduce disposable income, as their real income has not grown significantly (where any increase in nominal income is mainly designed to compensate for inflation).

⁶In the cases of VAT or other consumption taxes, the distributional pattern of tax revenues is usually much less progressive than income tax. Although most countries tend to have reduced VAT rates for basic goods, such as food, the burden of VAT is only indirectly linked to household income, through the spending patterns of each family.

3.9 Taxation and Externalities

An extremely relevant topic in Economics is that of externalities. This concept can be defined as: “*situations when the effect of production or consumption of goods and services imposes costs or benefits on others which are not reflected in the prices charged for the goods and services being provided.*” (OECD, 1993).

Taxation has a strong impact on negative externalities, especially in the case of excise taxes. Governments tax tobacco and alcohol more heavily, intending to reduce the cost of health services, as a continuous and strong consumption of such goods tends to lead to a deterioration in health. The same applies to the taxation of vehicles, fuel, or carbon, to help combat pollution, with the goal of a heavier taxation on such goods being to provide incentives for individuals and firms to behave in a more environmentally friendly (sustainable) way.

These taxes are generically called “Pigouvian taxes,” as they reflect the burden of certain types of consumption. This is especially the case when such consumption creates negative externalities, which is known as “market failure.” In this case, we can say that the *social cost* = *private cost* + *value of the externality*. If all the costs of externality are borne by the private individuals, then the social cost is equal to the private cost. If private costs differ from the social costs, then the full opportunity costs of using a scarce resource is borne by society in general (Boyes & Melvin, 2013).

The most common cases are taxes on pollution and taxes on alcohol and tobacco (health). These represent negative externalities, such as the cost of polluting (using a vehicle, a plastic bag, or when a factory emits Co₂) and the cost to the health sector of those who smoke or drink too much. In the cases of pollution negative externality, governments usually adopt taxes on fuel and vehicles (usually with exemptions for electric vehicles), and a carbon tax for industries. In the case of health-negative externalities, an additional tax is usually charged on tobacco and alcohol. In all cases, this additional ‘Pigouvian tax’ is added to the consumer price and have VAT on the cost with the tax (see Chap. 9). If these taxes did not exist, then those people who pollute (or prejudice their own health, thus creating costs for the National Health Service) would not bear the full cost of their action, and they would consume even more. These taxes act as an incentive to reduce the consumption of such products, through the penalization of the price to consumers. However, if such taxes are too high, they then create a distortion, which in turn leads to low levels of production (and too low a tax has exactly the opposite effect).

The solution for such market failure is to ensure that all the costs are borne by those who are actually involved in the transaction of these products. One possibility is to tax such negative externality (with other possibilities being legislation and licenses in the case of pollution and Co₂ emissions). By creating a tax on pollution, the firm (or the consumer) will be forced to consider the additional cost, which will thus lead to a reduction in production/consumption and lower pollution (the alternative being for the firm or the consumer to buy equipment that pollutes less, an example being the acquisition of electric vehicles to avoid paying fuel tax).

As mentioned by Romer (2012), conceptually, the ideal policy would be to combat pollution in a straightforward way, by estimating the dollar value of the negative externality and then tax pollution by the equivalent amount. If possible, such a solution would bring private and social costs into line and thus provide a socially optimal level of pollution. However, such an approach is generally not that straightforward, as it involves knowing the proportion of the pollution that should actually be subject to tax, and also whether pollution taxes are politically feasible (the political costs of taxation being the consequence of consumers using resources to attempt to exploit the tax system for their own benefit (see, for instance, Buchanan, 1967, 1975, 1976, or Holcombe, 2005). Indeed, the benefits of cruder regulatory approaches are likely to outweigh their costs and the amount of effort that individuals who care about others' well-being actually make to curtail their polluting activities.

This issue is also related with the topic of incentives. For as the economic theory postulates, according to the principle of rationality, economic agents (either consumers or investors) respond to incentives. Cabral (2021) provides the example of taxes and the impact on incentives, using car fuel efficiency. As European countries levy substantially tax more on fuel consumption than the United States, this provides consumers with a greater incentive to acquire more fuel-efficient cars than in the United States (and also provides the incentive for producers to produce more fuel-efficient cars).

3.10 Tax Effort

Countries around the world are becoming more and more concerned with the issue of tax revenues as a result of fiscal constraints (Arellano & Bai, 2017), a strong pressure on government expenditures, both from the point of view of social expenditures (i.e., health, pensions, and education) (Jimenez, 2017) and also public investment and infrastructures (Bacchiocchi et al., 2011; Sarmiento & Renneboog, 2016). On the other hand, attention is increasingly being paid to the sustainability of public finances, particularly in the context of low economic growth (Afonso & Jalles, 2012), where a high fiscal burden can be perceived as being an obstacle to economic development and growth (Afonso & Jalles, 2014).

Tax effort can be defined as being an index of the ratio between the share of actual tax collection in the gross domestic product and taxable capacity—with tax capacity being “the predicted tax-to-gross domestic product ratio that can be estimated empirically, taking into account a country's specific macroeconomic, demographic, and institutional features, which all change through time” (Le et al., 2012). Countries have differing tax capacities, which vary according to their level of GDP, income, openness to trade, and institutional quality (Gaspar et al., 2016). Tax capacity is measured as the predicted tax-to-gross GDP ratio that a country can support while considering its specific macroeconomic, demographic, and institutional characteristics (Le et al., 2012). Tax effort can be assessed as a derivative of tax revenues and tax capacity and is thus the ratio between tax revenues as a percentage

of GDP and tax capacity. It is important to note that a simple analysis of tax revenues as a share of GDP can be misleading, as it ignores differing tax capacity across the countries in question (Mertens, 2003).

As mentioned by Barros et al. (2022), the literature on the drivers of tax effort has mainly focussed on the economic and demographic aspects (Bahl, 1971; Chelliah et al., 1975; Mertens, 2003; Bahl, 2004; Gupta, 2007; Grigorian & Davoodi, 2007; Bird et al., 2008; Pessino & Fenochietto, 2010; Fenochietto & Pessino, 2013; Akitoby et al., 2020). However, other clusters of drivers should also be given due importance. The subject of the determinants of a country's tax effort are not well-understood in the extant literature, especially with regard to which determinants prevail in a large panel covering numerous countries over an extended period. Most studies have concentrated on the economic determinants (Frank, 1959; Bird, 1964; Lotz & Morss, 1967; Bahl, 1971; Chelliah et al., 1975; Berry & Fording, 1997; Piancastelli, 2001; Rivero et al., 2001; Gupta, 2007; Bird et al., 2008; Fenochietto & Pessino, 2013). The main drivers of tax effort are GDP growth and GDP per capita (Frank, 1959; Bird, 1964; Rivero et al., 2001; Gupta, 2007), although gross domestic income is also perceived to be relevant (Lotz & Morss, 1967; Chelliah et al., 1975; Piancastelli, 2001). In both the economic and demographic cases, countries with a higher level of development tend to have greater taxation and higher levels of tax effort. In addition, an increased contribution of agriculture to GDP tends to reduce tax capacity (Bahl, 1971; Chelliah et al., 1975; Piancastelli, 2001). Furthermore, economies with a higher level of openness—that is to say, with more trade—tend to have lower levels of tax effort (Gupta, 2007; Pessino & Fenochietto, 2010; Fenochietto & Pessino, 2013). Finally, a better institutional environment, characterized for instance by a low level of corruption and adherence to the rule of law, tends to improve tax performance and reduce the tax burden (Bird et al., 2007).

Studies have evolved into more complex and comprehensive studies based on the seminal works of Frank (1959) and Bird (1964), who were the first authors to define tax capacity and tax effort. Most studies use a data sample of several countries for an extended period. For example, Lotz and Morss (1967) used 72 countries to assess tax capacity for the period of 1963–1965; Tanzi (1968) used data from the United States, Canada, and European countries; Bahl (1971) used a similar period (1966 to 1968) but concentrated on 49 low-income studies; Chelliah et al. (1975) also used low-income countries drawing data from 47 countries for the period of 1969 to 1971. More recent studies include those of Rivero et al. (2001), which analyzed a sample of 14 European countries, with data from 1967 to 1995; and Mertens (2003) analyzed the 10 central and eastern European countries for the period of 1992–2000. Worldwide country analyses (using both developed and less developed countries) were carried out by Piancastelli (2001), Gupta (2007), Bird et al. (2008), Pessino and Fenochietto (2010), and Fenochietto and Pessino (2013).

Studies on tax effort are mainly divided into two main groups: (1) those that compare and evaluate tax effort across several countries, most of which use a cross section of data, ignoring time variation, although some use a sample period (e.g., Pessino & Fenochietto, 2010; Fenochietto & Pessino, 2013); and (2) those that

analyze the potential drivers of tax efforts. Of these studies, we can categorize the main drivers of tax effort into: tax, income, economic structure, population, and institutional environment. GDP and GDP per capita are used to measure the economic drivers of tax effort, with some authors (Lotz & Morss, 1967; Chelliah et al., 1975) using GDI (Gross Domestic Income) and GDP per capita instead. In addition, Tanzi (1968) used personal income (total and per capita). More developed countries—which are identified as countries with a high GDP or GDI per capita—tend to have higher levels of tax revenues, primarily due to a higher level of expenditure (which is principally social expenditure on pensions, health, and education). Nevertheless, tax effort accounts for purchasing power and disposable income, depending on the measure that is adopted.

The fiscal determinants are mainly per capita taxes, taxes as a percentage of GDP, and the total value of tax revenues. Most authors (Frank, 1959; Bird, 1964; Tanzi, 1968; Rivero et al., 2001) found evidence that a higher level of tax revenues and tax collection increases the pressure on taxpayers, leading to a higher tax effort. Higher tax revenues increase the numerator of the leading tax effort measure (Bird 1964), while decreasing the denominator irrespective of whether GDP remains the same. However, this effect can reduce the tax effort, as more developed countries tend to have a greater tax capacity, due to their stronger economies, as evidenced by a larger GDP.

Openness of the economy is also a relevant impediment to tax effort. For a higher level of trade tends to reduce the tax effort, due to several factors, namely: (1) a greater volume of exports generates higher profits and creates more employment, which in turn leads to more tax revenues; (2) imports are taxed more in most cases; (3) trade liberalization has led to an improvement in customs procedures and also to increased tax revenues (Keen & Simone, 2004; Agbeyegbe et al., 2006). Nevertheless, Baunsgaard & Keen (2010) found a weaker relationship in low-income countries, even though these authors discovered a positive and significant relationship between trade and revenue in high- and middle-income countries. The economic structure of a country is also related to its capacity to collect taxes and consequently influences the tax effort (Piancastelli, 2001). Past studies have shown that countries with a greater participation of agriculture in their GDP tend to have a higher tax effort (Bahl, 1971; Chelliah et al., 1975; Mertens, 2003; Gupta, 2007), as agriculture tends to be rudimentary and predominantly involves small-scale farmers, especially in less-developed countries (Fenochietto & Pessino, 2013). In this case, the majority of the economic agents involved are accordingly less prone to pay their fair share of taxes and the Tax Authority finds it more difficult to collect these revenues (Rajaraman 2004). As a result, the tax burden is shared by other sectors to a large degree (Rajaraman 2004). In less-developed countries, the share of tax revenues from agriculture is lower than the percentage of GDP, and tax performance is consequently weaker (Akitoby et al., 2020). On the contrary, mining and industry tend to reduce the tax effort (Pessino & Fenochietto, 2010; Fenochietto & Pessino, 2013), whereas in the case of mining, the high level of revenues—especially during a commodity price boom—tends to be highly taxed, which generates

revenues, which in turn, enables tax authorities to reduce the tax burden on other sectors.

Population also has a role in the level of tax effort. Bahl (2004) found evidence that countries with a faster-growing population tend to have a low level of tax effort, and Bird et al. (2008) also found evidence of such an effect. Nevertheless, it is important to appreciate that countries with a growing population tend to be low-income countries, and therefore their low level of tax effort could be more related to this factor.

The institutional quality of the country is another crucial aspect for determining the level of tax effort. Research has shown that countries with a better institutional framework—which is reflected by as low level of corruption, a stronger commitment to the rule of law, and higher levels of government efficiency—all tend to be characterized by a lower tax effort (Grigorian & Davoodi, 2007; Gupta, 2007; Bird et al., 2008; Pessino & Fenochietto, 2010; Fenochietto & Pessino, 2013). In general, these authors argue that a higher level of informal economy and tax evasion leads to a higher tax effort. The ability of a large proportion of taxpayers to evade their tax obligations naturally leads to the tax burden being shared by a reduced number of agents. Authors such as Bird et al. (2008) argue that in the case of low-income countries, improving government institutions is the best route to improving the country's tax collection, because such an improvement provides a better level of development than natural resources do. The same authors also claim that high-income countries have greater potential to enhance their tax performance, owing to the fact that they have better institutions. Despite this finding, other studies in the literature place emphasis on the repercussions that result from the lack of administrative capacity to enforce taxation in developing countries (Bird 1989).

Tax effort studies are mainly based on two measures of tax effort, based on the seminal works of Frank (1959) and Bird (1964). These two measures are still relevant today, despite recent attempts to define more comprehensive indices by also including economic development and the degree of openness (Lotz & Morss, 1967), foreign trade (Bahl, 1971), the intensity in the use of specific taxes (Bahl, 1972; ACIR 1988), and frontier production possibilities (Aigner et al., 1977).

The first of these measures is Frank's (1959) "tax sacrifice" measure, which captures the effects of differences in population and personal income, as follows:

$$Frank = \left[\frac{\left(\frac{T}{Y} \right)}{\left(\frac{T}{Y} \right)_P} \right] * 100$$

where T is tax revenues, Y is the gross national product, and Y/P measures gross national product by population (P). As the early studies on the topic of tax effort computed the "tax burden" solely as T/Y , without taking account of the level of economic development, Frank (1959) decided to overcome this limitation by introducing a "tax burden" measure that adjusted for per capita purchasing power. Bird (1964) introduced the "tax sacrifice" measure to meet the need to adjust Frank's

measure in order to improve the international comparisons of the tax burden, alleging that the numerator in Frank's measure failed to consider the effort required to produce the income. In addition, Bird (1964) challenged Frank's inclusion of gross national product rather than gross domestic product—which in his view assesses performance in open economies much better. Nevertheless, the formulation of Bird's index only changed the numerator part of the calculation. Bird's measure has since evolved from the “tax sacrifice” measure into the “tax effort” measure, as is highlight in this study (Reddy 1975; Ahmad and Stern 1989; Bird et al. 2008).

$$\text{Bird} = \left[\left(\frac{T}{(Y - T)} \right) \div \left(\frac{Y}{P} \right) \right] * 100$$

3.11 Tax Expenditures

The subject of tax expenditures was discussed in Chap. 2. Tax expenditures represent a loss of revenues owing to exemptions, tax benefits, exclusions, deferrals, and special tax rates that are lower than the statutory rate, among other mechanisms.

But how can tax expenditures be calculated? Anderson (2008) provides three methods to measure tax expenditures: (1) initial revenue loss (gain), which is the amount by which tax revenue is reduced (increased) as a consequence of the introduction (abolition) of a tax expenditure, based on the assumption of unchanged behavior and unchanged revenues from other taxes; (2) final revenue loss (gain), which is the amount by which tax revenue is reduced (increased) as a consequence of the introduction (abolition) of a tax expenditure, taking into account the change in behavior and the effects on revenues from other taxes as a consequence of the introduction (abolition); (3) the outlay equivalence, which is the direct expenditure that would be required in pre-tax terms to achieve the same after-tax effect on taxpayers' incomes as the tax expenditure would be if the direct expenditure is afforded the appropriate tax treatment for that type of subsidy or transfer for the recipient.

In economic terms, tax expenditures raise concerns regarding the impact on the fiscal position of the country itself and the tax policy in question. This is particularly because, as referred to by the OECD (2010), tax expenditures are easy to enact, but are difficult to evaluate, and even more difficult to terminate. This led to various criticisms about tax expenditures (see, for instance, Bartlett, 2001; Burman, 2003; Burman & Phaup, 2012; Bykov & Zimmermann, 2018).

Tax expenditures are perceived as having an economic positive impact due to the following motives (OECD, 2010): less administrative economies of scale and scope when compared with government expenditure programmes; low levels of fraud or abuse; they provide taxpayers with more choices and better incentives; and they can be adjusted to the tax capacity of each taxpayer. Nevertheless, tax expenditures are subject to criticism, for the following reasons: mainly because they reduce revenues and they tend not to be perpetuate over time (even when they become obsolete, or are

less efficient, or are not needed anymore); they tend to increase over time; they reduce the level of fairness of the tax system and present problems in terms of efficiency and effectiveness; they make the tax system more complex; and because their definition is much more ambiguous and is difficult to achieve.

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4.1 Main Definitions

Taxes significantly impact Accounting (and Finance, as will be seen in the next chapter). In turn, Accounting information is critical for firms' management (Ganyam & Ivungu, 2019). Accounting provides managers with information about the financial position, financial performance, and changes in the financial position of a firm (Horngren et al., 2012). This is critical for decision-making and such information should be useful, reliable, consistent, prudent, and on time. Financial reporting aims to provide financial information about the entity in question that is useful for potential investors, lenders, and other creditors in making decisions about providing resources to the entity (Walton & Aerts, 2006).

In this way, taxes impact the balance sheet, mainly as liabilities (the taxes that firms have to pay at the end of the year period or, as is described below, deferred tax liabilities). However, taxes can also be assets (the reimbursement of taxes and tax credits or, as is shown below, deferred tax assets). Taxes also impact on the P&L of a firm, both by being a cost (e.g., non-deductible VAT, property taxes, social security contributions, and other taxes) or by reducing net income (net income = EBT – corporate tax). They also impact on cash flows statement (in the operational cash flow), both as an outflow, which is more common (i.e., when the firm pays taxes), and also as an inflow (i.e., tax returns, which particularly occurs in the case of VAT—see Chap. 9).

Several definitions of taxation need to be understood, particularly regarding income and corporate tax:

Deferred tax asset: Balance sheet amounts resulting from an excess of payable taxes over income tax expense (expected to be recovered from future operations).

Deferred tax expense: The difference between taxes payable and income tax expense. This results from changes in deferred tax assets and liabilities.

Deferred tax liability: Amounts in the balance sheet resulting from an excess of income tax expense over taxes payable (expected to result in future cash

outflows). Deferred tax liabilities are created when more expense is applied to the tax return relative to the income statement (e.g., more depreciation). This results in lower taxable income and lowers taxes payable on the tax return relative to pre-tax income, and a tax expense is shown on the income statement.

Income tax expense: The expense recognized in the income statement that includes taxes payable and deferred income tax expense. It is essential to note that income tax expense comprises taxes payable plus noncash items, such as changes in deferred tax assets and liabilities (DTA and DTL). $\text{Income tax expense} = \text{taxes payable} + \Delta\text{DTL} - \Delta\text{DTA}$.

Income tax paid: Actual cash flow for income taxes (includes payments or refunds for other years).

Permanent difference: The differences between tax and financial reporting that are not expected to reverse in the future.

Pre-tax income: Income before income tax expense.

Tax loss carried forward: The current net taxable loss that is used to reduce taxable income (taxes payable) in future years and can generate a deferred tax asset.

Taxable income: Income subject to tax based on the tax return.

Taxes payable: The tax liability on the balance sheet caused by taxable income, which is also known as a current tax expense (not to be confused with an income tax expense).

Temporary difference: The differences between tax and financial reporting that will reverse in the future and will affect taxable income when they reverse, including the differences in the carried forward cost of depreciable assets on tax and accounting records.

Timing difference: The difference between the treatment of expenditures on the tax return and financial reporting.

Valuation allowance: Reserve against deferred tax assets based on the likelihood that those assets will not be realized.

4.2 Taxes in the Balance Sheet and the P&L

The balance sheet represents the financial position/condition at distinct points in time (usually the fiscal year end) (Horngren et al., 2012). The income statement (also called the P&L—Profits and Losses, which is the term used in this book, but also known as the Statement of Earnings, Operations, of Profit and Loss) shows the changes between those points in time that are attributable to operating a business. Both are represented on an accrual basis. Accrual measures in and outflows of all transactions, events, and circumstances when they actually occur, regardless of whether cash flows are involved. Most companies use the accrual basis to prepare their financial statements. In addition, taxes have an impact on both financial statements.

Taxes appear in the balance sheet in three ways.

The first is the current taxes that a firm has to pay or have the right to be reimbursed—which appear in the current assets just like accounts receivable

(reimbursements) or accounts payable (the taxes that need to be paid). As the balance sheet is usually closed on 31 December (or the end of the fiscal year), this does not necessarily represent that in the case of taxes to pay (accounts payable) that the firm has incurred any default or non-compliance with the Tax Administration. These taxes to be paid, as registered on 31 December in this account, are merely the taxes that are due now, although the payment deadline is the following year. This is the case of corporate tax (see Chap. 7), whereby the firm calculates its corporate tax to pay in year t (which appears in the balance sheet of 31/12/year t), however, the tax is only due 4–6 months later in year $t + 1$. This is also the case of VAT (see Chap. 9), as the VAT of the last months (depending on the country's rules) is also only paid at the beginning of the next year. This is also the case when firms retain individuals' income tax and deliver it to the Tax Administration, whereby the last month(s) are usually due during the following year. The same principle applies twofold to tax reimbursements (trade receivables): (i) when on 31 December a firm might have the right to a corporate tax reimbursement from that year to receive the following year, or it can be granted a VAT credit to use during the next months of the following year; (ii) when a firm pays corporate tax in advance, which is used on 31 December to reduce the amount of tax payable (see the subsection below on accounting and corporate tax, and also Chap. 7).

The second refers to taxes whose payment deadline has not been complied with, in which case these taxes are considered to be debt, as the firm has in effect failed to make a legal payment, in which case penalties/fines/interests are charged by the Tax Administration.

Finally, the third tax item of taxes to appear in the balance sheet concerns deferred tax assets and liabilities (which are represented in the current assets/liabilities). These will be explained in detail below.

Furthermore, tax contingencies are also relevant in accounting, but they do not appear in the balance sheet, as they are usually treated as future liabilities. Instead, they are referred to and explained in the financial statements (usually in the notes). As mentioned by Graham et al. (2012), they are also called “cushions”: *“to accrue an expense for these possible future tax payments on the income statement in the year of the activity, firms establish liabilities on the balance sheet, known as tax contingencies, which estimate the taxes (in addition to those reported on the tax return) that might have to be paid in the future.”*

In terms of the global investment performance standards, returns should be calculated net of non-reclaimable withholding taxes on dividends, interests and capital gains, with reclaimable withholding taxes being accrued. Firms must also disclose relevant details of the treatment of withholding taxes on dividends, interests, and capital gains (CFA, 2021).

Taxes appear in two items in the P&L (Fig. 4.1). First, all taxes (except for VAT, if the firm has the right to deduct it—see Chap. 9, as well as corporate tax and income tax retained for individuals—as they are not costs) appear in the operational costs (including all taxes on real estate, stamp duty on contracts or financial operations, and other taxes or social security payments). Second, corporate tax appears at the end

Fig. 4.1 Example of a P&L.

Source: Author

Revenues
(-) COGS: Cost of goods sold
Gross profit
(-) Operating expenses
EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortisations)
(-) Depreciations and amortisations
EBIT (Earnings before Interests and Taxes)
(-) Interests
EBT (Earnings before Taxes)
(-) Corporate taxes
Net income

of the P&L, as they pass from EBT (earnings before taxes) to net income (see Chap. 7 for more details).

Therefore, based on the P&L, we can calculate the Cash Flows from Operations as follows:

$$\begin{aligned}
 \text{CF from Operations} &= \text{Net income} \\
 &+ \text{depreciations/amortization} - \text{Changes in non} \\
 &- \text{cash current assets (inventories + receivables)} + \text{Changes non} \\
 &- \text{cash current liabilities (arrears + deferred revenues)} + \text{non} - \text{cash items}
 \end{aligned}$$

Therefore:

$$\begin{aligned}
 \text{CF from Operations} &= \text{Net income} \\
 &+ \text{depreciations/amortizations} - \text{Changes in non} - \text{cash working capital} + \text{non} \\
 &- \text{cash items}
 \end{aligned}$$

Based on the P&L, we can also calculate the Cash Flow for Leverage (allowing us to calculate how much cash the firm has to repay debts and interests—which is relevant to assess the amount of debt in the capital structure that the firm needs to raise, which is explained in Chap. 5):

Cash Flow for leverage:

$$\begin{aligned}
 &\text{Revenues} - \text{expenses} - \text{depreciation and amortizations} = \text{EBIT.} \\
 &= \text{Free Cash Flow to pay interests} \\
 &(-) \text{Cash tax} \\
 &+ \text{Depreciations and amortizations} \\
 &(-) \text{Non-discretionary capex} \\
 &(-) \text{Changes in Working Capital} \\
 &= \text{Free Cash Flow available to pay interest and principal.}
 \end{aligned}$$

4.3 Accounting for Corporate Tax

As has been stated above, corporate tax appears in the P&L and is deducted from the EBT (which is also called “pre-tax profits”) to assess the net income (also called the after-tax profits), but can also appear in the balance sheet. How are corporate taxes accounted for? Here is an example:

A firm has an EBT of 1000 and calculates that its corporate tax will be 300; therefore, the net income is 700. In this case, the firm needs to recognize the corporate tax in the P&L and the balance sheet:

Account	Debit	Credit
Corporate tax (P&L)	300	
Corporate tax (accounts payable – balance sheet)		300

In this way, the firm recognizes the corporate tax value in the P&L that will be deducted from the EBT and also the debt(liability) on the balance sheet.

Next, the corporate tax needs to be recognized in the P&L, passing the value to the EBT account (which has a credit balance, i.e., a profit, of 1000):

Account	Debit	Credit
Corporate tax (P&L)		300
EBT (P&L)	300	Credit balance: 1000

The EBT now has a credit balance of 700, which is transferred to the net income account:

Account	Debit	Credit
EBT (P&L)	700	Credit balance: 700
Net income		700

In the balance sheet, it is assumed that the firm has made prepayments of corporate tax of 200 (which the firm will deduct in its corporate tax declaration, only paying the remaining 100). The recognition of such debt is as follows:

Account	Debit	Credit
Corporate tax prepayments	Debtor balance: 200	200
Corporate tax (accounts payable – balance sheet)	200	Creditor balance: 300

The firm thus has a corporate tax debt in account payables of 100.

When such a payment is made (usually in year $t + 1$), it is then recognized as:

Account	Debit	Credit
Corporate tax (accounts payable – balance sheet)	100	Creditor balance: 100
Bank account		100

4.4 Accounting for VAT

Value-added Tax (Chap. 9 explains how VAT works) is not usually a cost for a firm. This is because the firm collects VAT when selling goods and services to clients and deducts VAT when buying goods and services from suppliers. Therefore, the VAT has no impact on the P&L.¹ Here is an example of how VAT is accounted:

A firm sells goods/services for 1000 + VAT of 20% (assume that the gross values are without VAT). Therefore, the final price to the client is 1200. This transaction will be recorded as:

Account	Debit	Credit
Revenues		1000
VAT charge		200
Clients/Bank account	1200	

The firm also brought goods/services/PPE worth 600 + VAT. The final price charged by the suppliers is thus 720. The transaction is recognized as:

Account	Debit	Credit
Costs/inventory/PPE/intangibles	600	
VAT deduction	120	
Suppliers/Bank account		720

If it is assumed that the firm has only made these two transactions, then the VAT that needs to be paid to the Tax Administration is 80 (i.e., the difference between the 200 VAT charged and the 120 VAT deducted). The calculation of the VAT to pay/receive is made as follows:

Account	Debit	Credit
VAT charge	200	Credit balance: 200
VAT deduction	Debit balance: 120	120
VAT clearance	120	200

The VAT clearance thus has a credit balance of 80, which represents the VAT to pay (accounts payable). If the VAT deducted was higher than the VAT charged, then the VAT clearance would have a debit balance, or in other words, an accounts receivable (suppose 200 VAT charged and 220 VAT deducted for suppliers—in such case, the firm would have a VAT reimburse/credit of 20—see Chap. 9 for more details).

¹Except in certain exceptional cases when it is not deductible, it becomes a cost included in the COGS: cost of goods sold or operational costs if it is a service.

As VAT is owed, the payment is recognized in the firm's accounting as follows:

Account	Debit	Credit
<i>Recognizing the liability</i>		
VAT clearance	80	Credit balance: 80
VAT debt (Accounts payable)		80
<i>Paying the VAT</i>		
VAT debt (Accounts payable)	80	Credit balance: 80
Bank account		80

If the firm was to have a VAT credit (assume the example of the 20 described before), then such a credit would be used in the following VAT declaration:

Account	Debit	Credit
<i>Recognizing the credit (asset)</i>		
VAT clearance	Debit balance: 20	20
VAT credit (Accounts receivable)	20	
<i>Receiving the credit</i>		
VAT credit (Accounts receivable)	Debit balance: 20	20
Bank account	20	
<i>Alternative: Using the credit in a future VAT declaration (1)</i>		
VAT credit (Accounts receivable)	Debit balance: 20	20
VAT clearance	20	

(1) Such credit will reduce the amount of VAT to pay in a future declaration

4.5 Deferred Tax Assets/Liabilities

A deferred tax asset/liability is created when an income or expense item is treated differently in financial statements from how it is in the firm's tax returns, and that difference results in a lower/higher income tax expense in the financial statements than on the annual tax return (Hanlon & Heitzman, 2010). Similar to deferred tax liabilities, deferred tax assets are also expected to reverse themselves through future operations and provide tax savings, and therefore are accounted for on the balance sheet (Bauman & Shaw, 2016). Warranty expenses and tax losses carried forward are typical causes of deferred tax assets.

A deferred tax asset is created if a firm has an expense item (e.g., an estimated warranty expense) in its financial statements that are not deductible for tax purposes (Laux, 2013). This represents the future tax savings resulting from the deduction (e.g., when the warranty expense is actually paid) (Guenther & Sansing, 2000). Both

deferred tax assets and liabilities are adjusted for changes in the tax rate expected for the period(s) in which the deferred tax asset/liability is expected to be reversed (usually the current tax rate). Additionally, deferred tax assets are adjusted for the probability of being realized in future periods (Brouwer & Naarding, 2018). This adjustment is made by creating or adjusting a “valuation allowance” on the balance sheet. This item reduces the DTA to reflect the probability that the DTA will not be realized in future periods. Deferred tax assets can have a valuation allowance, which is a contra account (offset) against deferred tax assets based on the likelihood that these assets will not be realized (CFA, 2021). For deferred tax assets to be beneficial, the firm must have future taxable income. If it is more likely than not (>50% probability) that a portion of deferred tax assets will not be realized (i.e., there is insufficient future taxable income to take advantage of the tax asset) and then the deferred tax asset must be reduced by a valuation allowance (CFA, 2021).

A valuation allowance reduces income from continuing operations. Because an increase (decrease) in the valuation allowance will decrease (increase) operating income, changes in the valuation allowance are a common means of managing or manipulating earnings. Whenever a firm reports substantial deferred tax assets, an analyst should review the firm’s financial performance to determine the likelihood that those assets will actually be realized. Analysts should also scrutinize changes in the valuation allowance to determine whether those changes are economically justified (CFA, 2021).

Deferred tax liability is created when an expense item is treated differently in the financial statements than in the firm’s tax returns, and when that difference results in greater tax expense in the financial statements than taxes payable on the tax return (Rosharlianti & Hidayat, 2019). Deferred tax liabilities are accounted for because the differences arising from unique accounting treatments for tax and financial reporting purposes are expected to reverse themselves (i.e., temporary differences). They result in future cash outflows which are related to the payment of taxes. The most common way that deferred taxes are created is when different depreciation methods are used in the tax return and the income statement. If the firm uses higher tax depreciation or vice versa, then the accounting will, respectively, report lower (or higher) costs and, therefore, greater (or lower) results and profits (Graham et al., 2012). As these authors refer to, the liability reported in the firm’s GAAP balance sheet measures the amount of the future tax liability that will be owed when the book depreciation becomes greater than the tax depreciation.

Temporary differences can result from several different types of operations, such as depreciation, unearned revenues (i.e., cash received in advance), warranty expenses (future warranty costs estimated by management); post-retirement benefits obligations, deferred compensations, prepaid expenses such as rents, loans or insurance, long-term construction contracts, inventory valuation allowances, intangible assets such as goodwill or R&D expenses, bad debts, among others.

Differences in taxable and pre-tax incomes that reverse in future years are considered to be current lower (higher) taxes payable, which results in future higher (lower) taxes payable, 2016e (Green & Plesko, 2016). These differences result in deferred tax assets or liabilities, such as:

Current liabilities – which is the temporary difference that results from using the instalment sales method for taxes and the sales method for pre-tax income. It should be remembered that the instalment sales and sales basis methods are used in revenue recognition.

Long-term liabilities – the long-term tax liability that results from using the declining balance depreciation for the tax returns and SL depreciation in the financial statements.

Current assets – the deferred tax assets created when warranty expenses are accrued in the financial statements but are not deductible in the tax returns until the warranty claims are paid. *Long-term assets* – the deferred tax asset created when post-retirement benefits expense in pre-tax income exceeds the limit allowed for a deduction in tax returns.

Stockholders' equity – the gains or losses from carrying forward marketable securities at market value are deferred tax adjustments for stockholders' equity.

However, there are also differences in taxable and pre-tax incomes that will not reverse, such as:

Tax-exempt interest income and the proceeds from life insurance on key employees which are not taxable, but are recognized as revenue in the financial statements.

Tax-exempt interest expenses, premiums paid on life insurance of key employees, and goodwill amortization, which are all examples of expenses in the financial statements, although they are not considered deductions in the tax returns. It should be remembered that goodwill amortization is no longer permitted under U.S. GAAP or International Financial Reporting Standards (IFRS).

Tax credits for certain expenditures directly reduce taxes and, unlike the accelerated recognition of expenses for tax purposes, they do not reverse in the future.

Permanent differences do not result in deferred tax liabilities or assets. Permanent differences between taxable income and pre-tax income are reflected in a difference between a firm's effective tax rate and its statutory tax rate (Graham et al., 2012), whereas a permanent difference is when a firm's reported effective tax rate is simply income tax expense/pre-tax income and the statutory tax rate is the marginal tax rate in the jurisdiction in which the firm operates. Any income that is not included in taxable income is recognized in the financial statements (e.g., tax-exempt interest income), resulting in an effective tax rate that is lower than the statutory rate. Conversely, those expenses recognized in the income statement that are not deductible for tax purposes (e.g., life insurance premiums paid for key employees) tend to increase the effective tax rate relative to the statutory tax rate. Differences between the statutory and effective rates can also arise when a firm's operations are located in different geographic locations and are subject to different tax laws. Sometimes the income of a foreign subsidiary is reinvested in that subsidiary and is not remitted to the parent company, which thus postpones taxation at the statutory rate. Remitting accumulated subsidiary income from previous periods has the opposite effect on the difference between statutory and effective rates.

Under the liability method, besides the impact on current period taxes payable and income tax expense, all balance sheet deferred tax assets and liabilities are revalued when there is a change in the tax rate that the firm faces in the future. An increase (decrease) in the tax rate increases (decreases) both deferred tax assets and liabilities alike. For example, if the tax rate increases, an increase in deferred tax liabilities increases the income tax expense, while an increase in deferred tax assets decreases the income tax expense. When deferred tax liabilities exceed deferred tax assets (which is the most common situation), the net impact of an increase in the tax rate is to increase the tax expense, which, in turn, causes net income and stockholders' equity to decrease in value. Should the opposite occur, i.e., if the tax rate decreases, then the resultant decrease in deferred tax liabilities decreases the income tax expense, while a decrease in deferred tax assets increases the income tax expense. In exactly the same circumstances (i.e., when deferred tax liabilities exceed deferred tax assets), the net impact of a decrease, rather than an increase in the tax rate decreases the tax expense, which in turn causes both net income and stockholders' equity to increase in value.

As referred to by several authors (Guenther & Sansing, 2004; Graham et al., 2012), the valuation of deferred taxes depends on the timing of the recognition for financial reporting versus income tax purposes.

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5.1 Main Definitions

Corporations (we will call them firms) are defined as legal entity that is created under statute by filing incorporation forms with the State or another jurisdiction where the corporation is incorporated, the owners being the shareholders (Cox & Hazen, 2019). The law treats a corporation as a legal “person” that has the legal right to sue and be sued, which is distinct from the rights or liabilities of its shareholders. Legal independence prevents shareholders from being personally liable for corporate debts, although they may be accountable for illegal/unethical management and it also allows shareholders to sue the corporation through a derivative suit and renders the ownership in the firm (shares) easily transferable. Corporations’ legal “person” status gives them a perpetual business life, where the turnover of officials or shareholders does not alter the corporation’s structure. Corporations are taxable entities that fall under a different scheme from individuals. Although corporations have a “double tax” problem—where both corporate profits and shareholder dividends are taxed—corporate profits are usually taxed at a lower rate than those of individuals.

There are several reasons for a business to be organized as a firm (Lederman & Kwon, 2020): the exemption of individual shareholders from personal liability; the organization continues to exist legally, even if shareholders change; the centralized management by a Board of Directors; the transferability of participant’s interests;

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This chapter only intends to describe the issue of taxes for Corporate Finance. Readers who are not familiar with the topic of Corporate Finance itself should resort to texts in specialist books, such as Damodaran (2001); Copeland et al. (2005); Ross et al. (2008); and Brealey et al. (2018).

access to additional capital; acting as a legal unit in holding property, contracting and raising debt; management, finance, and organizational methods.

Corporate Finance can be defined as being the study of the financial decisions that every firm has to make (Damodaran, 2001). In such decisions, taxation plays an important role and therefore decisions on taxes have to be made, as well as the impact on the three main decisions of Corporate Finance (Damodaran, 2001), namely: the investment decision, the financing decision, and the dividends decision.

Similar to Corporate Finance, where the objective is to maximize shareholders' returns, taxation from the shareholder's perspective has a single objective to reduce the tax paid by firms, to reduce the tax burden, and naturally, to always be within the boundaries of the law (the difference between tax planning, tax avoidance, and tax fraud is discussed in Chap. 8).

Taxes influence strategic and operational management decisions. Given the increasing number of multinational companies, Finance Managers should be aware that different tax systems impact their decisions and in addition, international (and also domestic) operations bring corporate tax management issues to the forefront. The marginal tax rate is usually the relevant tax rate for financial decision-making, the reason is that any new cash flow will be taxed at the marginal rate. Because financial decisions usually involve new cash flows or changes in the existing ones, this rate is an indication of the marginal effect of a decision regarding the firm's tax bill.

5.2 Decisions on Taxes

When making decision regarding taxes, it is first important to consider how many options the firm has. In some cases, there might be just one possible decision within the scope of the law (where everything else is beyond the limits of the law and is a crime, or a felony). However, in many cases, taxpayers face more than one possible decision regarding a specific case on taxation. Therefore, when facing Alternative A or B, it is essential to measure the impact of each alternative.

The first issue to understand is whether the tax problem is a problem of paying taxes, or of saving taxes (naturally all problems regarding paying taxes can be turned into a problem of saving taxes). Let us suppose that a specific problem has an impact of just 1 year:

Alternative A concerns paying 50 in taxes, as Alternative B represents paying 40. The natural choice would be to choose B instead of A. However, if A is the standard response to the problem (paying 50), suppose tax consultants present Alternatives B (paying 40) and C (paying 35) as two other options. Rather than saying that 40 or 35 will be paid, one could also say that Alternative B saves 10 and C saves 15 when compared to A. Naturally, in this case, one would choose C (assuming that all the three alternatives are within the boundaries of the tax law and that they all have no impact on other issues for the firm, such as finance, production, marketing, clients, and reputation). However, not always can firms choose Alternative C if there is a reputational issue at stake and if the firm strongly values its reputation.

Still, in most cases, a decision on taxes has an impact over several years. Let us analyze another example:

Suppose that a firm has to decide between Alternative A and B, knowing that the tax payments of each is as follows:

Year	A	B
t	20	25
$t + 1$	30	25
$t + 2$	10	20

In such a case, the Net Present Value needs to be calculated (for more detail on NPV, see the section below on “Taxes and the Investment decision”) of Hypotheses A and B. If the NPV is used and the problem is tax payments, then one would choose the lowest NPV.

Let us assume a 10% discount rate (the issue of the discount rate for taxes is also discussed below). In this case, the NPV of Alternative A is 55.5, and the NPV of Alternative B is 64.3. The best choice would thus be Alternative A.

Nevertheless, the problem can also be a problem of tax savings. Let us examine one more example:

Suppose that a current tax decision has two alternatives (B and C), with each one having the following tax savings (assuming a 10% discount rate again), where B saves 10, 20, and 15 over the next 3 years; and C saves 5, 25, and 20, respectively:

Year	B	C
t	10	5
$t + 1$	20	25
$t + 2$	15	20

In this case, as this is a case of tax savings, the highest NPV should be chosen. The NPV of B is 40.6, and that of C is 44.3. Therefore, C would be chosen.

In Corporate Finance future cash flows are discounted at a certain discount rate, in order to calculate the time value of money (as a dollar today is worth more than a dollar tomorrow). In investment valuation, the discount rate should reflect the opportunity cost (i.e., the risk-free rate, which is usually the yield of the Treasury Bonds of the country/currency of the investment in question, with a maturity close to that of one of the project’s) as well as the risk premium (which reflects the riskiness of the future cash flows).

In the case of firms, financing mainly originates from equity and debt (with NWC—net working capital—also playing a relevant role in the financing of some firms, see Barros et al., 2021a). With regards equity, as well as the risk-free rate, a risk premium for equity risk also has to be added. This is usually calculated by using

the CAPM (Capital Asset Pricing Model). As a risk and return model, the Capital Asset Pricing Model (CAPM) has become the most popular tool in corporate finance for assessing the cost of capital (in the sense that it measures the expected return of an asset and the systematic risk given by the available market assets), despite its many limitations. The CAPM is based on Markowitz's (1952) Portfolio Theory and the efficient market hypothesis (i.e., market prices react rapidly to new information). The CAPM describes the relation between systematic risk and the expected return of assets by measuring the variance in the returns and risk markers for a well-diversified portfolio. The model is widely used for estimating the cost of capital for firms and for evaluating the performance of managed portfolios (Fama & French, 2002, 2004). The CAPM was developed independently by Sharpe (1964), Lintner (1965), and Mossin (1966) and has become a cornerstone in finance, particularly in corporate finance and investment valuation. Berk and van Binsbergen (2017) provide evidence of the use of the CAPM by practitioners. For the methodology and calculation of the CAPM see, among others, Berk (1997), Damodaran (2001), Ross et al. (2008), and Brealey et al. (2018).

In the case of debt, loans usually have a market indexing (which is the Euribor in Europe, for instance, and the Libor in the United Kingdom), as well as a spread (which represent the debt risk premium), and also fees and commissions. The sum of all provides the pre-tax cost of Debt.

Based on the market indexing and spread, firms usually calculate their hurdles rates by using the WACC (Weighted Average Cost of Capital) which will be discussed below.

What about taxes? If the tax decision impacts on several years, how should managers make their decision? Once again, resorting to the previous examples, which discount rate should be used (in this chapter only the 10% discount rate is used in the interest of simplicity, but if this was a real example, what should the rate have been?). As taxes are part of a firm's cash flow and also part of its activity, it would make sense to use the WACC of the firm, along as the projects assume similar risks as those of the firm (when comparing two or more possibilities in any NPV calculation, the discount rate has to always be the same, as it is only possible to compare alternatives with the same level of risk).

Opportunity cost is the reason why discount rates are relevant in Corporate Finance, particularly for investment valuation. When making a decision regarding an investment, there is always the alternative to use the risk-free rate. The discount rate (i.e., the risk-free rate plus the risk premium) is in effect just the opportunity cost of making one investment, rather than invest in Treasury Bonds. Therefore, if an investor has the choice of Investment A, B, and C, and decides not to invest in any of these three possibilities, there is always the alternative to invest in public debt. Accordingly, in investment valuation there is always the possibility to choose not to invest in any of the possible projects (thus rejecting all the investment alternatives), as there is always an alternative.

In the case of taxes, such an opportunity cost may be less relevant. A firm making decisions on taxes always has to make one decision. For example, if the firm has to make a decision on taxes between choices A, B, and C, one of them has to be chosen

(otherwise the firm might not be complying with the tax law and in violation of legislation, or at the worst, commit a crime). Therefore, to evaluate decisions regarding taxes one simply needs to use the same discount rate for the various potential choices (which is also a rule adopted in Corporate Finance when using discount rates—where projects can only be compared with the same discount rate, which equates to the same level of risk).

5.3 Taxes and Costs

Another relevant topic concerns the impact of certain costs on taxes and on a firm’s profitability and value. Firms have costs, and such costs reduce the tax burden, as long as they are tax accepted in calculating the tax base.

One of the most important items on costs are depreciations (how depreciations are calculated and which rules are applied are discussed in Chap. 7 and how to use depreciations for tax planning in Chap. 8). For now, the focus will just be on how depreciations can impact on the firm cash flow, and therefore, in the shareholders cash:

Suppose a firm has revenues of 1,000 and costs (without depreciations) of 700 and pays a rate of corporate tax of 20% (Scenario 1). The EBT of the firm will be 300. Suppose the firm has to make a decision regarding depreciation. Assuming that there are no tax limits on the depreciation of non-current assets, the firm can therefore increase depreciation as follows: 100 (Scenario 2), 200 (Scenario 3), and 300 (Scenario 4). What is the impact of such a decision on the firm’s cash flow?

Scenario 1	Scenario 2	Scenario 3	Scenario 4
(No depreciation)	(Depreciation of 100)	(Depreciation of 200)	(Depreciation of 300)
EBT: 300	EBT: 200	EBT: 100	EBT: 0
C. Tax: 60	C. Tax: 40	C. Tax: 20	C. Tax: 0
Net income: 240	Net income: 160	Net income: 80	Net income: 0
Cash flow: 240 (1)	Cash flow: 260	Cash flow: 280	Cash flow: 300

(1) – This could be also calculated as EBITDA (1 – *t*) + depreciations

In this example, it can be seen that increasing depreciation obviously reduces EBT (due to an increase in costs) and accordingly also reduce net income, although the cash flow increases. If there is no depreciation, then the EBT is 300 and the cash flow is 240 (as the firm will pay 60 in corporate tax). If depreciation is 100, then EBT reduce to 200, however, the cash flow increases to 260. The increase in the cash flow of 20 is the result of the reduction in corporate tax. The same applies for Scenarios 3 and 4, up until a maximum cash flow of 300, due to corporate tax being zero. Naturally, this only occurs because depreciation is a cost, rather than an outflow, and only if such depreciation is tax accepted. Accordingly:

$$\text{Depreciation tax shield} = \text{Depreciation} \times \text{tax rate}.$$

Another case concerns the capital structure decision (between equity and debt—see the subsection on Taxes and the Finance decision-making below). In sum, the use of debt (under certain conditions and subject to certain limits) increases firm value and shareholder value.

5.4 Taxes and the Investment Decision

A firm's investment decision concerns which assets and business to invest in, where to allocate its resources, and also strategic decisions regarding which markets to enter or which products and services should be developed, among others (Damodaran, 2001). Gentry & Hubbard (2000) found that a higher degree of progressiveness in individual taxation can affect the decision whether to start a business, or not (i.e., whether to be an entrepreneur). Schuetze (2000) and Bruce (2002) also present evidence that marginal tax rates can have an important effect on the decision regarding whether to start/abandon a business.

Firms should only invest in assets forecast to have a higher return than the minimum acceptable return for the firm. This minimum return depends on whether the capital in question is raised by equity or by debt. Investments either generate additional revenues and/or reduce costs. In both cases, investment impacts taxes, particularly corporate tax, and, in turn, corporate tax also impacts the profitability of the investment and consequently on the decision whether to invest, or not.

Investment decisions are based on the Net Present Value (NPV) of the investment, which enables a firm to calculate the return of the investment in comparison with the discount rate (i.e., the cost of capital for the firm). Corporate Finance decisions are based on incremental after-tax cash flows, after being discounted for the opportunity cost of funds. Financing costs are normally ignored, because both the cost of debt and the cost of other capital are captured in the discount rate.

Therefore, an investment's NPV is calculated by:

$$NPV = -I_0 + \sum_{t=1}^n \frac{CF_t}{(1+i)^t} + \frac{CF_2}{(1+i)^2} + \frac{CF_3}{(1+i)^3} + \dots + \frac{CF_n}{(1+i)^n}$$

where, I_0 stands for the investment, CF for the Cash Flow of each period (which is usually a full year), and i for the discount rate.

The Cash Flow should be the Free Cash Flow to the Firm (FCFF) as is calculated:

$$FCFF = EBIT (1 - t) + \text{Non cash changes} - \Delta NWC$$

where Non-Cash Changes consist of depreciation, amortizations, provisions, and impairments, and where NWC is the net working capital.

However, a firm may also want to calculate the NPV for the investors, for which they need to use Free Cash Flow to Equity (FCFE), which is calculated as:

$$\text{FCFE} = \text{Net Income} - \text{Capex} - (\text{Debt repaid} - \text{new debt issued}) - \Delta \text{NWC}$$

In terms of taxation, investment projects must be analyzed by considering the following: Tax costs (reduce NPV/IRR/ROA/ROE); Tax deductions and benefits; and the Tax treatment of assets (tax depreciations). Furthermore, it is important to consider whether the project is developed in an existing firm, or in a new one. On the one hand, if the project is developed in an existing firm, then the losses of the first years can generate a tax benefit (a tax shield), as the losses are transferred to the parent firm. Such losses reduce the profits of the existing firm and thus reduce the amount of corporate tax payable. This benefit needs to be considered when calculating the value of the project. On the other hand, if the project is developed in a new firm, then it is important to understand whether such initial losses will be deducted in future years' profits (see Chap. 7 for a detailed explanation of tax losses carried forward), as there is no transfer of the losses to the parent firm.

All these issues are discussed later in Chap. 8, which analyses how these three aspects impact a firm's investment decision.

5.5 Taxes and the Financing Decision

Financing decisions concern the capital structure of the firm: how much capital is raised by equity among the firm shareholders and how much is raised by debt among banks, financial markets or other debtors. The mix of equity and debt should represent the lowest cost of capital, in order to maximize the investment/firm value. As will be seen below, debt has a tax advantage, but this is not the sole purpose for using debt, as the choice to opt for debt could be a governance mechanism that creates incentives for managers regarding both managing future obligations and the managers versus shareholders dilemma. However, debt also came with limits and problems (for a detail discussion of debt advantages and disadvantages, see Tirole, 2010), one such problem being shareholders views versus agency (managers) views (see for instance Barros & Sarmiento, 2020).

It is, however, important to make a distinction between the book value of the firm (which reflects the value of assets, debt, and equity in the balance sheet), the market value of the firm (which reflects the value of the stocks if the firm is listed, or the valuation of the firm if it is not), and also the valuation/intrinsic value of the firm (which reflects the present value of the future cash flows).

In the seminal work of Modigliani & Miller (1958), debt irrelevance is based on the following assumptions: no taxes, no issuance costs to raise debt or equity, and no transaction costs associated with bankruptcy, as well as no asymmetric information or agency costs. However, the M&M propositions was later changed (1962) to allow for a tax benefit for debt. If it is assumed that debt does not have higher costs as the leverage increase, then the optimal debt level is 100%.

Nevertheless, one other issue needs to be considered also (which will be explained in detail in Chap. 7 on corporate tax and also in Chap. 8 on tax planning), which is that in most countries there is a distinction between the tax treatment of

interest and dividends. Interest is normally tax deductible (whereas dividends are normally not—as they are paid out of net cash flows), but there are usually limits to such deduction. In this case (and most countries nowadays have such limits), these limits will have an impact on the decision of how much debt is to be raised and also decisions regarding the capital structure.

As is seen below, the difference in the tax treatment between interest and dividends (among those other factors that make $K_D < K_e$ ¹) provides a strong incentive for economic agents, mainly firms, to use debt rather than equity. However, high levels of leverage do not come without a price, as they increase the level of fixed cost of the firm and also the financial distress costs. The onset of recessions and/or situations when the banking sector operates with lower levels of liquidity can trigger issues and difficulties for highly indebted firms. In addition, if debts do not have a fixed interest rate (with indexing, which is based on the Euribor rate in the European Union, and on Libor rate in the United Kingdom, plus a spread), then an increase in interest rates can place a firm in financial distress as well. If such an increase in interest rates occurs during a period of recession/low economic growth/low sales growth/other economic turmoil, this can lead firms to declare bankruptcy (Nijs, 2013).

As refereed by Damodaran (2008, 2009), the use of debt creates tax benefits (as interest expenses are tax deductible), but it increases the risk of bankruptcy (and expected costs). The bankruptcy risk can be simplified as:

$$\text{Bankruptcy risk} = (\text{Probability of going bankrupt}) * (\text{cost of going bankrupt})$$

The cost of going bankrupt is expected to be fixed.

Leverage has a strong impact on firm value. Let us see an example:

Assume a firm with an EBIT of 2 M/year and a corporate tax rate of 25%. The firm has two alternatives for capital structure:

- (a) No debt
- (b) 6 M of debt, with a cost of debt of 10%

	(A)	(B)	(B – A)
EBIT	2,000,000	2,000,000	
Interest	0	600,000	
EBT	2,000,000	1,400,000	–600,000
Corporate tax	(500,000)	(350,000)	+150,000
Net income	1,500,000	1,050,000	– 450,000
Cash flow for shareholders and debtors	1,500,000	1,650,000	+150,000

Due to the level of debt, the firm saves a total of 150 k ($6 \text{ M} * 10\% * 25\%$) on taxes. If the debt has a 5-year maturity, then the NPV of the tax benefit is 569 k (using a 10% discount rate).

¹ With K_D standing for cost of debt and K_e for cost of equity.

For bondholders, income after all taxes have been deducted is the interest paid (600 k), minus income tax $[600 * (1 - T_p)]$, with T_p the personal income tax. For shareholders however, income after tax is the net income paid by dividends, minus the income tax, which in example A is $[1.5M * (1 - T_p)]$ and in example B is $[1.05M * (1 - T_p)]$. It appears that B is less favorable to shareholders (without accounting for the value of the equity), however, it is necessary to consider that in B the shareholders hold less 6 M in equity. As is seen below, this reduced equity has a strong impact on shareholders' profitability (in the ROE—Return on equity).

Therefore, the present value of the tax savings from debt (assuming no limits for the level of debt) can be calculated as:

$$\frac{\text{Marginal tax rate} * \text{Pretax cost of debt} * \text{Debt}}{\text{Pretax cost of debt}}$$

The tax advantage ² can be summarized as follows:

The interest is: $i_y = D * i_0$

Which leads to a reduction in corporate tax of: $\text{Tax}_{\text{savings}} = i_y * t$

The cash flow after tax of a non-leverage firm is provided by: $\text{EBIT} * (1 - t)$

The value of the non-leverage firm is given by: $\frac{\text{EBIT} * (1 - t)}{r_u}$

With r_u the cost of capital of a non-leverage firm.

To calculate the value of the firm with leverage, one just needs to sum the NPV of the tax benefit of debt, which can be expressed as $(D * t)$ if debt is constant and perpetual.

Based on this calculation, the tax benefit of debt versus equity can also be explained as:

$$\text{After tax return of debt} = i (1 - t_i)$$

with i being the interest rate, and t_i the interest income tax marginal rate.

This means that the return on equity can also be calculated as:

$$\text{After tax return of equity} = K_e (1 - t_c) (1 - t_e)$$

²It is important to mention that not all firms pay taxes (for they might declare losses rather than profits) and firms can have lower corporate tax rates than the statutory tax (by benefitting from tax benefits or tax deductions—see Chapter 7 on corporate tax for this). If the firm does not pay corporate tax, then naturally there is no tax benefit and also no additional benefit from the tax deductibility of interest costs, because the firm in question does not generally pay taxes. Accordingly, any firm that does not pay taxes and does not have debt financing will obtain no tax benefit from debt. Furthermore, issuing debt does not create value by itself. For if a firm issues debt and then keeps the excess cash in the bank, the debt issue will not create a tax benefit or value. In corporate finance, excess cash is the same as negative debt (see more in Asquith & Weiss, 2016).

with K_e being the cost of equity, t_c the corporate tax marginal rate, and t_e the equity income tax marginal rate.

Therefore, the tax benefit of debt when compared with equity can be summarized as:

$$\frac{1 - (1 - t_c)(1 - t_i)}{(1 - t_i)}$$

In addition, Brealey et al. (2018) identify the relative tax advantage of corporate debt as:

$$RTA = \frac{(1 - T_p)}{(1 - T_c)(1 - T_{pe})}$$

The discount rate should now reflect the capital structure and also the mix of equity and debt, and accordingly the Weighted Average Cost of Capital (WACC) should be used, as follows:

$$WACC = K_e * \frac{E}{E + D} + K_D * \frac{D}{E + D} (1 - t)$$

where K_e is the cost of equity, K_D is the cost of debt, E is the amount of equity, D is the amount of debt, and t is the corporate tax rate.

The cost of equity is normally calculated by the Capital Asset Pricing Model (CAPM) of the firm. The cost of debt is the average interest rate of loans, plus fees and any other financial cost:

$$[(\text{interest} + \text{fees} + \text{other financial costs})/(\text{debt})]$$

Normally (up until a certain level of leverage) $K_D < K_e$, due to four fundamental reasons:

1. Debtors have priority over the shareholders if the firm becomes bankrupt (with certain debt having seniority over other debt). This means that if a firm becomes bankrupt, debtors will then be the first to be reimbursed the proceeds from selling the firm's assets. Bankruptcy is usually a result of liabilities being greater than assets (leading to a negative net position), although debtors may still be able to receive part of their loans, shareholders are unlikely to recover their capital if the firm becomes bankrupt.
2. If $K_D = K_e$, there would then be an opportunity cost for equity and no investor would want to be a shareholder rather than a debtor.
3. Firms usually incur debt from banks and financial markets, which means that debtors normally have a larger portfolio diversification (as they can lend to thousands of firms) than the shareholders do (who usually concentrate their investment in a more limited number of firms).

4. The tax advantage of debt (non-tax neutrality of debt versus equity), albeit with the possibility that such a tax advantage is restricted by the fact that interest costs deduction may have limits (see Chaps. 7 and 8 for more details).

The tax savings from interest payments can be calculated as follows:

Suppose a firm borrows D , with an interest rate of i , and a corporate tax rate of t . The tax annual savings can be calculated by $D \cdot i \cdot t$. The NPV of the tax savings can also be calculated from Debt: $[(D \cdot i \cdot t) / I] = D \cdot t$ [once again assuming that debt is fixed and perpetual and that the tax rate is constant and firm pays taxes at the margin – no tax benefits].

However, as mentioned by Hawawini and Viallet (2011), the tax savings from the deduction of interest costs are not taken into account in the project's/firm's cash flow, but rather in the estimated after-tax cost of capital.

Accordingly, the value of a leverage firm can be calculated as:

$$\text{value of the unlevered firm} + D \cdot t$$

Suppose that a firm with a debt of 100M, with a 10% interest rate, and a 20% corporate tax rate. The annual tax savings would be 2M ($100 \cdot 10\% \cdot 20\%$), with the NPV of the debt tax savings being 20 M $[(100 \cdot 10\% \cdot 20\%) / 10\%]$. If the firm's unleveraged value is 150 M, then through the leverage of 100M with this additional capital (assuming that the 100 M is additional capital, and is not replacing debt), then the BV would become 250 M and the firm's valuation increases to 170 M.

The value of the firm is calculated by the after-tax cash flow divided by the cost of capital:

$$V_L = \frac{EBIT(1 - \tau_c)}{WACC}$$

An alternative to the WACC method is the APV (Adjusted Present Value) method. It first values the project as if it were unlevered: V^u , and then adds the present value of the tax shield, as follows:

$$V^l = V^u + PV \text{ tax shields}$$

In the first step, the APV method determines the unlevered value of the firm by discounting the FCFs at the unlevered cost of capital r_u or Pre-Tax WACC:

$$\text{Pretax WACC} = r_u = \frac{E}{E + D} r_E + \frac{D}{E + D} r_D$$

The second step of the APV method is to calculate the present value of the interest tax shield (after the firm has decided the debt capacity—thus enabling the estimation of the annual interest payments):

$$\text{Interest year } t = r_D * D_{t-1}$$

The interest tax shield is the interest paid, multiplied by the corporate tax rate. Nevertheless, if there is a target D/E, then the WACC method is the best one to use.

Dividends do not yield any tax benefit in most countries (as they cannot be considered as costs in the way that interest is). However, in some countries this possibility exists (normally with limits), in which case the NPV of net tax savings from debt = PV of tax savings from debt – PV of tax savings from dividends.

However, borrowing money does not add value if such debt is not used to finance investment in the operational activity of the firm and generate future cash flows. Value from tax benefits is created when: (1) the firm uses borrowed money to invest; or (2) the firm uses debt rather than equity to finance assets. The tax benefit should not be the only reason for raising debt (see more in Asquith & Weiss, 2016).

In sum, the decision between whether to opt for equity and debt can therefore have a strong impact on the firm value, for two main reasons: first, if $K_D < K_e$, then replacing equity by debt lowers the cost of the financing. In other words, put simply, the firm is replacing “debt to shareholders/owners” which is equity (which has a higher cost) with “debt to third parties” (which has a lower cost); second, the tax benefit of debt needs to be considered, with the “real” cost of debt being $K_D * (1 - t)$.

The benefits of debt naturally depend on the level of the interest rate. For as the firm takes on more debt, the greater will be the interest rate, thus reducing the benefit. At the limit, when $K_D < K_e$, the benefit of debt is just the tax benefit, which means that firm should only take on debt if:

$$K_D(1 - t) < K_e < \Rightarrow K_D < \frac{K_e}{(1 - t)}$$

Here is an example:

If a firm has a K_E of 10% and the tax rate is 25%, then the limit for the firm to take on debt is when $K_D = \frac{10\%}{0.75} = 13.3\%$

This means that if firms (in a hypothetical world) were to have an equal cost of debt (interest plus fees and commissions) regardless of their leverage, then the point where each firm would maximize the benefit of debt (and would maximize both the value of the firm and the ROE) would be at 100% (or close to 100%). Below is an example of how the benefit of leverage (with fixed interest rate) increases the return to shareholders:

Suppose an investment with a Capex of 1000. The cost of equity is 8%. The cost of debt is 5% and corporate tax rate is 20%. The investment generates an EBIT of 100/year.

What is the leverage effect if the cost of debt is constant?

The financial statements of this project would thus be:

Debt	Equity	Interests	EBT	Tax	Net income
0	1000	0	100	20	80
100	900	5	95	19	76
200	800	10	90	18	72
300	700	15	85	17	68
400	600	20	80	16	64
500	500	25	75	15	60
600	400	30	70	14	56
700	300	35	65	13	52
800	200	40	60	12	48
900	100	45	55	11	44

How does this affect the firm's financial position? Although it appears that increasing debt reduces net income, this increase in debt also reduces the shareholders' investment (i.e., the level of equity). What then is the impact on the firm's profitability (assuming that the K_e remains constant at 8%, despite the increase on the ROE, and that the calculation of the WACC should consider the increase of the K_e in line with the ROE, as a more indebted firm also increases risk for the shareholders)?

It can be seen that the ROE increases substantially with the leverage effect.

Debt	ROE	WACC (K_e :8%)	WACC (k_e)
0	8.0%	8.0%	8.0%
100	8.4%	7.6%	8.1%
200	9.0%	7.2%	8.2%
300	9.7%	6.8%	8.3%
400	10.7%	6.4%	8.4%
500	12.0%	6.0%	8.5%
600	14.0%	5.6%	8.6%
700	17.3%	5.2%	8.7%
800	24.0%	4.8%	8.8%
900	44.0%	4.4%	8.9%

It can be seen that there is a "tax gain" resulting from the deduction of interest. As long as $K_e = 8\%$, there is a gain from replacing equity for debt.

Debt	"interest" gain	Tax gain	Total gain	Total gain (%)
0	0	0	0	0.0%
100	3	1	4	0.4%
200	6	2	8	1.0%
300	9	3	12	1.7%
400	12	4	16	2.7%
500	15	5	20	4.0%
600	18	6	24	6.0%
700	21	7	28	9.3%

(continued)

Debt	“interest” gain	Tax gain	Total gain	Total gain (%)
800	24	8	32	16.0%
900	27	9	36	36.0%

There is also an “interest gain,” as the firm converts equity that costs 8% to debt which costs only 5%. Using 900 of debt, such a gain amounts to 27 $[(8\% - 5\%) * 900]$. For each unit of debt there is a 3% gain (the 8% of cost of equity minus the 5% of cost of debt), but the tax gain [interest cost $* 20\%$] also needs to be added to this gain. In effect, this leads to a reduction in the corporate tax shown in the first table, which is a result of the tax savings on interest. Note that the total gain when using 900 of debt is 36%, which increases the ROE from 8% of the cost of equity to a value of 44%.

Naturally, banks and financial markets are not immune from risk. For if the leverage increases, then the loan becomes riskier, which has an effect on the cost of debt (see Damodaran, 2001 for an explanation on the fundamentals of Corporate Finance regarding the cost of equity, debt, and risk).

What is the leverage effect (and limit) if the cost of debt increases 1 p.p. for each 10% of debt, above 30%?

Based on the above, the financial statements of the project are now:

Debt	Equity	Interests	EBT	Tax	Net income
0	1000	0	100	20	80
100	900	5	95	19	76
200	800	10	90	18	72
300	700	15	85	17	68
400	600	24	76	15.2	61
500	500	35	65	13	52
600	400	48	52	10.4	42
700	300	63	37	7.4	30
800	200	80	20	4	16
900	100	99	1	0.2	1

The table shows that interest costs increases substantially after the 30% leverage and that at the 90% level, the net income is almost zero. Therefore, what is the impact on the firm’s profitability?

Debt	ROE	WACC (ke:8%)	WACC (ke)
0	8.0%	8.0%	8.0%
100	8.4%	7.6%	8.1%
200	9.0%	7.2%	8.2%
300	9.7%	6.8%	8.3%
400	10.1%	6.7%	8.5%
500	10.4%	6.8%	8.7%
600	10.4%	7.0%	9.0%

(continued)

Debt	ROE	WACC (ke:8%)	WACC (ke)
700	9.9%	7.4%	9.3%
800	8.0%	8.0%	9.6%
900	0.8%	8.7%	10.0%

The ROE increases until 600 of debt (which is equal to the 500 of debt), however, the WACC of the 600 of debt is already higher. Management, therefore, needs to analyze which level of debt would maximize the firm's value.

In this case, 8% would be the limit of the K_D and the total maximum gain would be 600 of debt. This 2.4% of total gain would increase the ROE from the initial 8% to a maximum of 10.4%.

Debt	"interest" gain	Tax gain	Total gain	Total gain (%)
0	0	0	0	0.0%
100	3	1	4	0.4%
200	6	2	8	1.0%
300	9	3	12	1.7%
400	8	4.8	12.8	2.1%
500	5	7	12	2.4%
600	0	9.6	9.6	2.4%
700	-7	12.6	5.6	1.9%
800	-16	16	0	0.0%
900	-27	19.8	-7.2	-7.2%

Here is another example, considering the impact of debt in the calculation of the WACC and CAPM:

Assume a project with a R_f (risk-free rate) of 2% and a MRP (market rate premium) of 10%, with a debt spread of 0.7%, an EBIT of 100, and an unleveraged Beta (β_μ) of 0.6 and a corporate tax rate of 30%.

Assuming (once again in a hypothetical world) that there is no increase in spreads when firms take on more debt, the result of using a higher leverage would then be:

	Debt Ratio	Bu	B L	T	K _e	Spread	K _d	WACC	Debt	Equity	Interest	Tax	Net income	ROE
No debt	0%	0.60	0.60	30%	8.00%	0.70%	2.0%	8.0%	0	1000	0	30	70	7%
Low case	10%	0.60	0.65	30%	8.47%	0.70%	1.9%	7.8%	100	900	2	29	69	8%
...	20%	0.60	0.71	30%	9.05%	0.70%	1.9%	7.5%	200	800	4	29	67	8%
...	30%	0.60	0.78	30%	9.80%	0.70%	1.9%	7.3%	300	700	6	28	66	9%
...	40%	0.60	0.88	30%	10.80%	0.70%	1.9%	7.0%	400	600	8	28	65	11%
...	50%	0.60	1.02	30%	12.20%	0.70%	1.9%	6.8%	500	500	9	27	63	13%
...	60%	0.60	1.23	30%	14.30%	0.70%	1.9%	6.5%	600	400	11	27	62	16%
...	70%	0.60	1.58	30%	17.80%	0.70%	1.9%	6.3%	700	300	13	26	61	20%
...	80%	0.60	2.28	30%	24.80%	0.70%	1.9%	6.0%	800	200	15	25	59	30%
High case	90%	0.60	4.38	30%	45.80%	0.70%	1.9%	5.8%	900	100	17	25	58	58%

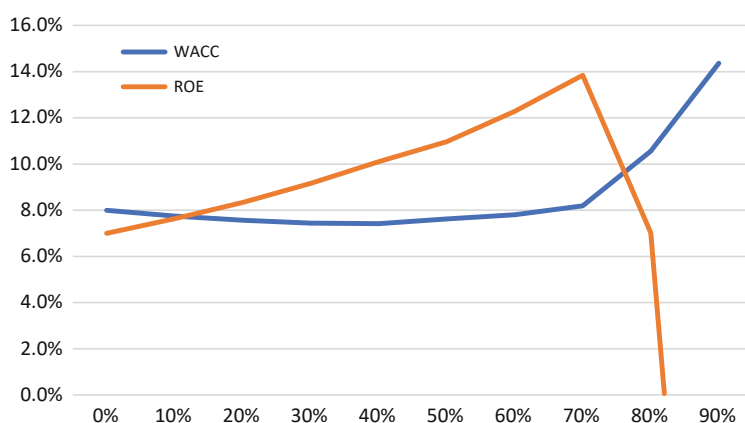
ROIC	Spread	D/E	ROE
10.0%	8.0%	0.00	7%
10.0%	8.1%	0.11	8%
10.0%	8.1%	0.25	8%
10.0%	8.1%	0.43	9%
10.0%	8.1%	0.67	11%
10.0%	8.1%	1.00	13%
10.0%	8.1%	1.50	16%
10.0%	8.1%	2.33	20%
10.0%	8.1%	4.00	30%
10.0%	8.1%	9.00	58%

As β_μ remains at 0.6 (because it does not change with the level of leverage), the β_l (Beta leverage) increases from 0.6 (if debt is equal to zero) to 4.38 (if debt equal to 90%). This increases the K_e from the 8% level to 45.8% and despite this increase in the K_e , the WACC reduces substantially.

However, as the level of debt increases, the level of risk to the debtor also increases, leading to an increase in spreads. As spreads increase with higher levels of leverage, the associated result of using more debt in this example is:

	Debt Ratio	Bu	B L	T	Ke	Spread	Kd	WACC	Debt	Equity	Interest	Tax	Net income	ROE
No debt	0%	0.60	0.60	30%	8.00%	0.70%	2.0%	8.0%	0	1000	0	30	70	7%
Low case	10%	0.60	0.65	30%	8.47%	0.70%	1.9%	7.8%	100	900	2	29	69	8%
...	20%	0.60	0.71	30%	9.05%	1.14%	2.3%	7.6%	200	800	5	29	67	8%
...	30%	0.60	0.78	30%	9.80%	1.59%	2.8%	7.4%	300	700	8	27	64	9%
...	40%	0.60	0.88	30%	10.80%	2.15%	3.3%	7.4%	400	600	13	26	61	10%
...	50%	0.60	1.02	30%	12.20%	3.15%	4.3%	7.6%	500	500	22	23	55	11%
...	60%	0.60	1.23	30%	14.30%	3.78%	5.0%	7.8%	600	400	30	21	49	12%
...	70%	0.60	1.58	30%	17.80%	4.62%	5.8%	8.2%	700	300	41	18	42	14%
...	80%	0.60	2.28	30%	24.80%	8.80%	10.0%	10.6%	800	200	80	6	14	7%
High case	90%	0.60	4.38	30%	45.80%	14.34%	15.5%	14.4%	900	100	140	-12	-28	-28%

ROIC	Spread	D/E	ROE
10.0%	8.0%	0.00	7%
10.0%	8.1%	0.11	8%
10.0%	7.7%	0.25	8%
10.0%	7.2%	0.43	9%
10.0%	6.7%	0.67	10%
10.0%	5.7%	1.00	11%
10.0%	5.0%	1.50	12%
10.0%	4.2%	2.33	14%
10.0%	0.0%	4.00	7%
10.0%	-5.5%	9.00	-28%



It can be seen that the increase in the K_e is also followed by an increase in the WACC, with the ROE attaining its maximum with a leverage of 70%.

If all the other issues and conditions remain equal, then the tax benefit of debt will be higher as the tax rate increases. Accordingly, the following three predictions regarding firms and their level of debt can be assumed (Damodaran, 2001): (1) the debt ratios of firms with higher tax rates should be higher than the debt ratios of firms with lower tax rates (see, for instance, MacKie-Mason, 1990); (2) firms with substantial tax shields, such as depreciation, are less likely to use more debt; (3) should tax rates increase over time, then it is also expected to see debt ratios to increase. As the firm value is the NPV of the after-tax cash flows, any decision that reduces the tax payable (as is explained in Chap. 8) increases the firm value. The NPV of an investment also includes the tax shield from debt. Therefore, debt has the following two main advantages: tax and debt discipline regarding the firm's governance. However, debt also has three main disadvantages, namely: higher bankruptcy costs, higher agency costs, and less financing flexibility.

In recent years, owing to the benefit of debt versus equity, firms have been borrowing intensively, particularly until the 2008 financial crisis (De Fiore & Uhlig, 2015; Brunnermeier & Krishnamurthy, 2020). The debt overhang become a

problem (i.e., the excess of debt in a firm leads to the borrower becoming debt-ridden and unable to raise funds or even pay the debt service—see Hennessy, 2004; Tirole, 2010; and also Hillier et al. for a detailed explanation of financial distress). Debt stress is discussed in Chap. 7 regarding corporate tax, and most governments now impose limits for interest tax deductions, in an attempt to reduce the debt advantage. Albeit much less frequent, such limits are also followed by accepting (with conditions and limits) the tax deduction of dividends, which further reduces the tax advantage of debt. The main objective is to reduce the leverage of firms, increasing their capitalization, and render them more resilient to economic shocks and recessions (see this Belgium case, for instance—De Mooij et al., 2018; Goyvaerts & Roggeman, 2020).

5.6 Taxes and the Dividend Decision

The dividend decision (also known as the payout decision—see Brealey et al. (2018)) concerns the firm's decision regarding how much earnings are to be retained to reinvest, and how much is reimbursed to shareholders. The proportion distributed to the shareholders can be done by either paying dividends or by buying back shares (Barros et al., 2020, 2022). This distribution can have a large impact on shareholders' income, especially if dividends and capital gains are taxed differently for income tax.

As referred to by Damodaran (2008), there are three main schools of thought regarding dividend policy: (1) dividend irrelevance (where dividends do not affect firm value, based on the two key assumptions that there is no tax disadvantage to an investor to receive dividends and that there are no issuance or transaction costs when firms raise funds in financial markets); (2) the proposal that in effect dividends are negative for the average stockholder owing to the tax disadvantage, and thus they reduce firm value; (3) that dividends have implied benefits, such as increasing firm value and creating good governance rules, as well as reducing excessive cash and even the fact that some investors 'like' dividends. Hakansson (1982) suggests that distributing dividends is a way of transmitting confidence to investors and creates an image of the good state of the firm. For investors, a high payout ratio suggests confidence in stability in terms of earnings and growth (Arnott & Asness, 2003).

Firms deem the dividend decision to be relevant, as it determines the future funds flow for both shareholders and the firm, and it also provides valuable information to markets about the firm's performance (Ross et al., 2008). Dividends can be paid as cash (cash dividends), or by issuing new stock, or by buyback of stocks in the market. Dividends are usually separated into regular cash dividends and extra-cash dividends. The buyback of shares is often called a stock dividend and increasing the number of shares of a firm (by dividing the value of stocks) is called stock split (Ross et al., 2008). Firms also have the choice to issue preferred stocks, which are stocks that take priority over common stock with regard to dividend payments.

The moment when a dividend is paid is called the ex-dividend day. There are several ways to measure the magnitude of the dividend to be paid out, namely: the

dividend yield (calculated by annual dividends by share/stock price); the dividend payout (dividends/earnings); or expected return on stocks (dividend yield + price appreciation). Damodaran (2008) refers that dividends tend to follow earnings and are usually stable over time, which in practice means that they follow a smoother pattern than earnings do, even though they follow the life cycle of the firm's business.

The ex-dividend day is a topic that is substantially covered in Finance and Taxation (Jabbouri & Attar, 2018). Should a buyer purchase stock before the ex-dividend day, they will then receive the dividend, whereas buying stock after such a day will not, and the stock price will accordingly fall on the ex-dividend date. If there were no transaction costs and no taxes, then the price of the stock before the ex-dividend day is $(P + \text{Dividend})$, with the price after the ex-dividend day being P . Nevertheless, as different shareholders can pay different tax rates, it is sometimes difficult to assess investors' tax preference for dividends. One way to assess this potential tax disadvantage associated with dividends is to analyze the price change on the ex-dividend date and then compare it with the actual dividend paid. As mentioned by Damodaran (2001), the stock price on the ex-dividend day should fall to reflect the loss in dividends for those buying the stock after that day. It is not clear, however, whether such a price drop will be equal to the dividends if both the dividends and capital gains are taxed at different rates.

Some firms pay no dividends at all (e.g., if a firm elects to pay a lower or no dividend and then reinvest the funds, the stock price may increase because future earnings and dividends might be higher). Although shareholders 'like' cash dividends, some appear to accept a policy of no dividend payments. The finance literature therefore provides evidence that the vast majority of shareholders invests in firms whose dividend policies match their preferences (Graham & Kumar, 2006). In most cases, studies found evidence that investors who have higher marginal tax rates (if they do not need liquidity) prefer firms that pay low or null dividends (where, in effect, their earnings are the increase in the market value of the stock). On the contrary, investors who have lower marginal tax rates (and should they require cash) tend to invest mainly in firms that pay higher dividends (Lewellen et al., 1978; Scholz, 1992; Lee et al., 2006). The identification of the type of investors of each firm is described as the "clienteles effect," whereby firms have an incentive to maintain a stable dividend policy. Furthermore, the dividend clienteles theory provides evidence contrary to the irrelevance of dividend policy theory (Black & Scholes, 1974; Lewellen et al., 1978).

In addition, the dividend signalling theory provides evidence that suggests that a firm's announcement of an increase in dividend payouts is an indication of positive future prospects. The theory is tied to game theory concepts, namely that managers with positive investment potential are more likely to signal, while those without such prospects refrain from doing so. The dividend increases communicating "good news" about cash flows and earnings. Cuts in dividend send "bad news," as a high dividend payout policy is costly to firms that do not have the cash flow to support paying a dividend, while paying a dividend increases the power of the signal of the firm's "good fortune" and transmits its managers' confidence in future cash flows.

The trade-off theory is based on the concept that firms maximize value by attaining an equilibrium between the costs and benefits of an additional unit of debt. The same concept is used for dividends, where a firm establishes a level of dividend payout whereby the firm maximizes its value (Sarmiento & Ferreira, 2016).

Taxes are relevant because dividends and interest payments due to firms' shareholders are subject to taxes (corporate tax if the shareholder is another firm, and income tax if the shareholder is an individual) (Barros et al., 2021b). All income that is paid out as dividends is taxed twice, once by the firm and once by the shareholder. However, instead of receiving a dividend, if the firm earns a euro paid out as interest, then it will not pay corporate tax. However, an individual who receives the same interest would be liable to personal tax. Capital gains are also taxed, but only when the capital gains are actually realized (although there has been an ongoing discussion in 2022 in the United States regarding taxing the unrealized capital gains of billionaires).

For income tax, cash dividends are usually taxed at a higher tax rate than capital gains. Furthermore, dividends are taxed when there are actually paid, as capital gains are deferred until the stock is sold. In the case of individual shareholders, if the tax rates of dividends are higher than the tax rate of capital gains, then the effective tax rate on dividend income is higher than the tax rate on capital gains

Companies can convert dividends into capital gains by changing their dividend policies. For instance, if dividends are taxed more heavily than capital gains, then taxpaying investors will welcome such a move and value the firm more favorably. In such a tax environment, the total cash flow retained by the firm and/or held by shareholders will be higher than if dividends are paid. If capital gains are taxed at a lower rate than dividend income, companies should pay the lowest dividend possible and accordingly dividend policy should adjust to changes in the tax code law.

Here is an example:

Assume that a firm has 1000 of EBT and pays a corporate tax rate of 35%, with income tax on dividends of 25%, and income tax for capital gains of 15%.

EBT: 1000

Corporate tax: 350

Net income: 650

The 650 is the cash to pay to shareholders.

If the firm pays through dividends, the cash to shareholders is: $650 \times (1 - 0.25) = 487.5$ (as the shareholders will pay 162.5 in income tax).

If the firm pays through capital gains (buyback of stocks), then the cash to shareholders is: $650 \times (1 - 0.15) = 552.5$ (those shareholders who sold their shares will pay an income tax of 97.5).

Naturally, in this case one is assuming that the firm has sufficient cash to pay dividends. In addition, buyback decisions have one strong limitation: they do not provide cash to all the shareholders (but rather only to those who sell their stocks). Shareholders' requirement for cash also determines the firm's dividend policy, besides taxation.

The decision to retain earnings, if successful, eliminates (or reduces) the shareholders' liability to pay income tax. Nevertheless, some countries, such as the United States, have a limit for untaxed retained earnings and in many countries dividends are subject to low levels of taxation and capital gains (usually in the medium and long run—i.e., when the individual shareholder has owned the stock for more than a certain amount of time: 12, 24, . . . , months) are to partial taxation (the most common being that 50% of income is subject to tax—a case in point being the United States, where the liability is based on just 50% of income, transforming a 28% tax rate into an effective tax rate of 14%). Firms can also treat the distribution of cash to individual shareholders as deductible interest, or even as a salary.

Here is another example using the buyback option:

Suppose a firm with 40 million shares with a price of 10 (and no debt) and a corporate tax rate of 25%. If the firm requests 200 M of debt to buy back shares in the expectation that benefits and the increase in the demand for their stock will increase both prices and the firm valuation.

With no leverage, the firm market value is:

$$V_u = 40 M * 10 = 400 \text{ millions}$$

With leverage (the 200 M of debt), then the following applies:

Debt tax advantage (PV):

$$T = 200 M * 25\% = 50 M$$

Which implies that the leverage of the firm value is now:

$$V_l = V_u + T = 400 M + 50 M = 450 M$$

As debt is 200 M, the stock value is:

$$E = V_l - D = 450 M - 200 M = 250 M$$

However, shareholders (as they receive 200 M in cash) now have a value of 450 M (250 M + 200 M), with net earnings of 50 M.

As the firm buyback shares at 10, it will buy 20 million (200 M/10) while retaining another 20 M in market.

This means that stock prices are now 12.5 (250 M/20 M).

Furthermore, the firm's earnings can be paid as dividends/capital gains (as seen), or as interest (i.e., by transferring equity to debt).

If paid as dividends/capital gains, then the result is:

Pre-tax investment cash flows: *Payout* $(1 - T_c)$

After-tax investment cash flows: *Payout* $(1 - T_c)(1 - T_e)$

If paid in interest, then the following applies:

Pre-tax investment cash flows: *Payout*.

After-tax investment cash flows: *Payout* $(1 - T_i)$

Assume that $T_c = 35\%$; $T_e = 20\%$; $T_i = 30\%$

Dividends after tax (investors): $(1 - 0.35)(1 - 0.2) = 0.52$

Interest after tax (debt holders): $(1 - 0.3) = 0.7$

Several countries protect investors from double taxation of dividends, in twofold: they either allow firms to deduct (usually partial) the dividends paid (although if there are foreign shareholders, then these benefit from such a tax windfall); or they allow full/partial tax relief for individual investors who receive dividends (which can be carried out by way of tax credits or by charging lower tax rate on dividends).

In sum, despite other non-tax issues, dividend policy is therefore also adapted to the tax law and to the tax rates of investors among other non-tax issues.

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6.1 Income Tax Definitions

Almost all countries in the world have a tax called “income tax,” or “personal income tax,” which is a tax on individuals’ income (as opposed to corporate tax or corporate income tax, which is a tax on firms, as will be seen in Chap. 7) (Graham et al., 2012). As described below, such income is based on wages, salaries, profits from individual businesses (rather than firms with organized accounts, but an independent activity which sometimes has organized accounts), interest, dividends, and profits from owning a firm, and rents and pensions, among others. According to the Taxation Trends of 2020, in the European Union income tax is usually the first or the second tax in terms of revenues (with VAT being the most important tax).

In most countries, when using a progressive income tax, the principal objective is to raise revenues (as in the case of all taxes) and reduce inequality. To this end, income tax tends to take into consideration the use of progressive tax rates (as will be discussed below) and the personal and family situation of each taxpayer. This is achieved by conceding tax deductions for personal expenses, such as health, education, and housing, among others, and also by applying specific deductions according to the number of people in the taxpayer’s household.

6.2 Main Principles

In most countries, several main income tax principles are harmonized at the OECD level,¹ as expressed in the “Model Tax Convention on Income and on Capital” (OECD, 2017). This harmonization comprises the type of income and its definition,

¹The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak

as well as the taxpayer's rules of residence and the applicable tax period. Therefore, although most countries have their own legislation regarding income tax, there are usually some minor differences and some specific issues to consider, and this harmonization is the guideline for these principles in international terms.

The first issue regarding income tax concerns the type of income that is subject to this tax. The main categories of income that is subject to income tax in most countries are the following:

- *Income from employment*: Wages and salaries or other types of income, as long as there is a work contract or, in the case of the public sector, the exercise of official duties. This category includes the base salary and bonus, fees, and variable remuneration or stock options. In addition, most countries also tax a large spectrum of “fringe benefits,” such as pension plans, health insurance, subsidies, and allowances, among many other benefits that firms or organizations pay to their employees or subordinates (however, some countries opt to just tax income paid in “money,” excluding benefits in kind).
- *Profits from individual business* (i.e., professional activities or being self-employed): including income from royalties.² In some cases, specific activities are organized as “Partnership Taxation.”³
- *Dividends and profits*: which is the income from shares, “jouissance” shares, or “jouissance” rights,⁴ mining shares, founders' shares or other rights which are not debt claims, participation in profits, as well as income from other corporate rights which are subject to the same taxation treatment as income from shares by the laws of the State of which the firm making the distribution is a resident.
- *Interest*: That is, income arising from debt claims (with or without a mortgage or the right to participate in the debtor's profits), from government or private bonds or debentures (including premiums and prizes, but not including penalties for late payments), and also interest from financial deposits and other financial applications.
- *Income from the fixed property*: namely all income from any land, building, or part of a building (mainly rents). This category usually includes agriculture and

Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The European Commission takes part in the work of the OECD.

²Income received for the use of, or the right to use, any copyright of literary, artistic or scientific work including cinematograph films, any patent, trade mark, design or model, plan, secret formula or process, or for information concerning industrial, commercial or scientific experience.

³In the case of “partnership Taxation,” there is a firm, which is owned by a number of professionals of a certain activity (e.g., lawyers and accountants). The firm calculates the EBT according to the corporate tax rules of the country, but instead of paying corporate tax, such EBT is allocated (“passed through”) to each partner, who has to pay income tax in the individual sphere (see further details in Schwarz et al., 2017).

⁴“Jouissance” shares are securities, which are different from share certificates, that do not provide its holder with any shareholder rights, but which carry certain financial rights and which principally receive dividends (and in most cases, additional dividends, which are higher than common shares with voting rights).

forestry (as well as property that is accessory to a fixed property, and also livestock and equipment used in agriculture and forestry).

- *Capital gains*: the income arising from a gain from the sale of fixed property, and also from non-fixed property, such as stocks and shares, equipment, or other non-current assets owned by an individual.
- *Pensions*: the income paid out to retired individuals as social security (or private pension funds) payments.

Another issue concerns the residence of the taxpayer. Each taxpayer is deemed to be resident in just one tax jurisdiction (usually one country), and is considered to be non-resident in the rest of the world. Consequently, each taxpayer is liable to different responsibilities in terms of income tax.

Each taxpayer has a global (worldwide) obligation in the country where they are resident, which implies that a taxpayer pays income tax on their overall global income. This obligation means that the individual taxpayer pays income tax on both their domestic income (income received in their country of tax residence) and their foreign income (income received from the rest of the world, i.e., from other countries). The issue of international double taxation (as it is likely that foreign income is liable to pay taxes in the country in question) is solved (or mitigated) by the existence of a Double Tax Agreement (DTA) between the two countries in question (with just one country tax having the right to tax such income) or there will be a disposition in the income tax law of the country of tax residence which enables the taxpayer to deduct (in total or partially) the amount of tax paid in the foreign country for the tax that is due in the country of tax residence (this issue is discussed in detail in Chap. 10 of this book).

There is usually a local obligation in the country where the taxpayer is not a resident, which means that if no DTA exists, then, as a rule, a single rate of tax is charged for such income (which varies from country to country, and within each country it can also vary, depending on the type of income). Such a tax rate is final, in the sense that the taxpayer is liable to pay income tax, but is exempt from any other tax obligation, particularly with regard to the submission of their annual income tax declaration (where it is usually the firm/institution in the foreign country that makes the payment of the taxpayer's income by deducting such tax at source and then delivering it directly to the country's tax administration). Such tax paid in the foreign country (if no DTA exists) usually can be deducted by the taxpayer from the tax due in their country of tax residence (either in total or partially) (once again, for further details, see Chap. 10).

The rules to consider when determining a taxpayer's residence are usually the following⁵:

⁵For the purposes of the OECD Convention, the term "resident of a Contracting State" means any person who, under the laws of that State, is liable to tax therein by reason of their domicile, residence, place of management or any other criterion of a similar nature, and also includes that State and any political subdivision or local authority thereof. This term, however, does not include

- Most countries use a minimum of days per year (civil year) that the taxpayer has been in the country, which is usually half a year (183 days).
- However, this first rule may not be easily verified (particularly in the EU, with the free movement of persons in the Schengen agreement) and therefore a second rule usually applies, namely that the country where the taxpayer has a permanent home that is available for their use or the country where they have established the closest personal and economic ties (their “center of vital interests”).
- If this second rule is also not applicable, then the taxpayer will typically be resident in the country where they have their principal address (their residence, or the right to abode there).
- If this third rule is also not possible, then the taxpayer is deemed to be resident in the country where they are a national. Should the taxpayer possess more than one nationality, then the competent authorities of the Contracting States will settle the question by mutual agreement.

The last issue regarding the main principles of income tax concerns the tax period. Unlike corporate tax (as discussed in the next chapter), most countries do not allow taxpayers to choose their tax period for the payment of income tax. On the contrary, the tax period usually corresponds to the civil year (from the first January to the 31st December), although it may be less than 12 months if the taxpayer took up/finished their residence/activity during that year). Additionally, just as in the case of corporate tax, income tax has a fiscal year (which is often referred to as the “financial year”)—which is the year when the income is actually earned—and also has an assessment year, which is the year after the fiscal year—for when the income of the fiscal year is assessed and taxed (through a tax declaration which is submitted every year by the taxpayer to the Tax Administration).

In the case of income tax, the tax period is relevant (as it is for corporate tax) for two main reasons (there being a third reason for corporate tax, which is related to the deadline for the submission of both the tax declarations and payments).

The first reason is that the tax period provides a time delimitation for declaring income in the tax year in question. This is known as the “accounting accrual principle,” where income should be recorded during the specific period when it actually occurs, even if the cash flow is not associated with the income (although in the cases of income tax, there may be some exceptions). Furthermore, the period principle also exists, whereby taxpayers are due to report their income over a standard period.

The second reason is that the tax period also provides for a taxable event in the case of income tax. A taxable event can be defined as any action or transaction that may result in taxes being owed to the government (Bittker, 1973). However, as mentioned at the beginning of this chapter, in the cases of income tax, issues relating to the taxpayer’s personal situation are of importance, such as their marital situation,

any person who is liable to tax in that State in respect only of income from sources in that State or capital situated therein.

the number of dependents they have, and whether the taxpayer has a disability, etc. Therefore, it is necessary to determine such personal conditions at a given moment in time. As the tax period is an entire year, and as the taxpayer's income will probably be obtained during the entire year, how are such personal conditions determined? The answer is usually the taxpayer's situation on the 31st December (if the tax period is obligatorily based on the civil year). Let us assume an example (with a certain degree of humor) that the author usually uses during his lectures: suppose someone marries on the 31st December of the current year: is that taxpayer obliged to submit their income tax declaration of that year (in the next year) as a single or a married person? Most students reply as a single person (as the person in question had spent 364 days being "happy," i.e., single!). However, if the marital status counts as from the 31st December, such a person is required to submit their tax declaration in the capacity of a married person.

6.3 Income Tax Structure

Considering the State's objective to reduce inequality and achieve horizontal and vertical equality, income tax is structured in two main stages: first, the gross income is calculated by considering the category of income, as explained above. Next, for each type of income, specific deductions are usually applicable for the gross income (e.g., for salaries, professional activities, and rents). The net income is therefore the resulting balance, with progressive tax rates being applied to such net income (in some countries a coefficient is used for married couples and/or for the number of dependents, which reduces the amount of tax due—which means that married people can have their income added together and then split in two before applying the tax rate and then multiply the resultant amount by two, or they may even have the option/obligation for separate taxation. Furthermore, often a coefficient of 2 for married is applied, with a smaller coefficient of 0.3, 0.4, or 0.5, etc., for each dependent). After calculating the respective individual income tax, personal deductions can be used to reduce the amount due, with such deductions varying from country to country (with regard to which deductions are acceptable and what the legal limits are). These deductions can include expenditures for health, education, housing (interest loans and rents), and deductions for specific investments (such as renewable energies) or specific savings (such as for pension retirement schemes).

The final amount is then compared with the monthly (or other periods) payments made during the year. If the amount of income tax calculated after personal deductions is higher than the payments that have been made along the year by the taxpayer, then there will still be tax to pay. However, if the amount of income tax calculated after the personal deduction is lower than the payments that have been made along the year, then the taxpayer will be due a reimbursement of the overdue income tax paid.

6.4 Types of Income Tax Rates

One of the most discussed issues regarding income tax is proportional versus the progressive mechanism (Buchanan & Congleton, 1979; Schneider, 1980). There are four main types of income tax rates, namely, “pure” proportional, “flat-rate,” progressive rate, and negative income tax.

“Pure proportional” tax (hereinafter referred to as “proportional,” but which is sometimes also called “true flat-rate income tax”) is composed of a single tax rate with no tax exemption limit, unlike the “flat rate,” which is the main difference between them both, as will be seen below (it is referred to in this book as “pure” proportional tax, as it remains theoretical, as to the author’s knowledge, no country to date has used this term to describe an income tax—unlike the “flat rate,” which is used in certain countries, unlike a corporate tax, which in most countries is, in fact, a “pure” proportional tax rate, with a single tax being applied to the entire year’s profit). Therefore, the proportional tax is in effect a single tax (of 10%, 15%, or 20%, etc.) with no tax exemption being conceded for a specific income limit. The tax is calculated as follows:

Person A	Person B
Gross income: 100 k	Gross income: 10 k
Tax rate: 20%	Tax rate: 20%
Income tax: 20 k	Income tax: 2 k
Net income: 80 k	Net income: 8 k

It can be seen that person A earns 10x more income before tax than person B. Even though A is paying more tax (20 k versus 2 k), the difference after tax is 10x. This is an example of when the proportional tax rate has no impact on reducing inequality. However, it could be argued that the tax is regressive (i.e., that it increases inequality). The reasons are twofold: firstly, money, such as any other good, is subject to the law of decreasing marginal utility. In other words, an increase in one unit (of one currency, e.g., euro/dollar/pound/. . .) results in a marginal utility that is lower than the previous unit (i.e., the previous currency unit). Therefore, B’s 2 k has more marginal utility than A’s 20 k. Secondly, Engel’s law establishes that those who earn lower incomes tend to spend more of their income (as a percentage of the total) on essential goods, which accordingly means that B will have a higher marginal propensity to consume and that the 2 k of tax harms B more than A.

The “flat rate” (also known as a “marginal flat tax”) is close to the proportional rate, in the sense that it also has a single tax rate, but with one distinct difference: there is an income allowance that is not subject to the tax (and is therefore exempted) (Caminada & Goudswaard, 2001). The reason for this exemption is to allow for some progressivity in the “flat rate” to reduce inequality while at the same time increasing the simplicity and efficiency of the tax (Davies & Hoy, 2002; Barrios et al., 2020). The “flat rate” can be calculated as follows for the same parameters:

Person A	Person B
Gross income: 100 k	Gross income: 10 k
Tax rate: 20%	Tax rate: 20%
Minimum income exemption: 8 k	Minimum income exemption: 8 k
Income tax: 18.4 k	Income tax: 0.4 k
Net income: 81.6 k	Net income: 9.6 k

In this case, the minimum income exemption is applied to both the taxpayers (the reason why this applies in the progressive tax rate will be discussed further below). This implies that the income difference between A and B after tax is now 8.5 \times and not 10 \times of the pre-tax income (and from the proportional tax). It can therefore be argued that a “flat rate” has a certain degree of progressivity, due to the minimum income exemption. Some countries have adopted a “flat rate” (2021), such as Hungary, Romania, and Bulgaria.

Supporters of a “flat tax rate” income tax argue that it reduces the distortion of progressive taxes, particularly in the labor market (Popescu et al., 2019) and it could create incentives for increasing the labor supply and for international labor mobility (Jacobs et al., 2010; Kienzler et al., 2021). It is also claimed that marginal income tax rates are so high that a substantial reduction would increase revenues (this is the “Laffer” curve that is referred to in Chap. 3). This implies that an increase in the tax base (resulting from economic growth and an increase in labor) would necessarily outweigh the tax rate reduction, although this depends on the elasticity of tax revenues and labor markets. It can also be argued that such an income tax would substantially reduce tax compliance costs and simplify tax obligations (Ambrus, 2012).

The opposers to a “flat tax rate” income tax argue with the benefits of progressive income tax are mainly the ability to reduce inequality directly and the higher tax revenues obtained, which in turn finance the provision of better public services (which indirectly reduces inequality). It is also claimed that a “flat tax rate” provides little benefit for the majority of the population (particularly those with low-income levels) while providing considerable benefits (i.e., significant tax cuts) to a small percentage of individuals with higher incomes (the so-called “1%,” or “10%”). See Ambrus (2012) and Bartha (2014) for a more detail analyze and review of the advantages and disadvantages of a “flat tax rate.”

Regarding the issue of who benefits from tax cuts, it is essential to mention the following: every tax cut or every reduction in tax rates usually has a greater impact in nominal terms for higher-income taxpayers. However, the issue must be analyzed twofold: first, how much is the tax reduction as a percentage of income? For higher-income level, taxpayers may receive a higher nominal value, but a low percentual value. Second, once again, similar to any other good, taxes and money are subject to the law of diminishing marginal utility, whereby reducing one unit of tax has a higher level of marginal utility for low-income taxpayers than high-income ones.

The progressive tax rate is the most common standard tax rate that is used for income tax, as almost all countries have some degree of progressivity in their income tax (Roemer, 1999; Buenker, 2018). This structure of tax rates works with brackets,

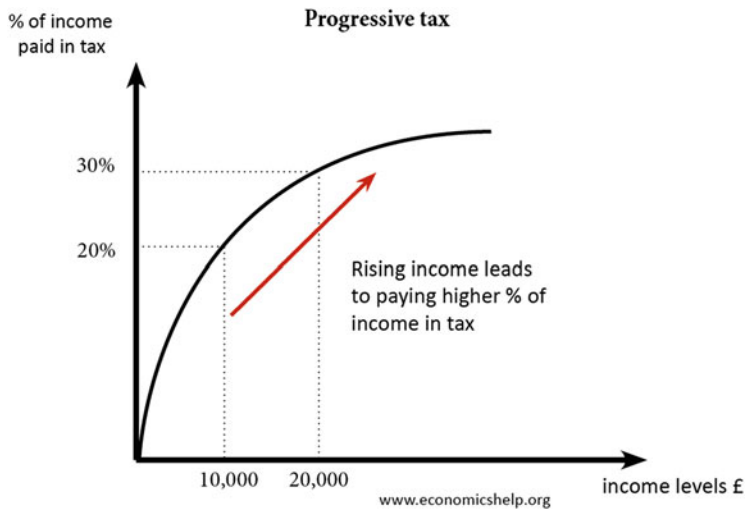


Fig. 6.1 Progressive tax rate. Source: economicshelp.org

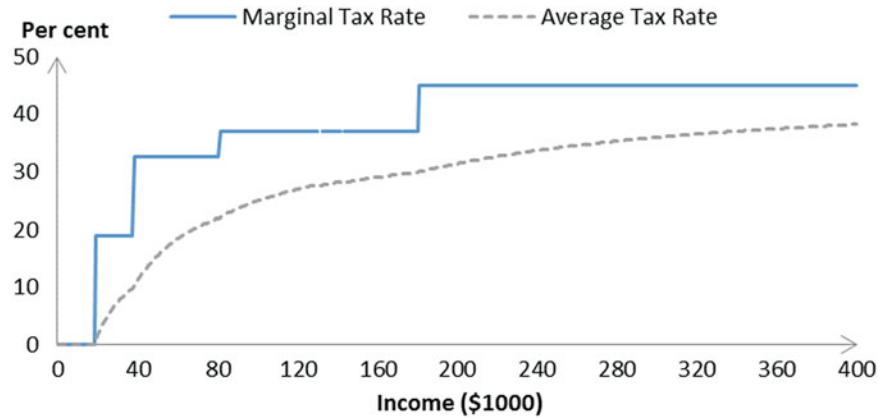


Fig. 6.2 Progressive tax rates with brackets. Source: <https://www.austaxpolicy.com/what-are-progressive-and-regressive-taxes/>

where, for most countries, the first bracket is a minimum of tax-exempted income. Each bracket has a lower and an upper limit, with a marginal tax rate being applied for each bracket. In other words, the marginal tax rate is applied in the bracket of that interval of income. Furthermore, as income increases, the tax rate also increases. However, progressivity implies that the increase in the tax rate is higher than the increase in income; i.e., an increase in 10% of income is followed by an increase higher than 10% of tax (where greater progressivity results in a larger increase) ($\Delta_I < \Delta_T$) (see Figs. 6.1 and 6.2). The progressive tax rate also acts as an automatic stabilizer.

Here is an example of an individual with an annual income of 100 k, who is subject to an income tax with the following tax brackets and tax rates:

Income	Tax rate
>80 k	40%
]30 k–80 k]	25%
]10 k–30 k]	15%
]6 k–10 k]	10%
[0–6 k]	0% (exempted)

Such an individual would pay a total income tax of 23.9 k, which is calculated as follows: (10 k–6 k)*10% + (30 k–10 k)*15% + (80 k–30 k)*25% + (100 k–80 k)*40%. This represents an average tax rate of 24%.

It is important to highlight that in this example, the individual will not be taxed at 40% (the marginal rate) for the entire 100 k, but will only be taxed at 40% for the proportion of income above 80 k. There is a crucial difference between nominal/legal, marginal, and average tax rates (see Chap. 3). For instance, in the example above, the nominal/legal tax rate varies according to the tax brackets, as defined by the country’s respective tax law. In this example, the marginal tax rate of the taxpayer is 40%, as any additional unit of income above the current 100 k will be taxed at 40%. However, the average/effective tax rate is just 24%. The marginal tax rate is calculated by $T_{mg} = \frac{\Delta T}{\Delta I}$, and the average tax rate is calculated by $T_{av} = \frac{T}{I}$.

It is also possible to calculate the average effective tax rate, which, at the micro-level, is the effective tax rate of the next unit of income.

The average tax rate is considered to be proportional if it is equal to the marginal tax rate ($T_{mg} = T_{av}$) and it is considered to be progressive if the average tax rate is lower than the marginal tax rate ($T_{mg} < T_{av}$). In addition, it is considered to be regressive (whether the average tax rate is higher than the marginal tax rate of ($T_{mg} > T_{av}$), which is discussed slightly further on in this chapter.

Using a progressive tax rate strongly impacts inequality and reduces differences in after-tax income. For instance, based on the above example, an individual who earns an annual income of less than 6 k would not pay any income tax.

Continuing to use the previous tax rates and the tax brackets of the previous example, the resulting calculations would thus be:

Person A	Person B
Gross income: 100 k	Gross income: 10 k
Income tax: 23.9 k	Income tax: 0.4 k
Net income: 76.1 k	Net income: 9.6 k

It can be seen from the above that the difference in after-tax income between A and B is now 7.9×, rather than the 10x of pre-tax income (as calculated by the “proportional rate”) or the 8.5× of the “flat rate.” Therefore, more brackets and/or higher tax rates naturally increase progressivity and reduce the difference in after-tax income. Nevertheless, as explained in Chap. 3 (on Taxation and Economics), there is

always a trade-off between reducing inequality (progressivity) and increasing efficiency (proportionality).

There are two main reasons why in the above examples A and B have the same tax rate for the first 10 k (zero for the first 6 k in both cases, with both then being taxed at 10% for the next 4 k, leading to achieving 10 k of income). The first is legal, in that all are equal in the eyes of the law, and therefore all should be taxed subject to the same conditions, whereas the second is economic (albeit it is related to the legal issue), where the first 10 k of income has the same marginal utility for both A and B. Furthermore, this is also the reason why A will pay 15% income tax on the next 20 k and then pay 25% on the next 50 k, and finally 40% on any income over 80 k, with the marginal utility of the euro before the 100 k being different (and lower, which justifies the higher marginal tax rate) from that of the euro before the 80 k or the 30 k or any other level of income. Additionally, A pays the same tax rate for the 40 k income as the 40 k income of any other taxpayer (which, once again, reflects the legal issue of all being equal before the eyes of the law).

Income tax can also be regressive, although the author is not aware that any country has such a condition (regressive income tax should not be confused with the issue of regressivity in VAT, where the tax rate is proportional, however, the tax itself can have regressive effects, owing to consuming patterns and levels of income—see Chap. 9 of this book). A regressive tax rate implies that as income increases, income tax decreases (and therefore the marginal tax is lower than the average tax), which leads to a reduced tax burden for higher-income taxpayers, although, as mentioned by Pistone et al. (2019), such regression can be mitigated by exemptions, deductions, or other forms of tax shields.

Finally, some of the economic literature supports the existence of negative income tax (Tobin et al., 1967; Moffitt, 2003; Friedman, 2013). Negative income tax implies that low-income (pre-tax) individuals should not pay any income tax at all, and, in addition, will be subject to a “negative” tax (which means that their income tax would be subsidized on account of their low level of income). Such a negative income tax system in effect transfers money to taxpayers who earn less than a certain income threshold, where the lower the income, the higher the transfer. Let us suppose on the one hand that such a threshold is 10 k, then an individual with zero income would receive part of the tax on the 10 k. If, on the other hand, the individual has some degree of income, then they will receive the tax on the 10 k minus the tax on such income. The rationale is that this system would provide incentives to work, particularly for those benefitting from welfare programs (however, certain disincentives may also arise). At a certain level of income, the tax deducted is equal to the value of the transfer (which is known as the “break-even income level,” or the “income threshold/negative income tax rate”).

The main argument supporting a negative income tax is that it alleviates inequality and facilitates redistribution, while reducing poverty without distorting the markets, as it mainly acts in opposition to the introduction of a minimum wage or an increase in the existing minimum wage (Boyes & Melvin, 2013).

Considering the content of Chaps. 2 and 3 regarding equality and efficiency (and also income capacity), the following could be argued regarding whether income tax

should be more or less progressive. For if it is more progressive, this would represent two main advantages, as it would reduce inequality and generate higher revenues. However, at the same time, such a progressive income tax would have two main disadvantages, as it would generate incentives for people not to work and would reduce the propensity to work more hours or harder (which in turn would create distortions in the labor market). On the other hand, if the income tax charged is less progressive, then this could lead to two main advantages as well, as the system would be simpler and it would also create incentives not just to bring people into the labor market, but also for people to carry out additional work. Nevertheless, there would also be two main disadvantages, as a progressive income tax would increase inequality and potentially reduce revenues—at least in the short term (whereas in the medium/long term, as discussed in Chap. 3, it is more than likely that it would increase revenues by stimulating economic growth and generate more economic activity, and consequently a higher tax base).

It is also important to stress that in almost all countries, those who receive a salary or income from professional activities are subject not only to income tax, but also to social security payments. In most countries, such payments are split between the firm (the employer) and the worker (the employee), which means that continuing with the example of progressive tax rate described above, for an average tax rate of 24%, the taxpayer's salary would also be reduced by the amount of Social Security payments liable to be paid by the employee. On the other hand, if such payments amount to 10% of the individual's salary, then the total taxation on income would be 34% (as the Social Security payments are proportional and usually have no income exemption limit). Furthermore, as also seen in Chap. 3, the total payment to Social Security (even the proportion paid by the employer) and the economic incidence (the tax burden) usually both fall on the taxpayer. Therefore, if an individual earns 4 k a month (gross salary) and the average income tax rate is 15% and the Social Security payments are 20% for the employer and 10% for the employee, this would mean that the cost to the firm (i.e., the individual's actual gross salary) is 4.8 k, but the net salary received by the individual would be only 3 k, as taxes and contributions in effect consume 1.8 k of the 4.8, which represents a total of 37.5% of the gross salary.

6.5 Exercises and Solutions

Exercise 1

Assume that a country has a “flat rate” income tax, with an exemption at 10 k and a single tax rate of 20% for incomes above such a value. How much income tax would each taxpayer pay: a) 8 k; b) 25 K; c) 60 k?

Exercise 2

Assume that a country has a progressive income tax with the following brackets and rates:

Income	Tax rate
>60 k	45%
]40 k–60 k]	30%
]25 k–40 k]	15%
]10 k–25 k]	10%
[0–10 k]	0% (exempted)

How much tax would a taxpayer pay who earns an income of: a) 15 k; b) 35 k; c) 50 k; d) 70 k?

Solutions

Exercise 1: a) zero; b) 3000; c) 10,000

Exercise 2: a) 500; b) 3000; c) 6750; d) 14,250

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7.1 Corporate Tax Definitions

Similar to personal income tax (see Chap. 6), most countries also have a corporate income tax (hereinafter designated as just corporate tax). This tax is paid by firms (the term organizations is more correct, but the term firms is used in this book, although some organizations that are not firms also pay corporate tax—Auerbach, 2006). Individuals do not pay corporate tax. As will be seen below, this tax is based on the concept of taxable profit (which represents the accounting profit¹ with adjustment on the net variation of the Equity of the firm and adjustments on the tax rules versus the accounting rules). Another widely used term for taxable profit is EBT—“Earning before Tax,” that is, the term used in this book, which is explained in detail further below. According to the taxation trends of Taxation trends, 2020, in the European Union, corporate tax is usually the third most relevant tax in terms of revenues, being less than income tax and VAT.

7.2 Main Principles

Similar to the description of the main principles of income tax at the beginning of Chap. 6, several of the main principles of corporate tax in most countries are harmonized at the OECD level,² as governed by the “Model Tax Convention on Income and on Capital” (OECD, 2017).

¹The accounting profit is in the P&L and is the income before pre-tax income, according to the accounting standards, before the provisions of the corporate tax.

²[1] The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. In addition, the European Commission is involved in the work of the OECD.

Table 7.1 Corporate tax incidence

Type of organizations subject to corporate tax		Corporate tax incidence
Resident	Firms (whose main activity is economic—Profit)	Taxable EBT (pre-tax profit)
	Other organizations whose main activity is not economic, i.e., profit driven (e.g., NGOs, associations, and foundations)	Pays corporate tax on economic activities (such as rents, interests, or commercial activities) that they carry out, but which are not related to their main non-economic activity (social, cultural, environmental, etc.)
Non-resident	With a permanent establishment (PE)	Taxable EBT (the PE is considered to be a resident firm and is taxable just like any other firm in the country)
	Without PE	Income tax

Source: Author

The first issue is the concept of a firm/company. The OECD convention establishes that the term “company” means “*any corporate body or any entity that is treated as a body corporate for tax purposes.*” The term “enterprise” applies to the operation of any business.

Regarding corporate tax incidence, the real incidence (i.e., what is subject to the tax) is the firm’s taxable profit (which will be defined later in this chapter). This is because firms pay corporate tax not based on the accounting EBT, but rather on the pre-tax EBT, which is referred to hereinafter in this book as “taxable EBT.” On the other hand, the personal incidence (i.e., who actually pays the tax) is based on the concept of organizations as in Table 7.1.

The country of residence of a firm is based on where the firm’s legal headquarters are located or where it has its “center of vital interests” (i.e., place of management). It is important to mention that in most countries the second condition is more relevant than the location of the firm’s headquarters. Tax Administrations take into consideration in which country the firm has its main center of interest and where management decisions are taken, rather than the firm’s legal address. Similar to income tax, a firm is a resident in one specific country and non-resident in all the other countries where it also has an interest. Furthermore, a firm has different responsibilities with regard to income tax.

In the country where the firm is resident, the firm is subject to a global (worldwide) obligation, which means that it is liable to pay corporate tax on the overall (worldwide) income it has earned. This obligation means that the firm will pay corporate tax on both its domestic corporate income (income earned in the country of residence) and additionally any foreign corporate income (income earned from the rest of the world, i.e., from other countries). The issue of international double taxation (as the firm’s foreign income will probably also have to pay taxes in another country) is resolved (or mitigated) by the existence of either a Double Tax Agreement (DTA) between the two countries (which allows just one of the countries to tax such income) or a disposition of the domestic country’s corporate tax law which

permits the deduction (either total or partial) of the amount of tax paid in the foreign country from the domestic tax liability (this issue is discussed in detail in Chap. 10 of this book).

The firm has a local obligation in the country where it is non-resident. This means that if no DTA exists, then, as a rule, a single tax rate is charged for such income earned out of the country of residence (which varies from country to country and varies according to the type of income in most countries). This amount of the tax paid in the foreign country (if no DTA exists) is consequently the value that the firm deducts (full or partial) in its country of residence (once again, for further details, see Chap. 10).

For instance, suppose that a firm in Germany has a branch in Spain. The EBT of the Spanish operation is 4 M, and the EBT of the German operation is 20 M. The branch in Spain is a PE (see below) and is liable to pay corporate tax (according to the Spanish law) on the 4 M. However, the firm in Germany will have to declare, for corporate tax purposes, in Germany, an EBT of 24 M. However, this type of double taxation problem is solved by the “mother and daughter EU directive” (Council Directive 2011/96/EU of 30 November 2011, regarding the common system of taxation that is applicable in the case of parent companies and subsidiaries of different Member States—see Chap. 12). Should these two countries not be members of the EU, then either a DTA or the domestic country’s double taxation rules for corporate tax would solve/mitigate the double taxation problem.

Another issue related to the type of tax persons in corporate tax is the permanent establishment (PE). The term “permanent establishment” means a fixed place of business where the firm wholly or partly carries out its business. The term “permanent establishment” mainly includes: (a) a place of management; (b) a branch; (c) an office; (d) a factory; (e) a workshop, or a mine, or an oil or gas field, a quarry or any other place for the extraction of natural resources. As discussed above, corporate tax is calculated differently for non-resident firms, according to whether they have a PE or not. The existence of a PE or not for a non-resident firm can therefore be summarized as follows in Table 7.2.

Therefore, in the cases of a non-resident firm that owns a fixed facility to produce or sell goods and services (a factory, a shop, a mine, a branch, or an office) in a specific country, such a fixed facility will be considered a PE and will be liable to pay corporate tax according to the country’s corporate tax law. However, if the fixed facility does not produce or sell goods, then the non-resident firm will be taxed according to the country’s income tax. The same rule applies to non-resident construction firms, depending on the duration of the construction site (and the limit of months of the country’s respective law) and also to the agent or representative of the non-resident firm.

Finally, there is the issue of the tax period. Naturally, every firm has a tax year (which is sometimes also called the “fiscal year,” although such a designation is more common for governments or for firms’ internal accounting). The tax year is in effect the financial year—a 12-month period that the firm uses for accounting purposes. The most common practice is for the tax year to be exactly the same as the civil year (1 January to 31 December), however, in several countries, this does

Table 7.2 Permanent establishment

Permanent establishment	Non-PE
A fixed facility that produces/sell goods and services	A fixed facility solely for the storage of goods (e.g., a warehouse for the purpose of storage, display, or delivery of goods or merchandise, that has no production or selling function) or a fixed facility where work is carried out to analyze the market, purchase products, or collect business information (again, without selling any good or service), or for the exercise of any preparatory or auxiliary activity carried by the non-resident firm.
A construction site with over 12 months of duration (Note: In some countries this minimum period may be different, usually lower, i.e., 6 or 9 months)	A construction site with less than 12 months of duration (Note: In some countries this minimum period may be different, usually being lower: 6 or 9 months).
An agent or representative (an individual who is resident in the country where the non-resident firm is operating) if the non-resident assumes the business risk (a broker, general commission agent, or any other agent of an independent status, provided that such persons are acting in the ordinary course of their business)	An agent or representative (an individual who is resident in the country where the non-resident firm is operating), if the non-resident does not assume the business risk (which instead is assumed by the non-resident firm)

Source: Author

not occur. For instance, in the United States the federal budget for the fiscal year 2021 ran from October 01, 2020, to September 30, 2021, whereas in the United Kingdom the financial year runs from 1 April to 31 March for government financial statements and yet for personal tax purposes, the fiscal year starts on 6 April and ends on 5 April of the following calendar year. In such cases, the fiscal year end is usually the end of any quarter, such as 31 March, 30 June, 30 September, or 31 December (note: in the United States, according to law, the IRS stipulates that a fiscal year is “12 consecutive months ending on the last day of any month except December.”³).

Unlike income tax, as seen in Chap. 6, firms may have a corporate tax period that is different from the civil year, for the following two main motives: (1) to accommodate the fact that a non-resident firm with a PE may have to submit its annual report and accounts to the headquarters located in a country where the tax year is different from the civil year, and thus firms in any country can choose wherever tax year they intend to adhere to in the interest of simplifying their financial accounting consolidation obligations (as otherwise, such firms would have to have operate two

³ Alternatively, in the United States, the IRS also permits that instead of observing a 12-month tax year, US taxpayers may observe a 52- to 53-week fiscal year. In this case, the tax year ends on the same day of the week each year, whichever happens to be the closest to a certain date—such as the nearest Saturday to 31 December. This system automatically results in some tax years having 52 weeks, and other having 53 weeks.

accounting systems in parallel: one for the Tax Administration from 1 January to 31 December and another for their consolidation process with the specific tax period); and (2) to reflect businesses typified by strong seasonality (or one whose activity is organized in a different period from the civil year, examples being football clubs in Europe, where the seasons runs from 1 July to 30 June the following year, or universities, as the academic year usually starts in September), which organize their financial statements and accounting in such way that ensures a more efficient analysis and management of their respective information and decision-making.

Similar to income tax, the tax period for corporate tax has two critical dimensions. First, it provides a time delimitation for the inclusion of revenues and costs in the year tax. This is the accounting accrual principle, where income and revenues and losses, as well as costs should be recorded in the specific period when they actually occur, even if the cash flow is not associated with the transaction. This time delimitation can also refer to the time period principle, whereby taxpayers are liable to report their income over a standard period of time.

Second, the corporate tax period provides the taxable event for income tax, whereby the taxable event can be defined as “*any action or transaction that may result in taxes owed to the government*” (Bittker, 1973). Accordingly, the last day of the tax period marks the firm’s situation for corporate tax purposes.

In addition, there is also a third aspect regarding the tax period, namely that it stipulates the deadlines (time limits) for a firm to submit its tax declarations and pay the respective corporate tax payments.

7.3 Corporate Tax Concepts—How the Tax Works?

By definition, corporate tax is not based on the accounting EBT, but on a pre-tax profit (referred to in this book as “taxable EBT”), in accordance with the tax law, as depicted in Fig. 7.1 (Fig. 7.2 presents the US case). In a firm’s P&L, EBITDA is calculated as revenue/income minus the Operation and Maintenance costs

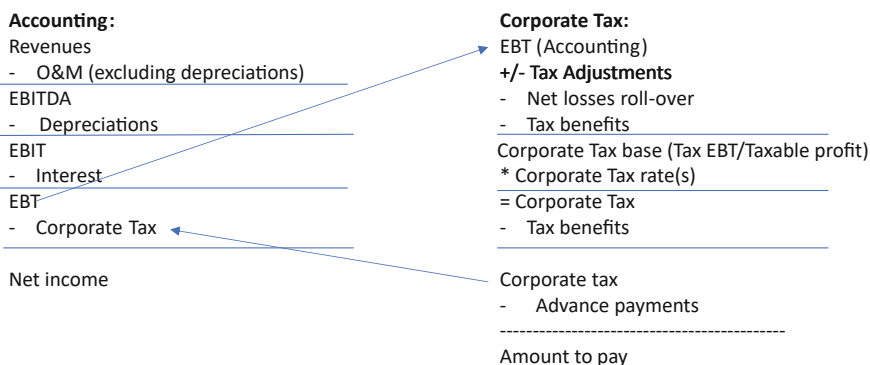


Fig. 7.1 Corporate tax framework. Source: Author

Total gross receipts or sales
- Costs of goods sold
Gross profits
+ Interest, dividends, capital gains, other incomes
Total income
- Ordinary and necessary trade or business expenses
Taxable income before special deductions
- Net operating loss deduction
- Dividends received deduction
= Taxable income
x Applicable tax rates
= Tax liability
-Tax payments during the tax year and tax credits
Tax due or tax return

Source: IRS

Note: The US also has an alternative minimum tax (AMT), applied to all firms, with the exception of small ones.

Fig. 7.2 US Corporate tax framework. Source: IRS. Note: The United States also has an alternative minimum tax (AMT), applied to all firms, with the exception of small ones

(excluding depreciation) and EBIT is derived as EBITDA minus depreciation, whereas EBT is EBIT minus interest costs. It is EBT that serves as the base for the calculation of corporate tax (see Chap. 5 for more details on the Corporate Finance).

With regard to EBT, it is necessary to make tax adjustments according to the country's corporate tax code. Such adjustments are related to the following categories: accounting costs not accepted as tax costs (increasing EBT); accounting costs that have tax benefits and thus reduce EBT (such as cost increases⁴); accounting income not considered in the accounting period, but which should be considered in the tax period (thus leading to an increase in EBT), or the opposite, i.e., where accounting income is considered in the accounting period, but should not be considered in the tax period (which results in a reduction in EBT), together with tax benefits that reduce the taxable EBT (tax benefits are discussed in Chap. 8). During the passage from accounting EBT to taxable EBT, these adjustments fall into two categories: either moving from the accounting result to the income result or moving from the accounting rules to the tax rules.

In the case of corporate tax, several factors can explain the differences between accounting income and taxable income: the two systems have different objectives (e.g., accounting provides the economic reality of transactions and helpful information to managers, whereas in the case of taxation, the objective of lawmakers is not only to raise revenues, but also to create incentives and/or reduce inequality). Also, according to Hanlon and Heitzman (2010), corporate tax income is based on a hybrid of accrual and cash basis, as, for instance, it does not allow firms to estimate

⁴For example—if there is an increase in costs of more than 100%, then for tax purposes it is considered that there is a tax benefit of 30%, where each dollar of accounting costs will be considered to be 1.3\$ for calculating the corporate tax, which will lead to a tax correction to the accounting result of 0.3\$.

expenses in advance or defer revenues and rather focusses on the location of the earnings. Book-tax differences have been substantially analyzed in the finance and accounting literature (see Palepu et al., 2020; Joos et al., 2000; Hanlon, 2005).

Below are two examples of corporate tax corrections, that would enable the firm to calculate its corporate tax based on the accounting result:

Example 1

EBT (Financial Accounting): 40 M (Revenues: 300 M and Costs of 260 M).

The firm has a fine/penalty of 10 M (paid by the firm).

Recognized in the Financial Accounts:

Banks: −10 M.

Cost: +10 M.

Corporate tax law usually does not accept penalties/fines for tax costs and results purposes (which accordingly means that the EBT without the fine cost would be: 50 M, whereas without this, the costs would have been only 250 M).

EBT: 40 M.

Tax adjustment: +10.

Tax profit: 50 M.

Example 2

A firm made a donation to a charity of 1 M (donating to a charity usually has a tax benefit for corporate tax purposes, in which case let us assume that it is increased by 30%). Therefore, for corporate tax purposes: the tax cost would be 1.3 M€ (1 M + 30% tax benefit).

Recognized in the Financial Accounts:

Bank: -1 M.

Costs: +1 M.

If the firm EBT: 10 M.

Tax adjustment: - 0.3 M.

Tax profit: 9.7 M (10 M − 0.3 M of the tax benefit).

Example 3

EBT: 40 M.

The firm has a tax benefit regarding a specific investment. Capex was 10 M and the firm can deduct an over cost of 30%.

Tax Profit: $40\text{ M} - 3\text{ M} = 37\text{ M}$.

After such tax adjustments, the firm can use the net loss carryforward, as is discussed below (which enables the firm to use the previous year's losses to reduce the amount of taxable EBT). The taxable profit is the tax base to which the firm applies the corporate tax rate (or rates, should surcharges apply). This calculation

provides the amount of corporate tax which can be deducted from tax benefits (in this case, tax benefits that reduce corporate tax, and not tax benefits that reduce the taxable EBT. The difference and the various tax benefits are discussed in Chap. 8). This amount of corporate tax minus tax benefits is the effective corporate tax that the firm has incurred for the tax period (the distinction between the statutory and the effective tax rate is discussed at the end of this chapter), which is the amount the firm records in the P&L, thus reducing the accounting EBT while providing the net income (as shown in Fig. 7.1). A firm with an accounting EBT of 10 M and a Taxable EBT of 12 M, with a 20% corporate tax rate, will pay an effective corporate tax of 2.4 M. This means that the effective tax rate that this firm is subject to is not the statutory (nominal) 20%, but rather an effective 24% ($2.4 \text{ M}/10 \text{ M}$), owing to the tax corrections of 2 M that resulted in an accounting EBT of 10 M and an increase of taxable EBT to 12 M.

In addition, it is necessary to compare the value of the effective corporate tax with the amount that was paid by the firms in the previous year. If the corporate tax is higher than past payments, then the firm has to pay the difference. If the opposite occurs, then the firm has the right to a tax reimbursement (refund), and will receive the difference in corporate tax.

The main characteristics of corporate tax are the following:

- It is charged on a firm's income (not only on Profits), and not on its assets.
- It is direct, as it is charged on the basis of a direct statement of capacity to pay.
- It is periodic, because, as a rule, tax is payable annually, for successive tax periods, which may or may not coincide with the calendar year.
- It is proportional, although rates are not constant, as they can vary based on the value of taxable income if surcharges apply.
- It is State-imposed because the State is the proactive party in the tax relationship.
- It is real, as it is charged on the income of corporate business, without taking into account any personal situations.
- It is a principal, as it is autonomous at both legislative level and at the level of specific tax relations.
- It is general because it affects all income gained.

7.4 Income and Costs

Income is defined in a broad sense in the corporate tax law of each country and is therefore considered to include income from operations of any kind and not only that derived from the taxpayer's regular activity.

The recognition of an income in a sale of goods occurs if: the seller has transferred to the buyer the significant risks and rewards of ownership; the seller retains neither continuing managerial involvement to the degree that is normally associated with ownership nor effective control over the goods sold; the amount of revenue can be measured reliably; the economic benefits associated with the transaction will most likely flow to the seller; the costs incurred or to be incurred in

respect of the transaction can be measured reliably. In the case of services, revenue should be recognized by reference to the stage of completion of the transaction at the balance sheet date (the percentage-of-completion method), based on the supposition that all of the following criteria are met: the amount of revenue can be measured reliably; the economic benefits will most likely flow to the seller; the stage of completion at the balance sheet date can be measured reliably; and that the costs incurred, or to be incurred, in respect of the transaction can be measured reliably. The measurement is made at the fair value of the consideration received or receivable. If cash inflow is deferred, then present value interest must be imputed, based on market rates.

Expenses are defined in the law and are considered to be costs proved indispensable to the earning of taxable income or the maintenance of the source of production.

In most countries, a firm does not recognize any gain or loss for the exchange of its stock for money and other property, nor for increasing or reducing the initial capital of the shareholders. Furthermore, there is no corporate tax impact when the firm raises debt (although stamp tax could be collected on the contract, however, which is a cost).

A “redemption” of stocks is a corporate buyback of those stocks. A firm redeems stock from a shareholder by exchanging other assets for the stock. This represents a gain if the value of the stock is higher than the amount paid, or, more commonly, a loss if the value of the stock is less than the amount paid (in most countries, such an accounting loss is normally not accepted for tax purposes).

Another issue is the “liquidation” of a firm. If it is partial, then it should be treated as a “redemption.” However, if it is total, then the act involves the distribution of all the firm’s assets to the shareholders (after paying all the debts), which in effect means that it is the net Equity that is distributed to the owners. Another possibility is to distribute all the assets to the shareholders before clearing debts, meaning that the shareholders become responsible for paying the liabilities. As explained in Chap. 8 regarding tax planning, “liquidation” has a tax impact on corporate tax and income tax alike when shareholders are individuals.

In most countries, firms are permitted to gain a tax credit for expenditures on social benefits (either paid out to employees, such as in the form of further education or health, or as donations made to charity). These benefits can be considered to be a tax credit on costs or a tax credit on tax payable (always with limits).

Example: A firm with 100 M revenues and 10 M of EBT, which paid donations of 200 k (corporate tax rate of 15%).

Case 1: Cost credit of 30%, with a 0.1% revenues limit – in this case, the firm can deduct $30\% \times 200 \text{ k} = 60 \text{ k}$ to the EBT (EBT = 9.94 M). The limit would be 100 k. If the limit were 0.05%, then the limit would be 50 k and the firm would only be able to deduct 50 k (the remaining 10 k could be carried forward, or not, depending on each country’s law).

Case 2: Credit on tax payables of 10% of expenditures, with a 0.1% revenues limit and EBT of 10 M, with a corporate tax of $10 \text{ M} \times 15\% = 1.5 \text{ M}$. The deduction is $10\% \times 200 \text{ k} = 20 \text{ k}$, and the corporate tax is 1.48 M (with a limit of 100 k).

In the United States, for instance, firms are permitted to make charitable deductions to qualified charitable organizations. The deduction is limited to 10% of taxable income for the following items: charitable donations, dividends received deduction, and capital loss carryback. Any contributions in excess of the permitted amount are carried forward for 5 years, and are added to the charitable donations of that year, with a 10% limitation for each year.

Example: suppose a firm that has 40 k of taxable income and donations to charity of 6 k. As the limit of 10% is 4 k, the taxable income will be 36 k and 2 k of donations will be carried forward (2021 rules).

7.5 Depreciation and Amortizations

Depreciation and amortizations are among the most relevant topics in corporate tax, particularly for tax management and planning. As has already been discussed in Chap. 5 in relation to taxation and finance, firms can save a substantial amount with their tax decisions, and can accordingly increase the value of the firm and also the ROA and ROE. One such decision is the depreciation method (albeit this is only relevant for capital-intensive firms that have a large amount of non-current assets, particularly in PPE and intangibles). Accordingly, this chapter only explains how firms can depreciate their non-current assets and the subject of tax decisions regarding management and planning will be left for the next chapter (Chap. 8). The focus of the next chapter is thus on how firms should decide about depreciation based on the forecasted profits (or losses) for the forthcoming years. The focus of this chapter is just the tax rules for depreciation.

Depreciation is defined as a “*non-cash expense that provides a source of free cash flow*” (Horngren et al., 2012). In question is the amount allocated during the period to amortize the cost of acquiring a long-term asset over the useful life of the same asset, which for income statement purposes is recorded as an expense to match revenues generated through the use of the asset with all the expenses incurred to produce the revenue. For balance sheet purposes, depreciation is recorded in a contra account called “Accumulated Depreciation.” The fixed asset account in the balance sheet is not directly reduced, because depreciation only estimates how much of its usefulness has expired.

Amortization is used in place of depreciation when referring to intangible assets (Horngren et al., 2012). For simplicity’s sake, the term depreciation is used throughout this book, to describe both depreciation and amortization. For an asset to be depreciated: (1) it must actually be owned by the firm (on the contrary, rent and leases are depreciated by the firm that owns the asset, rather than by the firm that rents or leases the asset); (2) it must be used in the firm’s core activity; and (3) it must have a finite (but determinable) relatively long life, meaning that it will eventually become obsolete, unnecessary, or lose value.

Depreciation is recognized in accounting (and for tax purposes) on the last day of the tax year (usually on 31 December). Naturally, a firm only depreciates those

non-current assets that are subject to depreciation (which have a finite life period) and which are recognized in the firm's balance sheet. The depreciation of an asset begins when it is available for use, i.e., when it is in the location and subject to the necessary condition to operate in the manner intended by management. Depreciation of an asset ceases at the earlier of the two dates when it is either classified as being held for sale (or included in a disposal group that is classified as held for sale) according to IFRS 5, or the date that the asset is derecognized. Therefore, depreciation does not cease to be deductible for accounting purposes when the asset becomes idle or is retired from active use, unless the asset is already fully depreciated (IAS 16).

As can be seen in the next chapter (Chap. 8) on tax planning, depreciation is an extremely relevant issue for paying corporate tax, as it is an accrual cost, rather than a cash item. As depreciation is a cost, it reduces corporate tax and thus increases the firm's cash flow, as seen in Chap. 5. Chap. 8 will discuss how managers should make their tax decisions concerning depreciation. However, let us first see how depreciation is considered for corporate tax purposes.

The first issue regarding corporate tax and depreciation is related to the life period of the non-current asset (the depreciation rate). For example, a 5-year period will have a 20% depreciation rate, 10 years a 10% rate, 20 years a 5% rate, and so on. If doubt exists, then the years of depreciation can be calculated by: $n = 100/\text{deprec. rate}$ (where, naturally, the depreciation rate can be calculated by: $r = 100/n$). In most countries, the corporate tax code law defines the depreciation rate for each type of asset, and, therefore, the number of years of depreciation.

The second issue regards the asset's value that is subject to depreciation. The book value is the acquisition/production cost plus all costs that are related to the transaction (except for VAT, if the firm can deduct the VAT—see Chap. 9) and which are necessary to ensure that the asset is functioning working properly (also known as the “Fair Value price/cost”⁵), plus the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located. Regarding the latter point, this cost estimate is a result of the obligation that the firm commits to either when the item is acquired or as a consequence of having used the item during a particular period for purposes other than to produce stock during that period (see Fig. 7.4). Therefore, all costs related to travel, insurance, fees, commissions, and packing, among others, are added to the book value of the asset in the balance sheet (as long as they are necessary for the purchase of the asset), together with the expected residual cost (Fig. 7.3).

Let us take an example: suppose a firm buys an equipment for 1 M€ + 20% VAT (and that it can deduct this VAT), with the following additional expenses: 40 k in transport, 60 k in fees, and 10 k in other expenses (not necessarily related to the transaction, which are all subject to the same 20% VAT rate). The firm will account the acquisition of the asset as follows:

⁵Fair value is the price received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.

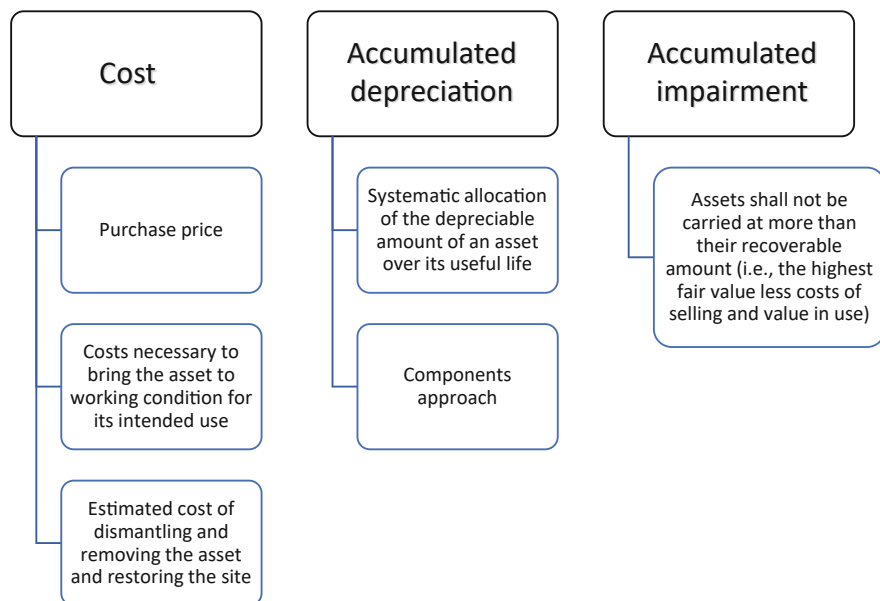


Fig. 7.3 Valuation of assets. Source: Author

Account	Debit	Credit
PPE	1.1 M (1)	
Costs	10 k (2)	
VAT deduction	222 k (3)	
Bank/suppliers		1.322 M (4)

(1)—1 M + 40 k of transports +60 k of fees; (2)—other costs; (3)—VAT of all acquisitions; (4)—payment/debt of all acquisitions

The PPE accounts for the 1 M of the asset price plus the 40 k and 60 k of necessary expenses to have the asset; the 10 k of not strictly necessary expenses are recognized as costs, whereby the firm can deduct the VAT of the entire value ($20\% \times 1.11 \text{ M}$) plus the VAT of the other costs and pays or maintains a debt to the bank/suppliers of 1.322 M (where other debts are accounted for as a non-current asset). The depreciation of this asset will therefore considered a value of 1.1 M. If the asset has a 4-year estimated useful life period (25% depreciation rate), then the yearly depreciation will be 275 k.

With regard to a non-current asset's book value, for tax depreciation purposes it is necessary to consider whether the asset has a residual value (RV). The RV could be zero (and most of the time is), but it could be another value. The residual value is the expected (if known) value at the end of the asset's life period. Therefore, the depreciated value of an asset is: $D_value = (BV - RV)$, where the depreciable amount is the cost of an asset, or another amount as a substitute for the cost, less its residual

value. Depreciation is the systematic allocation of the depreciable amount of an asset over its useful life.

Another issue related to an asset's value and the amount to be depreciated concerns buildings and real estate. As land for construction cannot be depreciated (as it has no finite life period), how should buildings and real estate be depreciated without considering the value of the land on which the building is situated? There are two possibilities: (1) if the firm acquired the land and then constructed the building, then the value of the two assets is recorded separately in the balance sheet and depreciation only applies to the value of the building itself; (2) if the firm acquired the building already constructed (with the land as well, obviously), then just one single value is recorded in the balance sheet. In most countries, corporate tax contemplates two distinct solutions: a valuation of the value of the land (by "fair market value") where the building is situated (with separate values recorded in the balance sheet for the building and the land, as above), or the tax code attributes a specific value to the land (10%, 15%, 20%, 25%, etc.), which thus reduces tax depreciation by such an amount.

Also, in some countries (such as the United States), there is a limit to tax depreciations on vehicles, usually by establishing a ceiling on the acquisition value of the vehicle. If such limit is for instance 50 k, and the vehicle acquisition value is 70 k, then the additional 20 k will not be tax depreciated. If the depreciation rate is 20%, then the annual accounting depreciation is 14 k, but the tax depreciation is only 10 k, leading the firm to a tax correction of 4 k in each year's corporate tax declaration.

A third issue (and the one that impacts the tax planning of depreciation the most, as is discussed in the next chapter—Chap. 8) regards the depreciation methods utilized. Methods vary from country to country, but the standard methods usually utilized (and accepted by most Tax Administrations) are defined by the IFRS (2020) (IAS 16 Property, plant, and equipment).⁶

The most commonly utilized method is the straight-line method, whereby the value of the non-current asset to be depreciated ($BV - RV$) is multiplied by the depreciation rate (or divided by the number of years of depreciation).

Here is an example: A firm buys an equipment with a BV of 10,000, an RV of zero, and a depreciation rate of 20% (5 years). The yearly depreciation will be 2,000 $[(10,000 - 0) * 20\%]$ or $[(10,000-0)/5]$. If the residual value is 2,000, then the yearly depreciation will be reduced to 1600 $[(10,000 - 2000) * 20\%]$ or $[(10,000 - 2000)/5]$. Not only is this method the easiest one to utilize, but it also provides a constant series of cash flows over time.

⁶The IASB has clarified that the use of revenue-based methods to calculate the depreciation of an asset is not appropriate, because revenue generated by an activity that includes the use of an asset generally reflects factors other than the consumption of the economic benefits embodied in the asset. The IASB also clarified that revenue is generally presumed to be an inappropriate basis for measuring the consumption of the economic benefits embodied in an intangible asset. This presumption, however, can be rebutted in certain limited circumstances.

Therefore, the yearly depreciation using the straight-line method is calculated as follows:

$$Year_D = (BV - RV) * \text{deprec.rate}, \text{ or } Year_D = (BV - RV) / n^a \text{ years_D};$$

and the accumulated depreciation at a specific moment is calculated in this way:

$$Acum_D = YearD * n^o \text{ years or } Acum_D = (BV - RV) * \text{deprec.rate} * (\text{current year} - \text{acquisition year})$$

The other standard method is the diminishing balance method (also called the declining balance method), which results in a decreasing charge over the asset's useful life (hereinafter this book just refers to this method as the "decrease method" for simplicity's sake). In effect, the method is an accelerated depreciation calculation that is typically used in business accounting and is usually accepted for tax purposes (although some Tax Administrations limit the type of assets that firms can use for this method). The motive to accept this method for tax purposes is that for some assets, the fair market value of a capital asset is generally highest in the year of its purchase, and then declines steadily in the following years. This method is capable of depreciating assets twice as fast as the traditional declining balance method in terms of depreciation value. In addition, it records larger depreciation expenses during the earlier years of an asset's useful life and smaller ones in later years. Firms also choose this method for those assets that are likely to lose most of their value early on in their useful life, or those that become obsolete more quickly. As is seen in the next chapter, this method also has the potential to assure larger tax savings for firms than the straight-line method.

When employing the decrease method, the first year of depreciation is very high, and the values of the successive years decrease until the end of the depreciation period, with the asset value ending up as zero. The following formula for calculating yearly depreciation uses a depreciation rate that is not applied to the initial BV of the asset, but rather to the net BV of the asset in the current year (where the net BV = BV – accumulated depreciation), resulting in the following calculation:

$$Year_D = (netBV - RV) * \text{deprec.rate}, \text{ or } Year_D = (BV - accumD - RV) * \text{deprec.rate}.$$

Furthermore, the depreciation rate used in the decrease method is the tax depreciation rate (according to the corporate tax code of the country), multiplied by a coefficient. If the method decided by the tax administration is the double-declining balance method, then the rate of depreciation is twice that of straight-line depreciation, although for certain assets (e.g., those with a short period of depreciation of up to 4 years, the rate could be 1.5, whereas, for assets with a long period of depreciation of more than 7 or 8 years, the rate could be as much as 2.5).

The previous example of the straight-line method is now modified for the declining balance method: assume the coefficient is 2 for the 5-year depreciation

of the asset (in the previous example, the normal rate of depreciation is 20%). Then each year's depreciation will be as follows:

Year	BV	D_rate	Year depreciation	Accumulated depreciation	BV
t	10,000	$40\% = 20\% * 2$	4000	4000	6000
$t + 1$	6000	40%	2400	6400	3600
$t + 2$	3600	40%	1440	7840	2160
$t + 3$ (1)	2160	40%	864	8704	1296
$t + 4$	1296	-----	1296	10,000	0

(Note: if the RV is not zero, then the easiest way to calculate each year's depreciation using the decrease method is to subtract the RV from the initial BV in year t)

(1) It is typical in the declining balance method that assets without a residual value are never fully depreciated. That is to say, at the end of their useful life their book value is not zero. For this reason, it is possible to switch from the declining balance method to the straight-line method when the depreciation expense for the declining balance method becomes less than that of the straight-line method. However, the use of this method poses a problem in the final year, because if the firm continues to use a 40% depreciation rate (or any other depreciation rate) over the BV, it can never reach zero at the end of the depreciation period. Accordingly, for the last year (although in some countries this rule applies for the last two years), it is necessary to consider the remaining value and fully depreciate this value in the last year (or possibly in the last two years, in which case the BV of the penultimate year—in this example $t + 3$ —is equally divided by the remaining two years, which in this example would have a 1.080/year of depreciation in Years $t + 3$ and $t + 4$)

In some countries the decrease method can be used by always applying the *depreciation rate * coefficient*, while assuming the ending book value at the end of the depreciation period as the residual value, such as in the following example:

Year	BV	D_rate	Year depreciation	Accumulated depreciation	BV
t	50,000	$40\% = 20\% * 2$	20,000	20,000	30,000
$t + 1$	30,000	40%	12,000	32,000	18,000
$t + 2$	18,000	40%	7200	39,200	10,800
$t + 3$ (1)	10,800	40%	4320	44,880	5680
$t + 4$	5680	40%	2272	47,152	3408

When comparing both methods (straight-line and decrease), the total depreciation is obviously equal in the end (as is the BV-RV). However, when utilizing the decrease method, the first two years have much more depreciation (6400 vs 4000). As is seen in the next chapter (Chap. 8), with regard to tax planning, the choice between these methods can substantially impact the firm's tax savings, and thus increase the firm value and the shareholders' returns. In addition, by using the decrease method, the firm recovers the cost of its capital investment more quickly,

resulting in a higher NPV (and, therefore, a higher IRR) than when using the straight-line method. The straight-line depreciation method is more widely used when a firm expects to offset losses during an asset's early years and wishes to defer the depreciation deduction to offset large incomes in later years. Once again, this subject is analyzed in detail in Chap. 8.

Another method that is accepted by the IFRS (although not all Tax Administrations may accept it for tax purposes) is the "units of production" method, whereby the depreciation expenses are charged based on the output that assets could produce, deliver, or utilize. This method is usually applicable for assets such as machinery, whose usage can be quantified in terms of the number of hours that the machine run during a year and the output in terms of quantity of products compared to the total expected number of hours or units that the machinery could produce during its useful lifetime.

The IRS accepts another method of depreciation in the United States, namely the "modified accelerated cost recovery system" (MACRS), which is accepted for tax purposes, but not for accounting purposes. As a result, it is not recognized in the US GAAP (leading to book-tax differences, as discussed in Chap. 4). The MACRS method allows for the capitalized cost of an asset to be recovered over a specified period via annual deductions, attributing fixed assets with categories that have set depreciation periods. Compared with the straight-line method, this method enables a more accelerated depreciation over long periods, with larger deductions being permitted in the first years, and smaller ones in the last years. In the United States, the MACRS depreciation can be used for assets such as equipment, furniture, automobiles, and farm buildings, among others.

There are two types of MACRS systems: the general depreciation system (GDS), which uses the declining balance method for nine specific classes of assets; and the alternative depreciation system (ADS), which permits a lower value of year depreciation, albeit for a more prolonged period of depreciation for a more extensive set of assets.

Compared to the straight-line method described above, MACRS provides accelerated depreciation rates that increase deductions, lower taxable income, and reduce income tax during the early periods of an asset's life. However, MACRS is not accepted in the GAAP and therefore it cannot be used as a method for accounting depreciation, although it can be used for tax depreciation (there is a difference between accounting and tax depreciation, with the former being less than the latter). This means that the firm pays less corporate tax in the first years of the asset depreciation, however using MACRS gives rise to the firm accounting for deferred taxes (the difference between the total tax and the amount paid, resulting from the differences between accounting profit and tax profit). If the taxable profit is less than the accounting profit in year t , then it will be more than the accounting profit in the next year(s). Any taxes not paid when due (i.e., deferred taxes) must be paid in the future and are therefore accounted for as a liability of the firm.

Assets and useful life in years	
Description of assets	Useful life (years)
Tractors, racehorses, rent-to-own property, etc.	3
Automobiles, buses, trucks, computers, office machinery, breeding cattle, furniture, etc.	5
Office furniture, fixtures, agricultural machinery, railroad track, etc.	7
Vessels, tugs, agricultural structure, tree or vine bearing fruits or nuts, etc.	10
Municipal wastewater treatment plant, restaurant property, natural gas distribution line, land improvements, such as shrubbery, fences, sidewalks, etc.	15
Farm buildings, certain municipal sewers, etc.	20
Water utility property, certain municipal sewers, etc.	25
Any building or structure where 80% or more of its gross rental income is from dwelling units	27.5
An office building, store, or warehouse that is not a residential property or has a class life of fewer than 27.5 years	39

Source: IRS

The fourth, and final issue concerns accounting depreciation versus tax depreciations. In most cases, firms will use the tax depreciation rules (i.e., depreciation rate and the depreciation method) to calculate the accounting depreciation. Accordingly, there is no tax correction. Nevertheless, in most countries, firms are permitted to have a system of accounting depreciations that does not follow the tax depreciation rules (as seen above for the case of MACRS, for instance,), as long as the firm makes a tax adjustment when calculating corporate tax, as mentioned further above. The reason is that the primary purpose of accounting is to provide useful information regarding the firm's: decision-making, financial position, financial performance, and changes in its financial position. Therefore, accounting does not need to be constrained by tax rules, as long as the tax calculation follows such rules. That is why at the beginning of this chapter it is referred to that in calculating corporate tax, the firm moves from the accounting EBT to the Taxable EBT, with such a passage being based on transactions that cannot or should not be recorded following the tax rules. In addition, because financial reporting is often different from tax legislation, the depreciation method used by a firm for financial reporting is not necessarily the same as that which it uses for tax reporting (Claussv, 2010).

Example Suppose a firm is investing in IT, and needs to update its equipment every year by fully replacing it (assume that each equipment has a cost of 12 k). Let us also suppose that the Tax Administration's tax depreciation rule stipulates that such equipment is expected to have a 3-year life period (leading to a 33.33% depreciation rate), however, for the purpose of the business of this firm, the life-cycle of this equipment is just 1 year long. What should the firm do? Should it depreciate the equipment over 3 years, following the tax rule? If the firm decides to take this course of action, then the accounting information will be misleading, as the real cost for the firm is 12 k (as the equipment has to be substituted every year), rather than the 4 k

calculated for a 3-year depreciation. What the firm should therefore do is use accounting depreciation for the 12 k, and make a tax correction over the 3 years:

Year	Accounting depreciation	Tax depreciation	Tax correction
t	12,000	4000	+8000 (1)
$t + 1$	0	4000	−4000 (2)
$t + 2$	0	4000	−4000 (2)

(1) –Increase the corporate tax in year t ; (2) decreases the corporate tax in year $t + 1$ and $t + 2$

This solution regarding depreciation provides flexibility for the firm to account for its depreciation in accordance with the business cycle and subsequently pay corporate tax (over the entire period, without losing tax credits in the next years) according to the tax rule, rather than the accounting rule.

7.6 Grants (Subsidies)

Many firms receive subsidies, subventions, or premiums (which hereinafter are all referred to as “grants”) from governments (and in the EU also from the European Commission funds). Grants can be defined as transfers of resources from a public entity to a private entity in return for past or future compliance with certain conditions relating to the entity’s operating activities. The primary economic rationale for the provision of grants by governments is to create incentives for firms to make decisions, as otherwise, they might not be interested. The conditions are usually related to positive externalities such as: producing certain goods or services, reducing environmental impacts, increasing employment, and favoring Capex.

Grants can be divided into either reimbursable grants (i.e., the firm is obliged to reimburse in full the public entity, which means that the grant is solely a loan—usually with better conditions than loans that the firm could obtain in the financial markets or banks) or (more commonly), into non-reimbursable grants (i.e., the firm is not obliged to return such funds to the public entity that provided the grant in question).

Reimbursable grants are treated in financial accounts as loans. They have no impact on revenues when they are received, and they only impact costs if there are interest and fees associated with the reimbursement of the loan. The actual loan is considered to simply be a financial transaction with an impact on the balance sheet, but no impact on the P&L and therefore loans have no impact on corporate tax (except in cases incurring interest and fees).

If the grant is non-reimbursable, then the value of the grant has to be recognized as revenue in the firm’s P&L, according to IAS 20 (IFRS 2001)—Accounting for Government Grants and Disclosures of Government Assistance.⁷ Non-reimbursable

⁷This International Accounting Standard governs the accounting for and the disclosure of government grants and the disclosure of other forms of government assistance. The distinction between

grants are thus taxed by corporate tax. The primary economic rationale for accounting for grants as revenues is to assure tax neutrality.

Here is an example of a non-reimbursable grant: suppose Firms A and B both have an EBT of 10M and are subject to a corporate tax rate of 20%. Both firms will have to pay 2M of corporate tax and have a net income of 8M. Now, suppose that A receives a grant of 4M. If grants were not considered as revenues (and would thus be exempted from corporate tax), then firm A would still have a taxable EBT of 10M and would have to pay 2M of corporate tax, however, the net income would be 12M. This would represent a tax advantage for A in comparison to B, which would not be related to the grant itself (e.g., the grant was given to A because of non-tax decisions, such as for increasing production, job creation, or Capex). Accordingly, firm A has to consider the grant to be revenue (for the sake of the example, the full value in a single year is assumed) and therefore A now has an EBT of 14M, will have to pay 2.8 M of corporate tax, and will have a net income of 11.2M. The difference in the net income of A in comparison to B is now just 3.2 M (i.e., the 4M of grants minus the 800k of corporate tax due for the revenue received as a non-reimbursable grant).

Therefore, if a firm receives a grant, we can assume that:

$net\ grant = grant * (1 - t)$, t being the corporate tax rate of the firm.

How do firms account for grants in the revenue accounting heading? A government grant is only recognized when there is reasonable assurance that the entity will comply with all the conditions attached to the grant and that the grant will actually be received. Government grants are recognized in the P&L on a systematic basis over the periods in which the entity recognizes expenses for the related costs for which the grants are intended to compensate.⁸ In the case of grants related to assets, such a rule requires setting up the grant as deferred income or deducting it from the carrying value of the asset (IAS 20). It can therefore be stated that grants are recognized as revenues at the same pace (or at least with a proxy) that the firm adopts to recognize the costs associated with the action that provided the grant.

Grants are usually received in the form of monetary compensation, meaning that the value to recognize as revenue is the actual financial value of the grant. On the contrary, non-monetary grants, such as land or other resources, are usually accounted for at fair value, although recording both the asset and the grant at a nominal amount is also permitted.⁹

Grants can be categorized by three main purposes, namely: (a) production of a certain good or service, (b) job creation, and (c) Capex.

government grants and other forms of government assistance is important as the standard's requirements only apply to the former.

⁸The grant is recognized as income over the period in which the related costs occur and for which the grant is intended to compensate, on a systematic basis [IAS 20.12].

⁹When a government grant takes the form of a low-interest government loan, the loan should be recognized and measured in accordance with IFRS 9 (at its fair value) and the difference between this initial carrying value of the loan and the proceeds received is treated as a government grant.

If the grant is related to the production of a certain good or service by the firm, then the grant is recognized as revenue in the year(s) that is received. It is assumed that this also includes the year of the production of the good/service, and therefore the revenue is recognized in the same period as the cost of producing such a good or service (albeit in certain circumstances production can occur in year t , although the grant was only received in year $t + 1$ or $t + 2$, in which case a proxy is used). Furthermore, a grant received as compensation for costs already incurred or for immediate financial support, with no future related costs, should be recognized as income in the period in which it is received.

As an example, a firm receiving a grant of 1 M for the production of good X will recognize 1 M as revenue, and as such revenue will increase the firm's EBT, this means that the firm also has to pay corporate tax on the 1 M.

Accordingly, the accounting recognition of the grant at the moment that it is received is:

Account	Debit	Credit
Bank	1 M	
Revenues (Grant)		1 M

If the grant is related to job creation, then the most common situation is to recognize the grant as revenues during the period that the jobs created have to be maintained. Two examples are presented below:

1. Assume a job creation for year t and year $t + 1$ (starting on 1 January of year t and ending on 31 December of $t + 1$ – and the firm tax year is the civil year) with a grant of 100 k. In case, the firm would recognize 50 k as revenues in year t , and another 50 k in year $t + 1$.
2. Assume a job creation between 1 June of year t and 30 September of year $t + 2$, with a grant of 100 k. In this case, the total period to be considered is 28 months. The revenue to be recognized in year t is 25 k $[(7/28)*100 \text{ k}]$, in year $t + 1$ it is 42.9 k $[(12/28)*100 \text{ k}]$, and in year $t + 2$ it is 32.1 k $[(9/28)*100 \text{ k}]$.

In this case, the firm would recognize the following in its accounting in year t :

Account	Debit	Credit
Bank	100 k	
Revenues (Grant)		25 k
Deferred revenues (liability)		75 k

In year $t+1$:

Account	Debit	Credit
Deferred revenues	42.9	
Revenues (Grant)		42.9

In year $t + 2$:

Account	Debit	Credit
Deferred revenues	32.1	
Revenues (Grant)		32.1

And in year $t + 2$:

At the end of year $t + 2$, total revenues would have accounted for 100 k and the deferred revenues account in the balance sheet would now be zero.

Suppose that the grant is related to the firm's Capex (for an investment decision). In this case, it is considered to be a grant related to assets, which may be presented in one of two ways: as deferred income or by deducting the grant from the asset's carrying value. Those who consider that such a grant should be recognized as deferred income considering that grants (as they are not given by the shareholders) should not be recognized directly in the Equity (but only indirectly, through revenues, which thus increase profits), and that there should also be a recognition during the appropriated periods of revenues to counterbalance the costs associated with the decision that led the firm to obtain the grant. Furthermore, there is support for the argument that when firms pay taxes (or other government charges), they recognize this payment as an expense (a cost) in the P&L, and therefore, as grants are an extension of public policies, they should also be recognized in the P&L. Those arguing in favor of the approach of recognizing the grant as capital argue that grants are a financing instrument and that therefore they should be recognized in the balance sheet in the same way as any other form of financing, rather than in the P&L. It can also be argued that grants are solely a government incentive, and therefore they should not be considered as revenue as a regular activity of the firm.

This book takes no stand on this choice but rather explains how to account for grants in both ways.

Grants related to Capex are for investments made in non-current assets. Such assets can be subject to depreciation (as they have a finite and expected life period) or not (as they do not have a finite life period, e.g., land for construction, or because the life period is unknown, which sometimes occurs in the case of patents and R&D expenses).

If the asset is depreciable, then the grant will be recognized during the years of depreciation, as shown in this example:

Suppose a firm receives a grant of 1 M for an investment in the acquisition of equipment (with a cost of 4 M), which has a depreciation period of 5 years (at a 20% depreciation rate). In this case, the yearly revenue to be recognized is 200 k ($1 \text{ M} * 20\%$).

However, if the firm uses the deferred income approach, then it will recognize the following in year t concerning the grant:

Account	Debit	Credit
Bank	1 M	
Revenues (Grant)		200 k
Deferred revenues (liability)		800 k

Concerning the equipment, in year t :

Account	Debit	Credit
PPE	4 M	
Bank/other debtors		4 M

Next, in each of the following 4 years concerning the recognition of the revenue from the grant (note: The equipment will be depreciated in accordance with the rules described in Chap. 4 and further below in this chapter):

Account	Debit	Credit
Deferred revenues	200 k	
Revenues (Grant)		200 k

In year $t + 4$ (the fifth year), revenues will have been recognized as 1 M and the deferred revenues account is zero.

If the firm adopts deducting the grant from the asset's carrying value, then the grant is deducted from the gross value of the asset and the benefit is presented in the P&L as a reduction for depreciation.

The accounting recognition in year t when the equipment is recognized in the balance sheet of the firm is:

	Account	Debit	Credit
Equipment	PPE	4 M	
	Bank/other debtors		4 M
Grant	Bank	1 M	
	Deferred expenses		1 M

Then, on 31 December of year t (when recognizing the depreciations of the exercise) and on 31 December of each of the following 4 years (the tax cost of the depreciation is 600 k instead of 800 k):

	Account	Debit	Credit
Equipment	Depreciation	800 k	
	Accumulated depreciation		800 k
Grant	Reduced asset depreciation		200 k
	Deferred expenses	200 k	

In year $t + 4$ (the fifth year), revenues for the full 5 years will have been recognized as 1 M (through the reduction of the depreciations of a total of 4 M to just 3 M – with 1 M being the difference between the asset BV and the grant) and the deferred expenses account is zero.

If the asset has no depreciation period, then most countries adopted the rule that the revenue is recognized during the period that the asset cannot be sold, or if such a clause does not exist, countries normally have a specific period of years (10, 15, 20, etc.) for the recognition of the revenue. Grants related to non-depreciable assets are credited to a capital reserve.

If a grant becomes repayable, it should then be treated as a change in estimate. When the original grant is related to income, its repayment should be applied first against any related unamortized deferred credit, and any excess should then be considered to be an expense. When the original grant is related to an asset, the repayment should be treated as increasing the carrying value of the asset or reducing the deferred income balance. The cumulative depreciation that would have been charged if the grant had not been received should be charged as an expense [IAS 20.32].

Grants are sometimes received as part of a package of financial or fiscal aid to which a number of conditions are attached. In such cases, care is needed in identifying the conditions that give rise to costs and expenses that determine the periods over which the grant will be received. It may be appropriate to allocate part of a grant on one basis, and the other part on another basis.

IAS 20 requires entities to disclose the following information: the accounting policy adopted for government grants, including methods of presentation adopted in the financial statements; the nature and extent of government grants recognized in the financial statements and also an indication of other forms of government assistance from which the recipient has directly benefited; any unfulfilled conditions and other contingencies attached to government assistance that has been recognized.

7.7 Capital Gains

When a firm sells a non-current asset (and therefore such income is not directly related to the firm's core activity), it is necessary to calculate the capital gain(loss) of such a sale.

Here is an example:

Assume that in year t a firm acquired an equipment for 10,000 (ignore the VAT), with a 10-year life (10% depreciation rate), and an RV of zero.

In year t the firm will recognize the asset in the balance sheet as:

Account	Debit	Credit
PPE	10,000	
Bank/other debts		10,000

At the end of year t , it is necessary to recognize the yearly depreciation (assuming the straight-line method for simplicity):

Account	Debit	Credit
Accumulated depreciations	1000	
Year depreciations (cost)		1000

Let us now assume that the firm sold the equipment in year $t + 4$ (after 5 years). The first thing necessary is to derecognize the equipment in the balance sheet:

Account	Debit	Credit
PPE		10,000
Accumulated depreciations	4000	

Note: 4000 of accumulated depreciation has been incurred, as there were only 4 years of depreciation. The moment the firm sells the asset in year 5, that year's depreciations will not yet have been accounted for (it is only accounted for at 31 December, at the close of the financial year).

It can be noted that the BV of the equipment is 6000 (10,000 of the initial BV, minus the 4000 of accumulated depreciation).

If the firm sells the asset for more than 6000 (assume 7000), then there is a capital gain of 1000, recognized as:

Account	Debit	Credit
PPE		10,000
Accumulated depreciations	4000	
Bank/other credits	7000	
Capital gain (income)		1000

If the firm sells the asset for less than 6000 (assume 5500), then it has a capital loss of 500, recognized as:

Account	Debit	Credit
PPE		10,000
Accumulated depreciations	4000	
Bank/other credits	5500	
Capital loss (cost)	500	

This means that the accounting capital gain or loss is calculated as:

$Cap_G/L = Sp - (BV - Acum_D)$, where Sp is the selling price of the non-current asset.

The accounting capital gain/loss is recognized at the moment of the transaction, however, in most countries, firms are also obliged to calculate the taxable capital gain/losses as of 31 December (or the last day of the tax period). This exercise is usually based on the accounting gain/loss, but with the $(BV - Acum_D)$ being capitalized by a coefficient that represents the monetary devaluation of the asset

according to the number of years since the asset's acquisition (an inflation adjustment by using a specific inflation index). Furthermore, in the case of the taxable capital gain/loss, the accumulated depreciation is solely the tax accepted, whereas in the cases of the accounting capital gain/loss the accumulated depreciation is recognized in the balance sheet.

However, some countries may apply specific corporate tax rates (higher or lower) for this type of firm's income. Also, the tax treatment of capital losses varies from country to country (with some countries allowing for a full tax deduction of capital losses, others for a partial tax deduction, and others for no deduction).

In addition, there could also be a need to account for benefits for reinvestment or different taxation for Capital Gains and Losses.

7.8 Tax Losses Carryforward

Another important issue regarding corporate tax is the tax losses carryforward. This is the possibility for a firm to use one-year losses to reduce the amount of the tax due in the following years.

To start with, here is a simple example, before entering into further details on this subject:

In year $t - 1$, a firm had losses of 35 M and in year t it had a tax profit of 40 M. If there are no limits to the deduction of previous years' losses, then the firm will be able to deduct a total of the 35 M. This means that the taxable profit will be 5 M. Assume that the corporate tax rate is 20%. Instead of paying 8 M on corporate tax ($40 \text{ M} * 20\%$), the firm will only pay 1 M ($5 \text{ M} * 20\%$), with the 7 M of tax savings being represented by the $35 \text{ M} * 20\%$.

Now, what if there is a limit, and the firm can only deduct losses up to a limit of 60% of the year's profits? In this case, the firm will only be able to deduct 24 M of the 35 M of losses ($40 \text{ M profits} * 60\%$). This means that the taxable profit will be 16 M, with the firm paying 3.2 M of corporate tax ($16 \text{ M} * 20\%$). The 4.8 M of tax savings (instead of paying 8 M on corporate tax the firm will pay only 3.2 M comes from the tax savings of the tax losses carry forward: $24 \text{ M} * 20\%$). The remaining unused losses (11 M) will be carried forward to the next year(s).

In most countries, such a carryforward has a time limit (of 5, 10, 15, etc. years), however, some countries have adopted a no time limit (e.g., Germany), and some countries also allow for a carry-back. This means that losses from year t can be deducted from profits of years $t - 1$, $t - 2$, and further back in time, according to the time limit of each country. Naturally, this implies that in year $t + 1$ (when the firm is calculating its EBT and the corporate tax of year t) the firm has to submit a new corporate tax declaration for year $t - 1$ / year $t - 2$ / ... (taking the opportunity to use the loss of year t in the previous year(s) and thus be reimbursed the tax paid before).

Furthermore, several countries impose a limit of a percentage of profits on the use of losses (e.g., if the firm can only use losses up to a limit of 60% of profits, then in year t it will have 1000 of losses, and in year $t + 1$ it will have 400 of profit, despite

having more losses to report than the profits of *year t + 1*. Accordingly, the firm will only be able to use 240 ($400 * 60\%$) and will have to pay corporate tax in *year t + 1* on an EBT of 160).

Here is another example, this time for tax losses: assume that there is a 2-year limit and a 50% limit on profits, with a corporate tax rate of 20%.

Year	Profit/ Loss	Carryforward	EBT	C. Tax	C. Tax with no carryforward
<i>t</i>	(300)	----- (Accumulated losses: 300)	(300)	0	0
<i>t + 1</i>	50	25 from year <i>t</i> (Accumulated losses: 275)	25	5	10
<i>t + 2</i>	80	40 from year <i>t</i> (50% of 80) (Accumulated losses: 0) (The 235 left from year <i>t</i> can no longer be used, due to the 2-year limit)	40	8	16
<i>t + 3</i>	(40)	----- (Accumulated losses: 40)	(40)	0	0
<i>t + 4</i>	(100)	----- (Accumulated losses: 140)	(100)	0	0
<i>t + 5</i>	300	140 (40 from year <i>t + 3</i> , and 100 from year <i>t + 4</i>) (As it is below the 150 limit: $300 * 50\%$) (Accumulated losses: 0)	160	32	60
<i>t + 6</i>	200	-----	200	40	40

In this example, it can be seen that the time limit is accounted for after the yearly loss (i.e., losses from *year t* can be used for 2 further years: *year t + 1* and *t + 2*). Additionally, firms can use one year's loss in several years of profits, just as occurs in the cases of the losses from *year t* (as long as they respect the time and profit limits), although they can also use several years of losses in a year of profit, as occurs in the cases of *year t + 5*. Using the carryforward enabled the firm to reduce the corporate tax in *year t + 1* (−5), as well as in *year t + 2* (−8) and *year t + 5* (−28). Over a 7-year period, the firm ended up paying just 85 in corporate taxes, instead of the 126 that it would have paid if there were no tax loss carryforward. The subject of carry-on is discussed in more detail in the next chapter (Chap. 8), as tax planning has to consider not only this effect, but also the implication of the carryforward limits for the depreciation policy.

Tax losses limits (2021)

Country	Loss carryback (number of years)	Loss carryforward (number of years)
Austria (AT)	0	No limit, capped at 75% of taxable income
Belgium (BE)	0	No limit, capped at 70% of taxable income exceeding EUR one million
Czech Republic (CZ)	2, Limited to CZK 30 million	5

(continued)

Country	Loss carryback (number of years)	Loss carryforward (number of years)
Denmark (DK)	0	No limit, capped at 60% of taxable income exceeding DKK 8,767,500 for 2021
Estonia (EE)	No limit (cash flow tax)	No limit (cash flow tax)
Finland (FI)	0	10
France (FR)	1, Limited to EUR one million	No limit, capped at 50% of taxable income exceeding EUR 1 million
Germany (DE)	1, Limited to EUR ten million	No limit, capped at 60% of taxable income exceeding EUR 1 million
Greece (GR)	0	5
Hungary (HU)	0	5, capped at 50% of taxable income
Iceland (IS)	0	10
Ireland (IE)	1	No limit
Italy (IT)	0	No limit, capped at 80% of taxable income
Latvia (LV)	No limit (cash flow tax)	No limit (cash flow tax)
Lithuania (LT)	0	No limit, capped at 70% of taxable income
Luxembourg (LU)	0	17
Netherlands (NL)	1	6
Norway (NO)	0	No limit
Poland (PL)	0	5, capped at 50% of total loss per year
Portugal (PT)	0	12, capped at 80% of taxable income
Slovak Republic (SK)	0	5, capped at 50% of taxable income
Slovenia (SI)	0	No limit, capped at 63% of taxable income
Spain (ES)	0	No limit, capped at 70% of taxable income exceeding EUR 1 million (additional revenue-based restrictions apply)
Sweden (SE)	1.5 (tax allocation reserve)	No limit
Switzerland (CH)	0	7
Turkey (TR)	0	5
United Kingdom (GB)	1	No limit, capped at 50% of taxable income exceeding GBP 5 million

Source: The Tax Foundation

7.9 Loan Interest Deduction and Limits

As has been seen in Chap. 5 (and which is discussed in greater detail in Chap. 8), debt has a tax advantage in relation to equity, as interest is tax deductible, whereas dividends usually are not. Nevertheless, since the 2008 financial crisis, in order to incentive firms to have more equity (disincentive debt), most countries have adopted a limit for interest tax deductions.

Such limits can just be applied in a variety of ways: to the nominal value of interest; to interest costs between related parties; as a percentage of profits incurred between related parties (see Chap. 11 on transfer prices) (e.g., Belgium Slovenia, France, and the United States); to all financial debts, such as a limit on interest costs as a percentage of debt ratio (e.g., Hungary, the Czech Republic, and Romania); to interest costs as a percentage of assets (e.g., Denmark); and finally to interest costs as a percentage of EBITDA (Germany, Spain, Portugal, Greece, Italy, and Poland). Such limits usually allow for the part of interest costs that are not tax deductible in year t to be carried forward for a specific number of years.

7.10 Corporate Tax Rates

Usually, corporate tax rate is a single proportional rate, although some countries also have surcharges, which increase the nominal tax rate and create some “progressivity.” For instance, in Portugal, besides the 21% corporate tax rate, there is also a surcharge of 3% for EBT between 1.5 and 7.5 M, 5% between 7.5 M, and 35 M and 9% above that limit. This means that a firm with an EBT of 50 M pays 13.4 M of corporate tax ($21\% \cdot 50 \text{ M} + 6 \text{ M} \cdot 3\% + 27.5 \text{ M} \cdot 5\% + 15 \text{ M} \cdot 9\%$). In the United States, the corporate tax rate for 2022 is 21%, with individual State surcharges ranging from 1% to 12% (although some states impose no additional taxes) which are considered to be deductible expenses for federal corporate tax purposes. In France, the corporate tax rate for 2022 is 28%, plus a social contribution of 3.3% which is assessed on the amount of the rate. For corporations with revenue in excess of €250 million, a 31% rate is applicable to taxable results in excess of 500 k. In India, corporate tax rates are more complex: domestic companies pay a 25% rate if turnover/gross receipts do not exceed INR 4 billion for the financial year of 2019–2020 (with a surcharge ranging from 7% to 12% of tax, depending on total income); a lower tax rate of 22%/15% is also applicable for corporate entities, subject to certain conditions (with an applicable surcharge of 10% of tax); a higher rate of 30% (with a surcharge ranging from 7% to 12% of tax, depending on total income) for other companies; and a 40% rate for foreign companies (with an applicable surcharge ranging from 2% to 5% of tax).

As discussed in Chap. 5, the marginal tax rate is normally the relevant tax rate for financial decision-making. The reason is that any new cash flow is taxed at the marginal rate and because financial decisions usually involve new cash flows or changes to existing ones, this rate enables the calculation of the marginal effect of a decision for the firm’s tax bill.

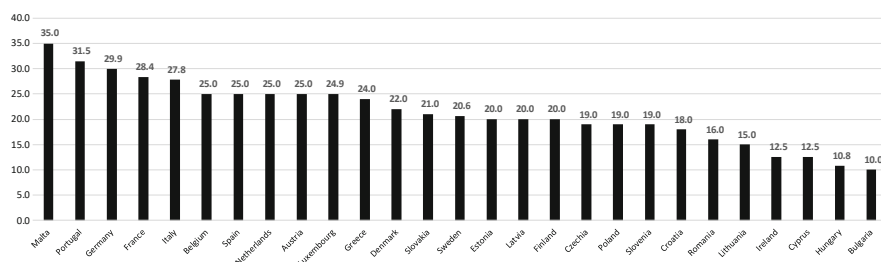


Fig. 7.4 Nominal/statutory corporate tax rates (2021). Source: Taxation trends data (note: includes nominal and all surcharges)

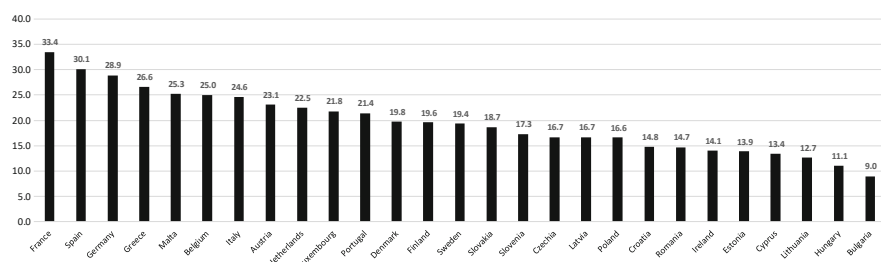


Fig. 7.5 Effective corporate tax rates (2019). Source: Taxation trends data (note: last year available)

There is therefore a need to make an important distinction regarding corporate tax: between nominal (legal/statutory) tax and effective tax, as explained in this example:

Suppose a firm has an accounting EBT of 50M. The same firm has 4M of tax corrections (which thus increases EBT), resulting in corporate tax base of 54M. Suppose that the firm is subject to a tax rate of 20%, but is also liable to a surcharge of 4% on profits above 20M. This means that the firm in question will pay 12.16M of taxes, based on the following: a legal tax rate of 20% (plus the 4% surcharge), an effective tax rate of 24.3% (the 12.16 of taxes divided by the accounting EBT of 50), with the firm's marginal tax rate being 24% (as any additional profit above the current profit is liable to pay 24%—i.e., 20% of nominal tax plus the 4% surcharge).

Over the last decades, there has been a worldwide “race to the bottom,” with countries reducing their corporate tax rates substantially (Auerbach, 2010; Kawano & Slemrod, 2016). At the European level, it can be seen that a wide disparity exists between the nominal/statutory corporate tax rates among the 27 Member States, ranging from 35% in Malta and 31.5% in Portugal to 12.5% in Ireland and even less in Hungary (10.8%) and Bulgaria (10%) (see Fig. 7.4). Nevertheless, in practice the effective taxes in the countries are substantially lower, ranging from 33.4% in France to 9% in Bulgaria (see Fig. 7.5). However, when comparing the effective rates of 2019 with the statutory rates of that same year (Fig. 7.6), what is more interesting is

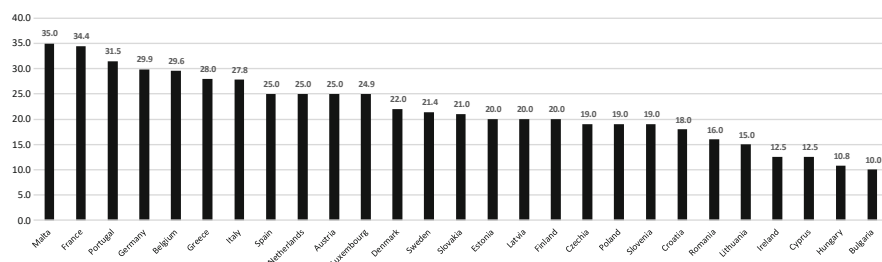


Fig. 7.6 Nominal/statutory corporate tax rates (2019). Source: Taxation trends data (note: includes nominal and all surcharges)

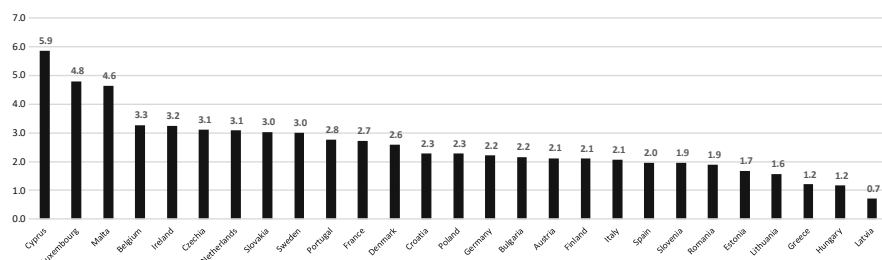


Fig. 7.7 Corporate tax revenues (%GDP) (2020). Source: Taxation trends data (note: last year available)

the scale of the difference between the statutory and effective tax rates in most countries. For instance, in 2019 Malta had a statutory rate of 35%, but an effective rate of just 25%, while Portugal had a statutory rate of 31.5% and an effective rate of 24%. Smaller differences are to be found in the cases of France (34.4% versus 33.4%) or Germany (30% versus 29%). The conclusion is thus that the ratio of corporate tax revenues as a percentage of GDP varies substantially among EU members (Fig. 7.7).

7.11 Corporate Tax Declarations and Payments

Corporate tax declarations need to be submitted a few months after the end of the tax period (which can be different from the civil year—see the section on the Tax period and Tax season in Chap. 2). Each country's tax code establishes the number of months after the end of the tax year of the deadline for the submission of corporate tax declarations, examples being: Croatia and Finland—4 months, Portugal, Netherlands, and Hungary—5 months, Denmark, Lithuania, Spain, and Greece—6 months, Belgium—7 months, Ireland—9 months, and Italy—11 months. The deadline in the case of the United States is by the fifteenth day of the twelfth month of the tax year.

Firms may also be obliged to make corporate tax payments during the tax year (some of which are obligatory), usually on a monthly or a quarterly basis (usually called taxes withheld or estimated tax payments). Such payments are usually calculated on the previous year's $(t - 1)$ (sometimes on $t - 2$) revenues or corporate tax. As described above, these payments are taken into consideration when calculating the firm's corporation tax liability and for knowing how much tax to pay—or even receive. If a firm has a corporate tax liability of 100 k and had made tax prepayments of 80 k, it is only due to pay 20 k on the corporate tax declaration. If tax prepayments were 110 k, then with the corporate tax declaration there is a refund of 10 k.

7.12 Exercises and Solutions

1. Calculate the tax depreciation of the following assets:

Asset	Acquisition value	Residual value	Depreciation rate
A	200 k	0	20%
B	800 k	100 k	5%
C	100 k	20 k	10%

2. Calculate the following data on the depreciation of these assets (using the straight-line method for the year 2018):

Asset	Acquisition year	Acquisition value	Residual value	Depreciation rate	Yearly depreciation	Accumulated depreciation (1)
A	2015		0	25%	5000	20,000
B	2005	10,000		7.14%	571.2	
C		15,000	3000	6.66%	799.2	8791.2
D	2016	3000	0	33.33%		
E	2016	5000		25%	1250	3750
F	2008	20,000		12.5%	2375	26,125
G	2006		0	6.66%	667	8658
H	2001	500,000		5%	21,000	378,000
I	2001		0	5%	2500	45,000
J	2003		5000	5%	1250	
K	2012	2000	0	12.5%		1750

- (1) The accumulated depreciation includes the depreciation from 2018

3. At the end of year t , a firm records the following information on its balance sheet:

Asset	Acquisition year	Acquisition value	Residual value	Depreciation rate
A	$t - 3$	50,000	0	20%
B	$t - 5$	200,000	40,000	5%
C	$t - 1$	40,000	10,000	33.33%
D	t	20,000	0	25%

- (a) Calculate the depreciation for each asset
- (b) Calculate the accumulated depreciation before year t
- (c) Calculate the accumulated depreciations after year t
4. For each year, calculate the depreciation of an asset with an acquisition value of 50 k, a residual value of 4 k, and a depreciation rate of 16.66%, using the decrease method (assume a coefficient of 2 and the straight-line method for the last two years).
5. Suppose a firm receives a grant of 50 k for job creation with an 18 months duration, starting at 1/3/year t and ending at 31/8/year $t + 1$. How much of the grant should the firm account as revenues for tax purposes?
6. Suppose a firm receives a grant for a reduction of the price of an agriculture product that the firm produced 100 k of in year t . How is this revenue recognized for tax purposes? How would this revenue be recognized if the grant was approved in year t , but only paid in year $t + 1$?
7. A firm invests 1 M and receives a grant for such an investment of 200 k. The investment depreciation rate is 20%. How should the grant be recognized?
8. Firm X decided to install a new plant in country Z, with a Capex of 10 M, divided into 2 M for acquiring the land and 8 M for buying the plant's building and equipment. The government provided a grant of 2 M, divided into 400 k for the land and 1.6 M for the plant. How should this revenue be recognized? (Assume a 10-year rule and that the depreciation of the plant is over 25 years.)
9. Calculate the accounting and tax gain/loss of selling an asset with the following information:
Selling price: 20 k in 2017; acquisition price: 100 K in 2013; depreciation rate of 10%; accounting accumulated depreciation is 50 k; and the tax coefficient is 1.3.
10. Calculate the accounting and tax gain/loss of selling an asset with the following information:
Selling price: 40 k in 2017; acquisition price: 80 K in 2011; depreciation rate of 20%; accounting accumulated depreciation is 80 k; and the tax coefficient is 1.4.
11. For each year calculate the tax losses carryforward (first assume that there are no year and profit limits and then assume a 3-year limit, with a 60% profit limit):

Year	Profit/losses (k)	Tax losses carryforward	Taxable EBT
t	(100)		
$t + 1$	(20)		
$t + 2$	(40)		
$t + 3$	30		
$t + 4$	40		
$t + 5$	100		
$t + 6$	150		

12. For each year calculate the tax losses carryforward (first assume that there are no year and profit limits and then assume a 5-year limit, with a 75% profit limit):

Year	Profit/losses (k)	Tax losses carryforward	Taxable EBT
t	(200)		
$t + 1$	(120)		
$t + 2$	30		
$t + 3$	(50)		
$t + 4$	20		
$t + 5$	20		
$t + 6$	(30)		
$t + 7$	60		
$t + 8$	80		
$t + 9$	50		
$t + 10$	35		
$t + 11$	90		

13. A firm has a tax profit of 40 M. If the country's corporate tax rate is 25%, how much corporate tax would the firm pay? How much corporate tax would the firm pay if the country also has a surcharge of 3% on profits from 4 M to 10 M and 5% on profits over 10 M?

Solutions:

1. Tax depreciation.

A: $(200 \text{ k} * 20\%) = 40 \text{ k}$;

B: $[(800 \text{ k} - 100 \text{ k})] = 35 \text{ k}$.

C: $[(100 \text{ k} - 20 \text{ k})] = 8 \text{ k}$.

- 2.

Asset	Acquisition year	Acquisition value	Residual value	Depreciation rate	Year depreciation	Accumulated depreciation
A	2015	20,000	0	25%	5000	20,000
B	2005	10,000	2000	7.14%	571.2	7996.8
C	2008	15,000	3000	6.66%	799.2	8791.2
D	2016	3000	0	33.33%	1000	3000
E	2016	5000	0	25%	1250	3750
F	2008	20,000	1000	12.5%	2375	26,125
G	2006	10,000	0	6.66%	667	8658
H	2001	500,000	80,000	5%	21,000	378,000
I	2001	50,000	0	5%	2500	45,000
J	2003	30,000	5000	5%	1250	20,000
K	2012	2000	0	12.5%	250	1750

3. (a) The yearly depreciation of asset A is 10 k [$50 \text{ k} * 20\% = 10 \text{ k}$]; asset B, 8 k [$(200 \text{ k} - 40 \text{ k}) * 5\%$]; asset C, 10 k [$(40 \text{ k} - 10) * 33.33\% = 10 \text{ k}$]; asset D, 5 k [$20 \text{ k} * 25\%$]. Total year depreciation is 33 k.
- (b) Accumulated depreciation before year t is 80 k – asset A has an accumulated depreciation of 30 k [$10 \text{ k} * 3\text{y}$]; asset B has an accumulated depreciation of

40 k [8 k*5y]; asset C has an accumulated depreciation of 10 k [10 k*1y]; and asset D did not exist in the firm's balance sheet before year t .

- (c) Accumulated depreciation after year t is 113 k – asset A has an accumulated depreciation of 40 k [10 k*4y]; asset B has an accumulated depreciation of 48 k [8 k*6y]; asset C has an accumulated depreciation of 20 k [10 k*2y]; and asset D has an accumulated depreciation of 5 k [5 k*1y]. Another way of calculating the accumulated depreciation after year t is to sum the accumulated depreciation before year t with the depreciation for year t (80 k + 33 k = 113 k).

4. If the coefficient is 2, then for the first 4 years of the total 6 years of depreciation (year t up until year $t + 3$) a depreciation rate of 33.33% (16.666%*2) is used. The straight-line method is used for the last two years ($t + 4$ and $t + 5$), dividing the book value of $t + 4$ by the remaining 2 years, as follows:

Year	BV	Yearly depreciation	Accumulated depreciation	BV
t	46,000	15,331.8	15,331.8	30,668.2
$t + 1$	30,668.2	10,221.71	25,553.51	20,446.49
$t + 2$	20,446.49	6814.82	32,368.33	13,631.67
$t + 3$	13,631.67	4543.43	36,911.76	9088.24
$t + 4$	9088.24	4544.12	41,455.88	4544.12
$t + 5$	4544.12	4544.12	46,000	0

5. The firm should recognize the grant as revenues for 10 months of the 18 months in year t [(10/18) *50 k = 27.8], and 8 months in year $t + 1$ [(8/12) *50 k = 22.2 k].
6. The grant should be recognized as revenue in year t . If the payment is only made in year $t + 1$, then the revenue should be recognized in that year.
7. The grant should be recognized as revenue according to the depreciation period (i.e., 20% = 5 years). Therefore, for each year (from year t to $t + 4$) the firm should recognize 40 k as revenue.
8. The 400 k for the land is a grant for a non-depreciated asset, and therefore as the country uses a 10-year rule, the firm should recognize 40 k in each year (from year t to $t + 9$). The 1.6 M for the plant has a depreciation for 25 years, resulting in a yearly revenue of 64 k (from year t to $t + 24$). Accordingly, the firm has a revenue of 104 k from year t to year $t + 9$ and from year $t + 10$ to year $t + 24$ it has a revenue of 64 k.
9. Accounting gain/loss: $20\text{ k} - (100\text{ k} - 50\text{ k}) = -30\text{ k}$ (an accounting loss)
Tax gain/loss: $20\text{ k} - (100\text{ k} - 100\text{ k} * 10\% * 4) * 1.3 = -58\text{ k}$ (a tax loss)
10. Accounting gain/loss: $40\text{ k} - (80\text{ k} - 80\text{ k}) = 40\text{ k}$ (an accounting gain)
Tax gain/loss: $40\text{ k} - (80\text{ k} - 80\text{ k} * 20\% * 5) * 1.4 = 40\text{ k}$ (a tax gain)
11. No limits.

Year	Profit/losses (k)	Tax losses carryforward	Taxable EBT
t	(100)	-----	(100)
$t + 1$	(20)	-----	(20)
$t + 2$	(40)	-----	(40)
$t + 3$	30	30 (year t)	0
$t + 4$	40	40 (year t)	0
$t + 5$	100	30 (year t); 20 (year $t + 1$); 40 (year $t + 2$)	10
$t + 6$	150	-----	150

With limits (3 years and 60% of profits):

Year	Profit/losses (k)	Tax losses carryforward	Taxable EBT
t	(100)	-----	(100)
$t + 1$	(20)	-----	(20)
$t + 2$	(40)	-----	(40)
$t + 3$	30	18 (60% of 30 k) (year t) (year t losses can no longer be used: a 3-year limit has passed)	12
$t + 4$	40	24 (60%*40) (year $t + 1$: 20 and year $t + 2$: 4)	16
$t + 5$	100	36 (year $t + 2$) – The limit of 60% is not applied in this year (as 36 is below the limit of 60)	64
$t + 6$	150	-----	150

12. No year and profit limits:

Year	Profit/Losses (k)	Tax losses carryforward	Taxable EBT
t	(200)	-----	(200)
$t + 1$	(120)	----- Accumulated losses: 320	(120)
$t + 2$	30	30 (year t) Accumulated losses: 290	0
$t + 3$	(50)	----- Accumulated losses:340	(50)
$t + 4$	20	20 (year t) Accumulated losses: 320	0
$t + 5$	20	20 (year t) Accumulated losses: 300	0
$t + 6$	(30)	----- Accumulated losses: 330	(30)
$t + 7$	60	60 (year t) Accumulated losses: 270	0
$t + 8$	80	70 (year t) and 10 (year $t + 1$) Accumulated losses: 190	0
$t + 9$	50	50 (year $t + 1$) Accumulated losses: 140	0
$t + 10$	35	35 (year $t + 1$) Accumulated losses: 105	0
$t + 11$	90	25 (year $t + 1$), 50 (year $t + 3$), 15 (year $t + 6$) Accumulated losses:15	0

5 year and 75% profit limits:

Year	Profit/ losses (k)	Tax losses carryforward	Taxable EBT
t	(200)	-----	(200)
$t + 1$	(120)	----- Accumulated losses: 320	(120)
$t + 2$	30	21 (year t) Accumulated losses: 299	9
$t + 3$	(50)	----- Accumulated losses: 349	(50)
$t + 4$	20	14 (70% of 20) (year t) Accumulated losses: 335	6
$t + 5$	20	14 (70% of 20) (year t) Accumulated losses: 170 (i.e., 120 from $t + 1$ and 50 from $t + 3$; the remaining unused losses of 151 from year t are no longer deductible, as the 5-year limit has already passed)	6
$t + 6$	(30)	----- Accumulated losses: 80 (50 from $t + 3$ and 30 from $t + 6$; 120 of losses from $t + 1$ are no longer deductible, as the 5-year limit has passed)	(30)
$t + 7$	60	42 (70% of 60) (year $t + 3$) Accumulated losses: 38	18
$t + 8$	80	38 (which is the remaining accumulated losses, with 8 from year $t + 3$, and 30 from year $t + 6$) (in this case the limit does not apply – The limit of 70% of 80 is 56, which is below the losses still to use)	42
$t + 9$	50	-----	50
$t + 10$	35	-----	35
$t + 11$	90	-----	90

13. In the first case, the firm has to pay 10 M (calculated as $40 \text{ M} \times 25\%$). In the second case, the firm has to pay 11.68 M (calculated as $40 \text{ M} \times 25\%$ plus the surcharge: $6 \text{ M} \times 3\% + 30 \text{ M} \times 5\%$).

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8.1 The Concept of Tax Planning and Management

Tax planning (which is different from tax management, as will be seen) is the process of evaluating the tax consequences associated with a business or a transaction and making recommendations designed to achieve the desired objective at minimal tax cost. Hoffman (1961, p. 274) defines tax planning as “*the taxpayer’s capacity to arrange his financial activities in such a manner as to suffer a minimum expenditure for taxes.*” Additionally, Pniowsky (2010, p. 1) defines tax planning as “*the process of structuring one’s affairs in order to defer, reduce or even eliminate the amount of taxes payable to the government.*” Tax planning is about choosing the best decisions, within legal guidelines, for reducing the tax burden (Mgammal & Ku Ismail, 2015). As mentioned by Garbarino (2011) and Mgammal and Ku Ismail (2015), similar to any other operational cost, tax liabilities can be decreased, and consequently, managers should also focus on the efficiency of reducing the firm’s tax burden. If carried out legally, with diligence and compliance, and if it is faithfully executed, is in the best interest of the firm and its shareholders to minimize the tax burden (Keinan, 2003).

Tax management is a different concept from tax planning (although both are strongly related). For tax management is simply the organization of the way the firm operates in compliance with the tax law and the firm’s tax obligations. Firms can practice good tax management (whereby they must respect the law) but have no tax planning (as they can make their business decisions without assessing the tax impact and ascertaining how to minimize such an impact within the boundary of their decisions and the tax law). However, no firm can practice tax planning without tax management. Singhania and Singhania (2019) summarize the main differences in concepts:

Tax planning	Tax management
<ol style="list-style-type: none"> 1. The objective of tax planning is to reduce tax liability to the minimum. 2. Tax planning is futuristic in its approach. 3. Tax planning is very wide in its coverage and includes tax management. 4. The benefits arising from tax planning are substantial, especially in the long run. 	<ol style="list-style-type: none"> 1. The objective of tax management is to comply with the provisions of the law. 2. Tax management relates to the past (assessment proceedings, rectification, revision, appeals, etc.), the present (filling in the income tax return form on time, based on updated records), and the future (corrective action). 3. Tax management has a limited scope, i.e., it concerns specific activities, such as filling income returns on time, drafting appeals, the timely deduction of tax at source, and updating records from time to time. 4. As a result of effective tax management, a firm can avoid paying penalties, penal interest, prosecution, etc.

Source: Singhania and Singhania (2019)

However, tax planning should be aligned with the firm's overall strategy. Firms should not engage in operations that minimize their tax obligation that deviate from the firm's overall strategy (Karayan et al., 2002). In other words, management decisions should not be solely made for tax purposes. Firms also need to analyze the pre-tax conditions and economic rational of each operation, for as taxes vary across different activities, firms/individuals, and also over time, there is a strong incentive to practice tax planning (Graham et al., 2014).

In tax planning, it is necessary to consider all the implications for all the parties involved in the transaction and also to consider all the taxes in the tax system that the transaction will impact (not only explicit taxes, i.e., those taxes paid directly, but also the implicit taxes, i.e., taxes that are paid indirectly in the form of lower before-tax rates of return on tax-favored investments) (Scholes et al., 2014). In addition, strategies to reduce the tax burden often imply other costs and a certain level of risk (not just related to tax liabilities and potential conflict and litigation with the Tax Administration, but also an operational risk, arising from changing operations and methods in order to reduce tax liabilities) (Hong & Smart, 2010).

Tax planning and tax management are relevant, as both can assist management in attaining the firm's objectives and they also provide support to assessing the impacts and risks of transactions (both domestic and international). Nevertheless, the main benefit of tax planning and tax management is bringing about a reduction in the overall tax burden of the firm and also avoiding issues of double taxation (see Chap. 10). Efficient tax planning and tax management should also create a flexible structure that enables the firm to respond efficiently to changes in the tax law and to correctly weigh up the tax risks (Minnick & Noga, 2010).

Effective tax planning generally requires extensive tax research (Dennis-Escoffier & Fortin, 2016). The term tax research is used in parallel with tax planning and is divided into two major categories: (1) closed-fact transactions (which have already occurred and the challenge is to find support for such actions in the light of a possible

decision or litigation by the Tax Administration to negate decisions made and increase the tax firm's liability instead) and (2) open-fact transactions (when the operation has not yet occurred, and therefore its execution can be planned in such a way as to not only reduce the tax liability, but also the risk of future litigation by the Tax Administration—which is truly tax planning).

According to Scholes et al. (2014), decisions on income tax planning (personal or corporate) are mainly focussed on three strategies: (1) converting income from one type/category to another which potentially is subject to lower taxation; (2) transferring income from one entity (firm/individual) to another entity, which could benefit from lower taxation (e.g., lower tax rates and tax credits/benefits/incentives); (3) shifting income from one period to another, thus deferring the payment of taxes (i.e., paying taxes later on), which reduces the PV of the tax cost. Strategies (1) and (2) can both also be described as tax arbitrage.

Furthermore, international tax planning is also related to transfers of revenues and costs by geographical areas (Beer et al., 2020). This is related to transfer prices (see Chap. 11), but also to creating subsidiaries in countries with lower effective tax rates (Dharmapala, 2014), reorganizing multinational business groups (Barrios et al., 2009), and using tax heavens, among other techniques.

The decision process making in tax planning needs to follow these steps: first, determine the risk profile of the firm; second, for each transaction and each tax solution, consider what could be the potential legal impediments and restraints (especially with regard to the anti-avoidance measures of the country in question); and third, each tax planning operation should analyze and determine the following: the objectives of the operation, the taxes subject to the operation, how the tax planning should be implemented, the costs and the tax savings, the risk level (and how the risk level is in line with the risk profile of the firm), a cost-benefit analyze, the time horizon for the operation, and also the timeline for the execution of the operation (Scholes et al., 2014). The purpose of tax risk management within a firm's overall business strategy is to avoid unnecessary tax costs, while at the same time ensuring sound compliance with legislative requirements.

However, tax planning and management are always strongly constrained by anti-avoidance measures at national or international level (Atkinson, 2012). These are legal dispositions designed to prevent base erosion and profit shifting and to reduce the legal scope of tax planning. Some countries have a general anti-avoidance rule, which allows the tax authorities to ignore or restructure a transaction that cannot be justified economically. For instance, most countries have “treaty shopping” clauses to limit attempts by taxpayers (individual or firm) to indirectly access the benefits of a tax treaty between two jurisdictions without being a resident in either one of those jurisdictions. The OECD refers that a wide number of arrangements exist through which a person who is not a resident of a jurisdiction that is a party to a tax agreement may attempt to use to obtain benefits that a tax agreement grants to residents of that jurisdiction. For example, a firm based in a “tax haven” that receives dividends from a US firm is subject to the United States withholding tax, however, the firm in question can create a new firm in a country with which the United States has a Double Taxation Agreement (see Chap. 10) and then transfer the stocks of the US

firm to the new firm and thus avoid taxation by the US Tax Authority (or at least reduce the level of tax to the level contemplated in the DTA). In the absence of anti-treaty shopping rules, such dividends would qualify for benefits under the DTA. Indeed, some countries, such as the United States, generally include specific rules that limit the benefits in certain circumstances of their tax treaties with other countries. These rules are typically called “limitation on benefits” or “LOB” provisions. Other countries generally rely on domestic law anti-treaty shopping provisions, rather than include the rules in the treaty itself.

Another typical anti-avoidance rule is the “controlled foreign corporation” (CFC) rules,¹ which tax the income of some foreign corporations that are paid out to domestic shareholders directly when earned, thus eliminating the ability to defer tax or seek exemption for all profits earned from offshore companies (see, for instance, Arnold, 2011). CFC rules are designed to prevent the shifting of profits by repatriating the profits into the domestic system of the resident country, or by taxing directly based on eroding payments that the foreign firm has received from a related party.

Tax planning has also been using another scheme called “inversion transaction” in several countries, mostly in the United States (Hwang, 2014; Yang et al., 2019). A corporate inversion—also called a “tax inversion”—is a process whereby firms based in one country relocate their operations to another country (this mostly happens with firms based in the United States²), with the objective of reducing their corporate tax burden (see, for instance, Hickson, 2012). This occurs when in a specific country all foreign income is double taxed both abroad and in the country of incorporation. Those firms that carry out such a corporate inversion usually select a country that has a lower tax rate than their home country. The US Tax Administration (IRS) and legislators (Congress) have been creating anti-avoidance rules to mitigate this scheme (Beer et al., 2020).

Firms also avoid higher levels of taxation by avoiding the interest cost limit deduction in one country using “earnings stripping.” This is a way to escape high domestic taxation by using interest deductions in a friendly tax regime area to lower their corporate taxes.

Over the last years, countries around the world have been implementing the FACTA (Foreign Account Tax Compliance Act) (De Simone et al., 2020). This is imposed by the United States on any country that wishes to operate in dollars and plans to have banking operations in the United States. This Act imposes broader information collection, reporting, and withholding requirements on all foreign financial institutions where US taxpayers have an account. Furthermore, most tax

¹For instance, in the United States, a CFC is a foreign corporation owned more than 50% in terms of voting power or value by US shareholders. A US shareholder is any US person or entity, including a US corporation, owning at least 10% of the foreign corporation’s voting stock.

²The largest aborted tax inversion was the US\$160 billion merger of Pfizer with Allergan plc in Ireland in 2016. The largest hybrid-intellectual property (IP) tax inversion was the US\$300 billion acquisition of Apple Inc.’s IP by Apple Ireland in 2015.

havens have signed up for a TIEA (bilateral Tax Information Exchange Agreements) (Kemmer et al., 2017).

Decisions regarding tax planning can be made at the time of the recognition of income and costs. Should the firm be able to defer the recognition of income and/or anticipate the recognition of costs within the limits of the tax law, then it will opt to differ the tax payment. Here is an example:

Suppose that instead of paying 1000 of taxes this year, the firm will only pay 1000 next year. If the firm's cost of capital is 10%, this means that the PV of paying 1000 next year is 909 (and thus the firm saves 91 on taxes).

The time value of money from delaying tax payments can have a strong impact on the firm's value and return to shareholders (also see Chap. 5). An example follows:

Suppose a firm makes two investments of Capex (A and B) each with a Capex of 350. Both investments provide a pre-tax cash flow of 200 for years 1, 2, and 3. In the case of investment A, there is a tax liability of 30 each year (totalling 90). Investment B is subject to a tax of 90 in year 3 (having deferred all taxes to the last period). Assume a discount rate of 10%. What is the PV of the tax cost and the NPV of each investment?

The PV of taxes for A is 74.6 and for B is 67.6, resulting in a NPV for project A of 66.1 and a NPV for B of 72.5.

Nevertheless, deferring taxes may not always be the optimal solution. For if the amount of taxes to be paid later is higher, then this could lead to a higher PV of tax costs. Here is another example:

Taking the previous example, assume that the taxes for B in year 3 are no longer 90, but 100.

In this case, the PV tax cost of A would still be 74.6, but the tax cost of B is now 75.1. This leads to a NPV for A of 66.1 (as in the previous example), however, B now has a NPV of 65.7. It can thus be seen in this example that sometimes delaying taxes may not be the optimal solution.

Therefore, as we have seen in Chap. 5, when involving more than one period, the calculation of taxes always requires the calculation of the PV of each tax solution.

Reducing the marginal tax rates can also impact on tax liabilities. For instance, this example below now combines the two issues (time value of money and marginal tax rates):

Suppose a firm pays a corporate tax rate of 20% up to a limit of 100 k of EBT and then 25% above this value. If the firm has an EBT of 90 k and has to decide whether to recognize an additional income of 25 k in year t or year $t + 1$, what is the impact of deferring such income (assume that the tax rate brackets will not change and that even with the additional 25 k the firm's EBT in year $t + 1$ will still be below the 100 k limit):

If the income of 25 k is recognized in year t , then the firm's EBT will increase from 90 k to 115 k and the marginal tax rate will be 20% for 10 k and 25% for 15 k, leading to a marginal tax of 5.75 k.

However, if the income of 25 k is recognized in year $t + 1$, then the firm's EBT in year t will remain below the 100 k bracket, with the additional income having a marginal tax rate of 20% in year $t + 1$, leading to a tax liability of 5 k, to be paid 1 year later.

The savings of 0.75 k have a PV (with a 10% discount rate) of 0.68 k.

Furthermore, firms can also take advantage of anticipating costs, particularly if they expect their effective marginal tax rate to reduce next year (which could happen if the resident country has decided to reduce the corporate tax rate, or if the firm has sufficient tax benefits/credits/losses to enable a reduction of the tax burden). Here is an example:

Suppose a firm has to make a decision regarding expenditures of 1 M. If the firm's effective marginal tax rate is 25%, but it is forecast to reduce to zero next year, then recognizing such expenditure this year would bring about a tax benefit of 250 k, while the tax benefit would be zero the following year.

This also occurs in the context when the government is expected to increase or reduce the corporate tax rate. If firms anticipate such changes, they should align their tax decisions based on such factors. In some cases, a government can make a decision to reduce/increase the corporate tax rate for the following years and thus oblige economic agents to anticipate their expectations and their decision-making by taking into account such information.³

Here is an example:

Suppose that in country X the corporate tax rate for year 1 is 30%. The Government has decided to reduce this rate to 25% in year 2 and 20% in year 3. A firm has to make an expenditure, and accordingly, it can legally decide to recognize 6 M in year 1, or sign a 3-year contract, recognizing 2 M each year. In the first case, the tax benefit will be 1.8 M ($6 \text{ M} \times 30\%$) and in the second case, the tax benefit will be 1.5 M ($2 \text{ M} \times 30\% + 2 \text{ M} \times 25\% + 2 \text{ M} \times 20\%$). Not only is the tax benefit higher (nominal), but the PV (with a 10% discount rate) of the first hypothesis is also higher (with the PV of A being 1.8 M, and that of B 1.26 M).

Here is another example of anticipating costs:

Suppose a firm needs to make an investment in a non-current asset of 100 M, with a 5-year depreciation (20 M/year). The firm currently pays a corporate tax rate of 30%, however next year this rate will drop to 25%. If the firm decides to make the investment this year, it will save 6 M ($20 \text{ M} \times 30\%$), and it will save 5 M/year ($20 \text{ M} \times 20\%$) over the next 4 years, with a total saving of 26 M (with a PV of 19.9, using a 10% discount rate). If the firm delays the investment until the next year, it will then save 5 M/year over the following 5 years, leading to a total saving of 25 M (with a PV of 18.9, using a 10% discount rate—where the 1 M difference is the tax saving of the current year).

³If the managers expect Government to increase or reduce the tax rate, it need to incorporate such expectation in the decision-making process. For instance, if the management anticipates a 30% likelihood of reducing taxes by 20%, then the expected value of such reducing is 6%.

However, should the firm's corporate tax rate increase, instead of reducing, then postponing 1 year's investment can save taxes. Taking this example, suppose now that the tax rate will increase from 30% to 40%. In this case, instead of investing this year (which will generate 38 M of savings, with a PV of 28.5) (with a 10% discount rate), the firm should only invest next year, and it will have a tax saving of 8 M/year over the next 5 years (the total savings will be 40 M, with a PV of 30 M—the difference being the additional 2 M of tax savings from the first year of the depreciation with a tax rate of 40% instead of 30%—which has a PV of 1.8 M).

Tax management can also include transforming certain types of incomes into gains, expenses into losses, and taxable income into non-taxable income, if such changes result in less tax according to the national tax law (Karayan et al., 2002 - the authors also discuss transforming non-deductible personnel expenses into business deductible expenses.). For instance, selling the firm or its assets is a good example, as can be seen below.

Despite maintaining the main goal of reducing the amount of taxes to be paid and increasing the firm's value, tax planning should also consider non-tax factors and all the costs involved in each transaction. On the one hand, such factors could be operational (e.g., the tax decision will affect the operational capacity of the firm or will reduce its net margin) or could refer to the cost of implementing such a scheme. On the other hand, the factor could be financial or reputational, which is becoming increasingly relevant, as firms tend to be concerned about the perception that tax planning, tax avoidance, or tax evasion creates among consumers, investors, financiers, and the overall public alike (Lee & Yoon, 2020). As referred to by Karayan et al. (2002), taxes impact success because operational decisions are generally based on the risk-adjusted net present value of expected after-tax cash flows.

As mentioned by Dennis-Escoffier and Fortin (2016): *“The business purpose doctrine holds that a transaction will be recognized for tax purposes only if it is made for some business or economic purpose other than a tax avoidance motive.”* These authors also refer to the relevant concept of the substance-over-form doctrine and they state that the taxability of a transaction is determined by the reality of the transaction, rather than its appearance.

Finally, management should always bear in mind that tax planning has a non-tax costs liability for the firm, as tax planning is typified by trade-off between tax savings and other costs. Then there is also the issue of uncertainty in tax planning (according to Scholes et al., 2014, there are two types of uncertainty: “symmetric”—where all parties have the same information; and, “strategic”—where one party possesses asymmetric information about the other party). These two uncertainties result in the implementation of strategies that may not always maximize the tax savings (with some tax savings even being ‘discarded’ for other purposes).

8.2 Tax Avoidance and Tax Evasion

According to Hoffman (1961), to understand fully tax planning concepts, it is necessary to distinguish between tax evasion and tax avoidance. Failure to do so can lead to discrediting allowable tax planning and eventually cause serious legal consequences, such as fees, penalties, or even jail. The main differences between tax avoidance and tax evasion are “legal” and “illegal” (Mgammal & Ku Ismail, 2015).

Tax avoidance can be defined as activities of tax planning and the consequences of ambiguity (intended or unintended) concerning tax laws, policies, or technical aspects (Rego, 2003). Tax avoidance usually is assessed by ETR (effective tax rates), such as the difference between the Book effective tax rate and the Cash effective tax rate (Barros & Sarmento, 2020), GAAP ETR, the long-run cash ETR, but also by the permanent/temporary differences between book and taxable incomes, unrecognized tax benefits, marginal tax rate or tax shelter activity (see Hanlon & Heitzman, 2010, for more details on this).

Tax evasion (or tax fraud) is the illegal non-payment or underpayment of taxes, usually by deliberately making a false declaration or non-declaration to the tax authorities—such as by understating income, profits or gains in tax declarations, or by overstating deductions.

According to Singhania and Singhania (2019), the following summarizes the differences between tax avoidance and tax evasion:

Tax avoidance	Tax evasion
<ul style="list-style-type: none"> Any planning of tax that aims at reducing or negating tax liability in legally recognized permissible ways, which can be termed as an “instance of tax avoidance.” Tax avoidance takes into account the loopholes of law. Tax avoidance is tax hedging within the framework of law. Tax avoidance has legal sanctions. 	<ul style="list-style-type: none"> All methods by which tax liability is illegally avoided are termed as tax evasion. Tax evasion is an attempt to evade tax liability by resorting to unfair means/methods. Tax evasion is tax omission. Tax evasion is unlawful and an act deemed to be guilty of tax evasion may be punished by law. Tax evasion is an intentional attempt to avoid payment of tax after the tax liability has arisen.

Source: Singhania and Singhania (2019)

In most tax systems it is the taxpayer (an individual or a firm) that fills in the tax declaration and reports their income and costs. In the case of income tax, it is the individual that fills in the declaration with the income, expenses, and personal and family situation. In many countries, the Tax Administration can control *ex ante* various issues (especially income, as firms disclose information regarding the salaries of their employees to the authorities, or about pensions, as these are paid by another branch of the government, or interest, as banks provide such information). In addition, firms retain part of employees’ salaries to pay their income tax and Social Security payments delivering it directly to the government (banks, for instance, usually do the same for income tax on interest). Furthermore, some

individual taxpayers may be tempted to enter into some form of collusion with firms, however, this is unlikely in medium and large firms. Individual taxpayers (with high levels of income) can also find ways to divert investment to other countries, particularly to low taxation jurisdictions (often called “off-shores” or “tax heavens”). However, over the last two decades, not only are most countries enforcing new laws to reduce and control such actions, as international cooperation between tax administrations has increased enormously (see Chaps. 2 and 10). Many taxpayers who have been found using such schemes have incurred large penalties and, in some cases, have been convicted and sent to jail.

As mentioned by Merks (2006), the consequences of passing the fine line between legal tax avoidance and illegal tax evasion can have a large cost, not only for the taxpayers involved (fees, penalties and in the limit, time jail), but also for the other parties involved (either voluntary or involuntary), such as banks, consultants, and managers.

Tax planning advisors are therefore required to not only practice tax compliance but also to carry out tax research and planning. This means that there is a need to understand the laws and regulations, both national and international, particularly with regard to multinational firms and groups. These professionals do not only carry out the task of filling out the client’s (individual or firm) tax declaration, but they also plan and prepare transactions and advise on decisions to reduce the amount of taxes to be paid, together with entering into dialogue with the Tax Administration to defending such decisions, particularly with regard to tax audits⁴ (Dennis-Escoffier & Fortin, 2016).

Tax planning involves first knowing the business and sector of the client, then gathering all the relevant information, assess the tax impacts of each possible decision (within the law), bearing in mind, as explained in Chap. 5, that if the decision has an impact over several years, then the Present Value needs to be calculated and then each possible decision has to be presented with an explanation of the risks and rewards.

It is more difficult for a Tax Administration to control tax evasion by an individual with professional activities or those that are self-employed. In these cases, it is more difficult to control income (as this is on an individual cash basis) and control expenses (as personnel expenses on goods, services, and equipment can be considered to be for professional purposes and thus reduces the amount of tax to be paid).

⁴The authors identify two types of tax audits: “Office audits (usually involve one or more issues that require some analysis and the exercise of the IRS auditor’s judgment, rather than a mere verification of the item. The taxpayer is asked to come to the district office for an interview and to bring any records and documents that support the questioned items); field audits are more comprehensive than office audits and are usually limited to an examination of business returns. Field audits are usually conducted on the taxpayer’s premises and generally involve a complete review of the entire financial operations of the business. This type of audit is usually used for corporations.”

In the case of corporate tax, firms also submit their tax declaration with the amount of the accounting profits (revenues minus costs) and tax corrections, calculating the tax base and the amount to pay (see Chaps. 4 and 7). Fraudulent accounting can occur, particularly in small firms, which are held under the tight control of a single owner or manager.

In the case of Value-Add Tax (VAT), firms (and individuals with professional activities) also submit the VAT declaration and calculate the amount of VAT to pay or receive (see Chap. 9). In the case of VAT, firms (particularly small ones) can attempt to evade paying VAT by not declaring part of the sale.⁵ Furthermore, if there is more than one VAT rate, then firms can increase the sales of those goods and services that are subject to lower VAT rates. Additionally, as firms deduct the VAT from their purchases, they can also increase such a value in order to reduce the amount of VAT that they have to pay. VAT can also be subject to a type of fraud known as “VAT carousel fraud” (see Chap. 9).

Nowadays, there are many situations where taxpayers have very little scope to evade paying tax, although there are also situations where there is much scope, which are called “loopholes” in the tax law, which can be exploited to reduce the amount of tax paid (Blouin, 2014). Such loopholes are part of tax planning, where some can be considered to be aggressive, and others not. In most cases, decisions are made in Courts or by way of an Arbitrage mechanism.

In addition, delivering false information (i.e., declaring fictitious income or over declaring deductions and costs) may only be detected by the Tax Administration if the individual or the firm is audited, which authorities have relatively limited capacity to do. However, taxpayers can also evade taxes by simply failing to submit a declaration, or, in the extreme, completely operate on the fringe and occult their activities (which is also called the “shadow economy”).

International corporate avoidance is also a major topic with regard to “lost” revenues for countries (see Ftouhi & Ghardallou, 2020, for an extensive review of literature on international tax planning techniques). Multinationals can use transfer prices (see Chap. 11) to reduce profits in one country, by shifting such profits to other country that has lower taxation (although not necessarily with lower tax rates, as is discussed below), using costs, revenues, fees, interest, or intellectual property for such transactions.

Tax evasion is mainly determined by four factors, namely: individual aversion to risk, the probability of being detected, the amount of tax savings, and the penalty if detected.

Individual “risk aversions”: decisions are made by individuals (either for themselves or for organizations). The level of risk aversion, therefore, determines part of

⁵Which is more common in sectors where the clients are mainly individuals who are not eligible to deduct VAT and are therefore less prone to ask for an invoice; on the other hand, firms can deduct VAT and will therefore probably ask for an invoice, as they can deduct the costs and thus reduce their corporate tax liability; and also in sectors which involve small monetary transactions, for instance restaurants and bars, where many of the clients pay in cash, rather than with a card or by bank transfer.

the likelihood of tax aversion. Individuals with a high level of risk aversion (who are less susceptible to take risks) are less likely to engage in such activities, while individuals with low risk aversion (who are more susceptible to taking risks) are more likely to engage in tax evasion decisions (Khlif & Acheh, 2015). Naturally, each individual position's concerning taking risks is determined by several factors, of which the cultural and institutional environment is likely to be the most relevant (Slemrod & Yitzhaki, 2002; Fuest & Riedel, 2009). In countries where tax evasion is perceived to be negative, the likelihood of someone being more risk adverse is higher, as they will not only run the risk of suffering the legal consequences, but they may also be subject to social stigma. In countries where tax evasion is not so negatively perceived and where such social stigma is inferior, or even inexistent, then the risk aversion may be lower.

Naturally, the risk aversion of each individual has to be weighed with the other three factors. If the probability of detection is low, then even low-risk individuals might accept such a decision (Christiansen, 1980). However, if the amount of tax savings is very high, then low-risk agents may well consider this option, as the reward increases—and therefore the effective marginal tax rate is determinant (Richardson & Sawyer, 2001; Richardson, 2006). Finally, if penalties are low, then the consequences of being caught for tax evasion may not demotivate individuals to engage in such actions.

However, as mentioned by Smith (2015), the low levels of tax evasion and fraud in most developed countries cannot be explained by the probability of detection (as very few taxpayers are actually audited), and not by the size of the penalties, together with the fact that the tax rate and burden in most developed countries are higher. Therefore, such a low level of tax evasion must be mainly explained by the high-risk aversion of most taxpayers (although some taxpayers may perceive the probability of detection to be higher than reality). Nevertheless, as most people are not so risk-averse in relation to other issues (for instance, savings and investments), this could mean that the moral bidding of society through evading taxes can have a role in reducing the propensity of individuals to engage in such acts, enforcing the civic duty to pay taxes (Smith, 2015).

8.3 Tax Benefits, Tax Credits, Tax Shelters, and Tax Incentives

Tax benefits (which are also referred to as tax credits, tax shelters,⁶ or tax incentives; in this book the term “tax benefits” is used hereinafter to designate all these designations) are benefits created by law, through which firms (and also individuals, although this chapter only discusses the issue of firms) can reduce the amount of corporate tax that they are liable to pay (in the case of individuals, this is naturally personal income tax). These tax benefits for firms arise from activities such as R&D

⁶However, tax shelters are mainly when a deduction from one income source can be offset against other income source.

or Capex, or expenses such as social expenditures (paying for health benefits, child care, social assistance for employees, etc.). These tax benefits are a direct reduction of the tax liability of the firm. In addition, they can be, among others: foreign tax credit, investment tax credit, credit for R&D and other expenditures related to innovation and science, credit for employment, job creation, etc.

According to Clark (2001), tax benefits can be justified by four main reasons: (1) international competitiveness; (2) “market failure” considerations, (3) regional development and income distribution, and (4) macroeconomic considerations.

Tax benefits can take several forms with regard to corporate taxes for firms, namely:

- *A deduction on costs with a surcharge*: for each 1\$ of the costs of a specific category (Capex, donations, salaries, etc.) the firm is able to tax deduct 1\$ + a specific percentage. For instance, assume that a firm has revenues of 20 M and costs of 15 M. The accounting EBT will be 5 M. Assume that included in the 15 M of costs was 1 M which was eligible for a tax benefit of increasing the tax deduction by 20%. This means that for tax purposes the firm can consider such a cost as 1.2 M. Therefore, the firm will deduct 200 k from the accounting EBT. This means that the tax EBT (the value for which the firm applies the corporate tax rate and calculates the amount of taxes due) will be 4.8 M (5 M–200 k). If the firm is subject to a corporate tax rate of 30%, this means that without the tax benefit the firm would be liable to pay a corporate tax of 1.5 M, and if the tax benefit is included, this amount of corporate tax is reduced to 1.44 M (the 60 k of savings being the $200\text{ k} \times 30\%$).

Here is another example: Suppose a firm has an accounting EBT of 10 M and has invested 20 M of Capex. Assume that such an investment has a 20% deduction from the EBT. Then, in this case, the firm would be able to deduct 4 M, leading to a tax EBT of 6 M. If the corporate tax is 30%, then instead of paying 3 M of corporate tax, the firm would only pay 1.8 M (the 1.2 M of tax savings being calculated by $4\text{ M} \times 30\%$).

- *A deduction on the amount payable*: In these cases, the tax benefit is a direct deduction from the amount of corporate tax due. Assume the first example (i.e., a cost tax increase), but this time the tax benefit is 10% deducted from the corporate tax of the firm. In this case, the tax EBT would be 5 M and the corporate tax (pre-tax benefit) would be 1.5 M, and the firm would be able to deduct 100 k ($1\text{ M} \times 10\%$), paying only 1.4 M of corporate tax.

Taking the second example, what if the tax benefit to the Capex was 10% of the value of the investment directly deducted from the corporate tax? In such a case, the firm's tax EBT would be 10 M, the corporate tax (pre-tax benefit) would be 3 M, and the firm would be able to deduct 2 M ($20\text{ M} \times 10\%$) from the corporate tax and would end up paying just 1 M.

Tax benefits can also be classified according to whether there is a limit for deductions, or not. A tax credit is considered to be a reduction of the tax liability, which is assigned after the calculation of the tax value, on the contrary to other

mechanisms (e.g., exemptions or reductions) which have an impact on the tax base. There are two types of tax credits limit for deductions (Sarmiento, 2018):

“Non-payable tax credits” (also called “non-refundable or wasteable”) are credits that can only be used up until the amount of the tax liability, in cases when a non-used share is lost—no longer tax deductible for the following years.

“Payable tax credits” (or “refundable” or “non-wasteable”) are those that may be used beyond the tax liability (that give rise to a tax refund), or when they cannot be used beyond the amount of the tax liability in that tax year, or when they can be reported during the following years.

Tax benefits can be used in a single year, but usually they can be carried forward for a specific number of years if they are not fully used (depending on the country’s tax law), and, in some countries, they can even be carried back (which is also subject to a limit on the number of years).

One common type of tax benefit is a tax holiday. This applies to “newly established firms” in qualifying activities/sectors which do not to pay corporate income tax (although such firms can also be exempt from other taxes or tax liabilities as well) for a specified number of years (or until the firm recovers the up-front capital costs, i.e., when it attains the full payout of the Capex, with the objective to attract investment). Sometimes, tax holidays do not allow firms to benefit from tax deductions over the tax holiday period or indefinitely (e.g., depreciation costs and interest expenses).

Another type of tax benefit is a reduced (statutory) corporate income tax rate for qualifying income, where the rate of reduction may be broad-based (i.e., the rate is applicable to all domestic and foreign-sourced income), or it may be limited to income received from specific activities, or from specific sources (e.g., foreign-sourced income), or to income earned by non-resident investors alone (in effect a form of “ring-fencing”), or a combination of these.

Two other forms of tax benefits are investment allowances and investment tax credits. The former are special/enhanced deductions that enable the reduction of the taxable income. For instance, accelerated depreciations or the possibility to deduct the goodwill of an acquisition (see Chap. 4). The latter are special deductions made against corporate income tax which would otherwise be payable.

Here is an example:

Suppose a firm needs to buy some hardware for the sum of 10 M. The firm’s corporate tax rate is 30% and the depreciation period is 5 years. This represents an annual depreciation of 2 M, with a tax benefit of 600 k—with total savings of 3 M, with a PV of 2.3 M (using a 10% discount rate). However, suppose that the country where the firm is located concedes a tax benefit for investment in R&D and that this acquisition qualifies for such a benefit and that in this case, the tax benefit is the possibility to offset the depreciation in a single year, then the tax savings would be the 3 M in the first year (the PV will also be 3 M).

However, if instead, the tax benefit is depreciation over 3 years, instead of 5 years, then there would be 3.3 M of depreciation each year, with a tax saving of 1 M/year. Total tax savings would still be 3 M, but the PV is now 2.5 M.

In another scenario, if the tax benefit is in the form of a tax credit of 15% of the Capex (which is deductible from the EBT over the 5-year depreciation period), with tax savings for depreciation of 3 M (PV of 2.3 M), then the firm would have an annual tax saving of 90 k ($2 \text{ M depreciation} \times 15\% \text{ tax credit} \times 30\% \text{ corporate tax rate}$ – as the 300 k of tax credit will reduce the EBT, and therefore, will reduce the corporate tax by 90 k: $300 \text{ k} \times 30\%$), with total tax savings from this tax credit of 450 k and a PV of the tax credit of 340 k. The total tax savings of the asset is now 3.45 M, with a PV of 2.64 M.

If the tax benefit is a tax credit of 10% of the Capex (deductible from corporate tax over the 5-year depreciation), then to the depreciations tax savings of 3 M (with a PV of 2.3 M), the firm would have an annual tax saving of 200 k (the 2 M depreciation times the 10% of the tax credit, which is now deductible to the amount of corporate tax to be paid by the firm). The total tax savings of this tax credit is now 1 M over the 5 years ($200 \text{ k} \times 5$), with a PV of 758 k. The total tax savings of this asset is now 4 M, with a PV of 3.058 M.

Clark (2001, p. 28) also categorizes another type of tax benefits as being financing incentives, i.e.: *“i) up-front tax incentives (tax deductions or credits) which provide shareholders with income tax relief on the cost of their equity investments in (or loans to) targeted activities; ii) downstream tax incentives (tax deductions or credits) which provide shareholders with income tax relief in respect of the return (dividends or capital gains) from their investments in targeted activities; and iii) flow-through tax incentives which allow businesses to transfer unused tax deductions or tax credits earned on qualifying expenditures to investors, to be used to offset shareholder-level rather than business-level taxation.”*

Also, tax benefits can be traded (which is also called tax shifting). In some countries, such as the United States, firms can sell their tax benefits (including DTA from tax losses carried forward), although in most countries such transactions of tax credits or DTA are not allowed. However, the transaction of the entity/firm that holds the tax credit is possible, in which case the tax credit impacts on the value of the transaction. If a firm has the right to tax benefits for the next years, then the PV of such tax credits are considered in the market value of the firm. Below is an example of a firm with tax credits that is subject to a M&A operation (although even if there is no M&A, the tax credits of a firm increase the firm's value):

Suppose that firm A is planning to buy firm B. Firm B has a pre-tax cash flow of 100 and a corporate tax rate of 25% for the next 4 years. Using a 10% discount rate, this means that the after-tax cash flow has a PV of 237.7. However, suppose that Firm B has a tax credit to deduct from the pre-tax income of 60 in year 1, and 40 in year 2. In this case, the PV of the after-tax income is 259.6. The tax credit of 60 and 40 enables the firm to reduce its corporate tax by 15 in year 1, and 10 in year 2. These tax savings have a PV of 21.9.

Here is another example:

Suppose that firm A is selling a non-current asset with a market value of 5 M. However, the asset also has a tax credit of 400 k. If the buyer is another firm that is also subject to corporate tax and which is able to deduct the tax credit, then if the corporate tax rate is 30%, the market value of the asset is 5.12 M ($5 \text{ M} + 400 \text{ k} \times 30\%$).

In the United States, firms that have foreign subsidiaries can decide to either receive a credit for foreign tax paid or to deduct the foreign taxes paid from their US income. As mentioned by Scholes et al. (2014), a dollar of tax credit is usually better than a dollar of deduction, as a dollar of tax credit reduces taxes by a dollar, but a dollar of deduction only reduces taxes by $\$1 \times \tau$, where τ is the taxpayer's marginal tax rate. The authors mention that there are two types of tax credits, namely: direct foreign tax credits (if the US firm directly pays foreign taxes, including withholding taxes that are deducted from dividends or other forms of passive income paid to the US parent firm) and indirect tax credits (when a US firm gains credit for foreign taxes paid on earnings that are repatriated or deemed to be repatriated from foreign firms). However, US firms are subject to rules regarding foreign tax credit limits (the most relevant being that foreign tax credits cannot exceed the US tax paid on foreign-sourced income), and therefore they should use tax planning to maximize the tax savings for using such credits.

Over the last years that has been significant controversy regarding the adoption of certain accounting schemes that are used to calculate the corporate tax of some large multinationals in order to minimize the tax payable in several countries, by shifting the burden to lower taxation jurisdictions.

Participation exemption is the term generically used to refer to the tax exemption or reduction for dividends received from a subsidiary and any capital gains from the sale of stocks and shares. The country that is usually quoted as a reference for this scheme is the Netherlands, where such a scheme is applied to shareholdings in Dutch companies, as long as the holding is at least 5% of the investor's capital, provided that certain conditions are met. As a general rule, such a participation is exempt, as long as the participation is not held as part of a portfolio investment.

Furthermore, there is the issue of Hybrid Mismatch Arrangements and Tax Arbitrage. This is the case of a firm that creates a vehicle to enable deductible payments in one country (e.g., debt, which generates deductible interest payments), but which are considered to be non-taxable receivables in other country (e.g., an exempted dividend paid in the other country which is considered to be tax free). Another example would be a repo agreement in which the two countries consider different taxpayers to be the owner of the underlying obligation, each with a correspondingly different tax treatment.

8.4 Tax Planning and M&A

Mergers and Acquisitions (M&A) have become an extremely relevant topic for firms, particularly large and multinational firms, and also for Corporate Finance (Martynova & Renneboog, 2006). M&A seeks to increase firms' performance, and therefore the firm value for the shareholders (Das & Kapil, 2012). This can be achieved by increasing sales, by generating synergies, or by increasing the size of the firm to create efficiency and economy of scale (Martynova & Renneboog, 2008; Barros et al., 2022). Acquisitions can be horizontal (i.e., when a firm buys a competitor); or they can be vertical (i.e., when a firm buys another firm in the

value chain (either above or below); or they can be in the form of diversification (i.e., when a firm buys another one in a different market or sector).

Taxes play a relevant role in M&A (Ftouhi & Ghardallou, 2020). For although the purpose of a M&A should not be for tax planning purposes (as is seen above, no decision by a firm should solely be for tax purposes, but rather taxes should be accounted for when making a decision), and such operations can also impact on the tax burden of firms (Mescall & Klassen, 2018).

Here is an example:

Firm A has an EBIT of 2 M and interest costs of 3 M (resulting in an EBT of -1 M and a zero corporate tax). On the other hand, Firm B has an EBIT of 4 M and no interest costs (whereby if the rate of corporate tax is 20%, then firm B will be liable to pay 800 k in corporate tax). If a merger takes place between A and B, the EBIT of the new firm (C) will accordingly be 6 M, and the EBT will be 3 M, with the new firm paying 600 k of corporate tax. The M&A operation thus saved 200 k in taxes.

Should this example be considered as legitimate tax planning or as tax avoidance? Sometimes the answer is not clear! However, as mentioned by Scholes et al. (2014), five major tax issues are associated with M&A, namely: (1) does the operation result in a tax liability for the shareholders of the firm that is selling?; (2) how does the acquisition or the sale affect the tax attributes (e.g., tax shields from depreciations, tax losses carried forward, tax benefits, and tax credits) of the target firm or the business being sold?; (3) if the operation results in a taxable gain or loss for either firm?; (4) does the operation result in a change in the tax basis of the assets of the target firm or the divested subsidiary?; (5) does the operation result in a tax saving?

In some countries, M&A can be either taxable or non-taxable (or at least partially taxable). For if the sale of the firm (of the shares) is paid for, then the seller is liable to pay taxes (income or corporate and capital gains). If the sale is mainly made by transacting shares (of the acquisition firm or of the new firm created through the merger), then this operation is considered to be a potential capital gain, and is thus not taxed usually. However, in the case of a merged firm (or of the firm that acquired the other one), this is liable to be taxed as if the two firms were together.

Another issue regarding M&A is tax inversion (Laing et al., 2019). Mergers of firms outside the residence of the country of the acquisition firm can generate tax savings. For instance, in the United States, all overseas operations are also liable to corporate tax, although this is not the case in the majority of countries. When a US firm moves abroad due to a merge, it will still pay US taxes on US profits, but will no longer pay taxes on profits earned worldwide (as the tax headquarters has moved from the US to other country). Over the last decade there have been several cases of US firms merging with European firms and moving to Europe (mainly to Ireland) for tax reasons (at a time when the US corporate tax rate was 35%, being the highest in the OECD).

8.5 Depreciations and Tax Planning

As has been seen in Chap. 7, firms pay corporate taxes on their EBT and are permitted to deduct expenses from the income/revenues generated by their activity. Among those expenditures that can be deducted, depreciations (as has been explained in Chaps. 5 and 7) can play a very important role. In Chap. 5, it was shown that depreciation (as this is a non-cash cost item) actually increases the cash flow of a firm, as it reduces the amount of corporate tax (assuming that the firm has generated profits and pays corporate tax; or at least has losses, but is forecast to make a profit over the next years, in which cases it will be permitted to deduct such losses from its future profits, which thus reduces the level of corporate tax of those next years). This reduction of corporate tax due to depreciation is known as a “depreciation tax shield.”

Therefore, as seen earlier on in this book, depreciation is relevant, as it reduces corporate tax, and accordingly increases the value of the firm value and the return to shareholders. Furthermore, Chap. 7 describes the different methods employed to depreciate assets (the straight-line method, decrease method, and, in the United States, the modified accelerated cost recovery system—MACRS). However, how should firms plan their tax depreciation? First, when buying an asset, the firm needs to decide which method to use (in most countries, when a firm decides to opt for a certain method for a specific asset, it is usually not allowed to change this method during the life-cycle of the asset). Accordingly, the firm’s choice of the method depends substantially on forecast revenues and costs and thus whether the firm expects to make a profit or a loss in the next years.

Here is an example:

Assume a 5-year depreciation (i.e., a depreciation rate of 20%) of an asset with a BV of 10,000 and an RV of zero. Also, assume that the firm forecasts making a profit for the next 5 years and corporate tax rate of 30% (additionally assume that the firm does not expect any move by the government to reduce or increase the rate of corporate tax).

If the firm is eligible to use either the straight-line method or the decrease method (with a coefficient of 2), what is the impact on taxes (and the firm’s value) of each method?

First, it is necessary to calculate the impact on costs and tax savings of each method:

Year	S. line (A)	Tax savings	Decrease (B)	Tax savings	B-A
1	2000	600	4000	1200	+600
2	2000	600	2400	720	+120
3	2000	600	1440	432	−168
4	2000	600	1080	324	−276
5	2000	600	1080	324	−276
Total depreciation	10,000		10,000		
C. Tax is 30%		3000		3000	0

Considering the whole 5-year period, as the BV and the depreciation rate are equal, regardless of which method is used, the end result is 10 k of depreciation and a tax savings of 3 k ($10\text{ k} \times 30\%$).

However, the tax savings of B mainly occur during the first 2 years, while the tax savings of A occur equally across the 5-years. When calculating the PV of the tax savings of both A and B (using a 10% discount rate), a value of 2274 and 2433 is obtained, respectively. This means that the PV of tax savings of B is higher than that of A (as both have the same value of savings, namely 3000, although it can be seen that the PV of B would be higher than that of A, due to the time value of money). The B option should thus be chosen, as it always has the highest PV of tax savings (see Chap. 5), the value being 159 (B-A). If incremental cash-flows are used, then if the PV is positive, this means that the PV of B is higher than that of A (if it is negative, that means the opposite). Once again, the highest PV should be chosen, in order to maximize the tax savings.

It can, therefore, be stated that if a firm forecasts profits for the next years and does not expect any changes in the tax rate, then it should always choose the decrease/accelerated method (if this is allowed in the tax law, as some countries limit the use of this method, as seen in Chap. 7). Furthermore, the NPV of the decrease method is higher, as firms opt to reduce the level of uncertainty of deducting the depreciation costs quicker over time.

On the other hand, the tax savings can be calculated in another way:

Assume an asset with a value of 10,000 (no residual value), with a 5-year straight-line depreciation or a 6-year MACRS depreciation, and with a corporate tax rate of 35%. The effect is to increase the PB of the tax savings from 2523 to 2583, as follows:

Year	Depreciation	Tax shield	PV Tax shield (12%)	Depreciation	Tax shield	PV Tax shield (12%)
1	2000	700	625	2000	700	625
2	2000	700	558	3200	1120	893
3	2000	700	498	1920	672	478
4	2000	700	445	1152	403	256
5	2000	700	397	1152	403	229
6	0	0	0	576	202	102
Total	10,000	3500	2523		3500	2583

However, what should firms do if they expect (or have certainty) that corporate tax rates will increase or reduce? In such a case, and purely from a taxation point of view, there is no single answer such as in the previous example and it is necessary to calculate the NPV of both methods and then choose the highest NPV of tax savings.

Here are some examples:

Assume that in year 1 the corporate tax rate is 30%, but it is known that it will increase to 40% in year 2 and beyond.

Year	Tax rate	S. line (A)		Decrease (B)		B-A
		Depreciation	Tax savings	Depreciation	Tax savings	
1	30%	2000	600	4.000	1200	600
2	40%	2000	800	2.400	960	160
3	40%	2000	800	1.440	576	-224
4	40%	2000	800	1.080	432	-368
5	40%	2000	800	1.080	432	-368
Total depreciation		10,000		10.000		
Total savings			3800		3600	-200

Apparently, the straight-line method appears to result in higher tax savings, but once again, by calculating the cash flows over time, it is possible to arrive at the NPV of both methods. In this case, the NPV (using a 10% discount rate) of the tax savings of A is 2851 and of B is 2880. Option B should thus be chosen.

However, what would happen if the increase in the corporate tax rate was only up to 35%?

Year	Tax rate	S. line (A)		Decrease (B)		B-A
		Depreciations	Tax savings	Depreciations	Tax savings	
1	30%	2000	600	4.000	1200	600
2	35%	2000	700	2.400	840	140
3	35%	2000	700	1.440	504	-196
4	35%	2000	700	1.080	378	-322
5	35%	2000	700	1.080	378	-322
Total depreciation		10,000		10.000		
Total savings			3400		3300	-100

It can be seen in this case that the NPV (using a 10% discount rate) of the tax savings of A is 2563, and of B is 2657. B should thus be chosen.

But what if the increase was up to 45%?

Year	Tax rate	S. line (A)		Decrease (B)		B-A
		Depreciations	Tax savings	Depreciations	Tax savings	
1	30%	2000	600	4.000	1200	600
2	45%	2000	900	2.400	1080	180
3	45%	2000	900	1.440	648	−252
4	45%	2000	900	1.080	486	−414
5	45%	2000	900	1.080	486	−414
Total depreciation		10,000		10.000		
Total savings			4200		3104	−300

Now the NPV (using a 10% discount rate) of the tax savings of A is 3139 and of B is 3104. In this case, A should be chosen.

What if the firm has information that conversely the tax rate is going to decrease from 30% to 20%, starting in year 2?

Year	Tax rate	S. line (A)	Tax savings	Decrease (B)	Tax savings	B-A
1	30%	2000	600	4.000	1200	600
2	20%	2000	400	2.400	480	80
3	20%	2000	400	1.440	288	−112
4	20%	2000	400	1.080	216	−184
5	20%	2000	400	1.080	216	−184
Total depreciation		10,000		10.000		
Total savings			2200		2400	+200

In this case, the NPV (using a 10% discount rate) of the tax savings of A is 1698 and of B is 1986. B should be chosen.

Finally, if the firm forecasts that it will make a loss, it is then necessary to account for the depreciation method by combining these rules with the rule of the tax losses carried forward (the limit of the number of years, and, if applicable, the limit of the percentage of profits—as seen in Chap. 7). This decision is discussed in the next two subsections.

8.6 Tax Losses Are Carried Forward and Tax Planning

As seen in Chap. 7, tax losses can be carried forward (and in some countries can also be carried back), and they thus reduce the corporate tax liability of a firm. Tax losses carried forward play a relevant role in determining the marginal explicit tax rate of a firm. Having tax losses to carry forward provides a strong advantage if the firm is able to fully use such losses.

In addition, firms with losses are not permitted to account for the tax savings of expenditures, particularly should the tax savings originate from tax benefits/credits (tax shelters). For instance, a firm with profits and a corporate tax rate of 30% will be able to deduct its expenditure on R&D, with an after-tax cost of 70% (or 0.7 for each 1\$). However, suppose that these expenditures on R&D generate a tax benefit of 20%. This would thus mean that in comparison with a competitor that has 10 M of expenditures with tax losses, a firm with tax profits would be able to invest 12.5 M (10/0.8).

Furthermore, firms need to be careful about the limits that each country sets for the use of tax losses carried forward. For, as seen in Chap. 7, most countries impose a limit on the number of years that the losses can be used, and some countries even add a second limit whereby losses can only be used up until a certain percentage of the year's profit.

Accordingly, if a country imposes such limits, it is then necessary to assure that any losses that occurred in a specific year can be used, or otherwise the firm will lose the tax shield generated by such losses.

Here is an example:

Assume a firm with the following EBT:

Year	1	2	3	4	5	6
EBI	−200	−150	50	100	150	150

If the country where the firm is resident has no tax losses carried forward rule and a corporate tax rate of 20%, then the financial statements of the firm would be as follows:

Year	EBT	C. Tax	Net income
1	−200	0	−200
2	−150	0	−150
3	50	10	40
4	100	20	80
5	150	30	120
6	150	30	120

In this case, the firm has no tax shield from the losses of years 1 and 2.

However, if the country has a 2-year limit in place, then the financial statements of the firm would be as follows:

Year	EBT	Tax losses accumulated	Tax losses used	EBT	C. Tax	Tax savings	Net income
1	-200	-200	0	-200	0	0	-200
2	-150	-350	0	-150	0	0	-150
3	50	-350 (1)	50 (2)	0	0	-10	50
4	100	-150 (3)	100 (4)	0	0	-20	100
5	150	0 (5)	0	150	30	0	120
6	150	0	0	150	30	0	120

1—losses accumulated in year 3 are from years 1 and 2 (as the losses of year 1 have year 3 as a limit); 2—from year 1; 3—losses accumulated in year 4 are from year 2 (year 2 losses have year 4 as a limit); 4—from year 2; 5—in year 5 there are no more accumulated losses, as the 2-year limit has passed for losses from year 1 and year 2.

The firm would thus be able to save taxes in years 3 and 4 (in the sum of 10 and 20, respectively). However, the firm was only able to use 150 of the 400 of losses from the first 3 years, the reason being the existence of the 2-year limit (whereby the 200 of losses of year 1 can only be used until year 3, to the limit of 50, with the additional 150 being “lost” due to the time limit; similarly, the 150 of losses of year 2 can only be used up until year 4, amounting to a total of only 100, with the remaining 50 being no longer tax deductible).

However, if the firm was able to increase its EBT in years 3 and 4 (which are the limits for the losses of years 1 and 2, respectively), both by anticipating revenues from years 5 and 6, and/or by postponing expenditures from those years, then the firm could maximize the tax shield of these losses.

Suppose that the firm, by anticipating revenues and/or postponing expenditures, now has the following EBT:

Year	1	2	3	4	5	6
EBT	-200	-150	200	150	50	50

In this case, the firm’s financial statements would be:

Year	EBT	Tax losses accumulated	Tax losses used	EBT	C. Tax	Tax savings (1)	Net income
1	-200	-200	0	-200	0	0	-200
2	-150	-350	0	-150	0	0	-150
3	200	-350	200	0	0	-10	200
4	150	-150	150	0	0	-20	140
5	50	0	0	50	10	-20	40
6	50	0	0	50	10	-20	40

These tax savings are compared with the tax payments of the original case (no tax loss carry forward), where the tax payments were 10 in year 3, 20 in year 4 and 30 in year 5 and 6

Within the constraints of the tax law, the firm could now maximize the tax shield (as it can pay 70 less taxes during the 6 years), due to the fact that the firm uses the total 350 of losses from the first 2 years. This enables savings from years 3 and 4 (arising from tax losses carried forward) and also the reduction of corporate tax in years 5 and 6, as profits from those years were “anticipated” in years 3 and 4 (enabling the full use of the tax losses).

8.7 Tax Planning of Depreciations and Tax Losses

The tax losses carried forward rules must also be considered for depreciation policy decisions. As seen above, a firm expecting to make a profit in the next years should depreciate assets by using the best method to ensure the quickest rate of depreciation. However, if future losses are forecast, the PV should be calculated for each method, to find which is the best to calculate depreciation.

Here is an example, based on a firm that forecasts the following EBITDA for the next 10 years:

Year	1	2	3	4	5	6	7	8	9	10
EBITDA	−100	−150	−50	0	30	100	150	150	150	150

If the same firm has a Capex in year 1 of 1000, which method should it use: (a) 5-year depreciation, or (b) 10-year depreciation, assuming a 25% corporate tax rate? Note: In this example, the firm has no interest costs, and the following also apply:

1. Tax losses carried forward are not permitted.
2. Tax losses carried forward have a 3-year limit with a 50% of profits limit also.

In the first case, as no tax losses carried forward are allowed, the two methods of depreciation (5- or 10-year) provide the following results:

Year	EBITDA	Method a) (5-year)			Method b) (10-year)		
		Depreciation	EBT	C. TAX	Depreciation	EBT	C. TAX
1	−100	200	−300	0	100	−200	0
2	−150	200	−350	0	100	−250	0
3	−50	200	−250	0	100	−150	0
4	0	200	−200	0	100	−100	0
5	30	200	−170	0	100	−70	0
6	100	0	100	25	100	0	0
7	150	0	150	37.5	100	50	12.5
8	150	0	150	37.5	100	50	12.5
9	150	0	150	37.5	100	50	12.5
10	150	0	150	37.5	100	50	12.5

The PV of corporate tax (at 10% discount rate) is thus: $A = 81.2$; $B = 22.4$.

The firm should depreciate using Method B, allowing for some of the depreciations to be recovered by the tax shield. In other words, by using Method A, the firm would not be using any depreciation tax benefit, as the depreciation would, in effect, increase losses, albeit there would be no tax losses carried forward (as corporate tax cannot be less than zero).

In the second case shown below, with tax losses carried forward and with a 3-year limit and a 50% of profits limits, the firm would have the following results:

Year	Method A)					Method B)					NL used	EBT	C. Tax
	EBITDA	Year depreciation	EBT before NL	Accumulated NL (1)	NL used	EBT	C. Tax	EBITDA	Year depreciation	EBT before NL	Accumulated NL		
1	-100	200	-300	-300	0	-300	0	-100	100	-200	-200	-200	0
2	-150	200	-350	-650	0	-350	0	-150	100	-250	-450	-250	0
3	-50	200	-250	-900	0	-250	0	-50	100	-150	-600	-150	0
4	0	200	-200	-1100	0	-200	0	0	100	-100	-700	-100	0
5	30	200	-170	-970	0	-170	0	30	100	-70	-570	-70	0
6	100	0	100	-620	50	50	12.5	100	100	0	-320	0	0
7	150	0	150	-370	75	75	18.75	150	100	50	-170	25	6.25
8	150	0	150	-170	75	75	18.75	150	100	50	-70	25	6.25
9	150	0	150	0	0	150	37.5	150	100	50	0	50	12.5
10	150	0	150	0	0	150	37.5	150	100	50	0	50	12.5
						PV	55.8					PV	16.2

(1):

Year	Accumulated tax losses
1	Losses from year 1
2	Losses from years 1 and 2
3	Losses from years 1, 2 and 3
4	Losses from year 1 (the last year to use these losses), years 2, 3 and 4
5	Losses from year 2 (the last year to use these losses), years 3, 4 and 5
6	Losses from year 3 (used 50 in this year; the last year to use these losses), losses from years 4 and 5
7	Losses from year 4 (used 75 in this year; the last year to use these losses), losses from year 5
8	Losses from year 5 (used 75 in this year; the last year to use these losses)
9	–
10	–

Despite the existence of the rule that permits the firm to carry forward some losses, Method B still results in a lower PV of corporate tax. It is true that by using Method A the firm uses 200 of tax losses carried forward, and that with Method B it only uses 50. However, with the use of Method B, spreading depreciation over a longer period permits a lower level of taxes in the last years, which accordingly reduces the PV of the cost of corporate taxes during the total 10-year period.

It is now assumed that tax losses carried forward have no limits regarding years and profits, however, the firm's EBITDA is now the following:

Year	1	2	3	4	5	6	7	8	9	10
EBITDA	–100	–150	–50	0	300	200	400	400	400	400

In this case, the firm would obtain the following results for each method:

Year	Method A)						Method B)					
	EBITDA	Year depreciation	EBT before NL	Accumulated NL	NL used	EBT	EBITDA	Year depreciation	EBT before NL	Accumulated NL	NL used	C. Tax
1	-100	200	-300	-300	0	-300	-100	100	-200	-200	0	-200
2	-150	200	-350	-650	0	-350	-150	100	-250	-450	0	-250
3	-50	200	-250	-900	0	-250	-50	100	-150	-600	0	-150
4	0	200	-200	-1100	0	-200	0	100	-100	-700	0	-100
5	300	200	100	-1100	100	0	300	100	200	-700	200	0
6	200	0	200	-1000	200	0	200	100	100	-500	100	0
7	400	0	400	-800	400	0	400	100	300	-400	300	0
8	400	0	400	-400	400	0	400	100	300	-100	100	200
9	400	0	400	0	0	400	400	100	300	0	0	300
10	400	0	400	0	0	400	400	100	300	0	0	300
						PV						PV
						81						84

Method A now results in a lower PV of corporate taxes (with less costs during the entire period), because the firm is able to recover the tax losses of the first years earlier on.

Therefore, as seen above, if a firm forecasts profits for the following year, it should decide to employ the depreciation method that accelerates the value of depreciations the most. In this way, it will be able to maximize both the depreciation tax shield and the tax savings during the lifecycle of the asset. However, if the firm forecasts losses for the next few years (and the profits later on), it needs to conciliate the different depreciation methods available with the tax losses carried forward rules, especially with regard to the limit of the number of years and the percentage of the year's profit that the firm can deduct from the accumulated losses.

8.8 Tax Planning on Investment Decisions

As seen in Chap. 5, taxes have a significant impact on firms' investment decisions. For the NPV will be affected by the corporate tax that the firm will be liable to pay (based on the effective tax rate), as this reduces the FCF (Free Cash-Flow to the Firm). Furthermore, as tax benefits reduce the effective tax rate, as seen above, they have a considerable impact on investment decisions.

Tax planning on investment decisions is also relevant with regard to the tax savings arising from the decision whether to lease or buy an asset. Assuming that the interest rate of the leasing contract is equal to the cost of capital of the firm, then leasing has a tax advantage, as the firm can not only deduct the depreciation, but also the interest as well.

Here is an example:

Suppose a firm with a corporate tax rate of 30% decides to acquire new equipment. The 5-year lease will cost 100 k of annual payments (capital + interest). The alternative is to buy the equipment for a cost of 379,079 (at an interest rate of 10%). The annual tax savings of each option are as follows:

Year	Leasing	Tax savings	Depreciations	Tax savings
1	100,000	30,000	75,816	22,745
2	100,000	30,000	75,816	22,745
3	100,000	30,000	75,816	22,745
4	100,000	30,000	75,816	22,745
5	100,000	30,000	75,816	22,745
	PV	113,724	PV	86,220

The above calculations show that the tax savings are higher in the cases of leasing, which represents a higher NPV.

But what if the equipment has a tax benefit for being depreciated over a period of 3 years? Then the tax savings of each option would be the following:

Year	Leasing	Tax savings	Depreciations	Tax savings
1	100,000	30,000	126,360	37,908
2	100,000	30,000	126,360	37,908
3	100,000	30,000	126,360	37,908
	PV	74,606	PV	94,271

Taxes also impact the decision about whether to invest in order to reduce costs. This is the case when a firm buys an equipment, such a purchase reduces some costs (e.g.: energy, raw materials, etc), although it is necessary to account for the incremental taxes of the investment in the P&L.

Here is an example:

Suppose a firm plans to buy an equipment for a cost of 200 k that will save 70 k of energy costs. The equipment has a 5-year depreciation (using the straight-line method) and the firm's corporate tax rate is 20%.

The P&L of the investment is:

Gains:	70,000
Increase in depreciation:	40,000
EBT:	30,000
Corporate tax:	6000
Net income:	24,000

Increase in operational cash flows: (savings – corporate tax): 70 k – 6 k = 64 k.

This can also be calculated as (net income + depreciations): 24 k + 40 k = 64 k, or even as [savings* (1–t) + (depreciations*t)]: $[70*0.8 + 40*0.2] = 64$ k.

Another relevant issue is which tax rate should be used to assess the investment decision. Firms should always analyze investment decisions based on the marginal tax rate of such an investment (i.e., the tax rate for the next unit of income), and not on either the average or the nominal tax rate (for an explanation of the differences between such rates, see Chap. 3).

Here is an example:

Suppose a firm generates 200 k of income before investing in a new project that costs 40 k (which is fully tax deductible during one year), with a Present Value after-tax of 30 k and a 20% average tax rate, but with a marginal tax rate of 35%.

Income (before investment):	200,000
Cost project:	40,000
EBT:	160,000

If the average tax rate of 20% is used, the after-tax cost of the project is 32 k $[40*(1-0.2)]$.

If the marginal tax rate of 35% is used, the after-tax cost of the project is 26 k $[40*(1-0.35)]$.

Therefore, using the average tax rate would lead the firm to reject the project, whereas correctly making the decision to use the marginal tax rate would result in the firm accepting the project.

8.9 Tax Planning in Financing Decisions

As was seen in Chap. 5 (Taxation in Finance), taxes impact on the financing decision (i.e., whether a firm should raise capital through equity or by debt). It was found that in a world where interest rates are constant, an increase in leverage (i.e., an increase in the percentage of debt in the total capital) reduces the WACC (Weighted Average Cost of Capital), as the cost of debt is always lower than the cost of Equity (thus increasing the Return on Equity for the shareholders). However, when firms increase their leverage, the level of risk to lenders also increases (which is mainly the default risk), and the interest rate consequently increases also. Tax planning should therefore analyze the optimal debt level, namely the one that minimizes the WACC and maximizes the ROE.

This type of tax planning can also be used not just for calculating the overall level of debt and equity, but also when the firm invests in a specific asset. As was seen above, depreciation generates a tax shield and reduces the amount of corporate tax of a firm. The use of debt increases the tax benefit of the asset, adding depreciation to the tax benefit, which acts as an additional tax shield of debt. Here is an example:

Assume that a firm buys an asset for 10,000 with a 5-year depreciation (for simplicity, the straight-line depreciation method is used, as well as a residual value of zero). If the firm pays a corporate tax rate of 20%, this results in a depreciation of 2000 a year and a tax saving of 400. The total tax savings of depreciations are 2000 ($10,000 \times 20\%$ or 400×5), with a PV (at a 10% discount rate) of 1516. The after-tax cost of this asset is 8484. However, if the firm finances the purchase of this asset with a loan, then it will also be able to deduct the interest costs of the loan. Assume a 10,000 loan, with a 5% interest rate, and, for simplicity's sake, the full payment of the debt by the end of the 5 years. This would result in an interest cost of 500 every year, with an additional tax saving of 100. At the end of the 5-year loan period, the loan provides 500 ($10,000 \times 5\% \times 20\%$ or 100×5) of tax savings over this period, with a PV (once again, with a 10% discount rate) of 379. The after-tax cost of the asset is now only 8105.

8.10 Tax Planning in Dividend Decisions

As was also seen in Chap. 5, taxation plays a relevant role in a firm's dividend payout decision. The payout decision is a twofold step: (1) what earnings will the firm retain and reinvest (assuming that the firm can reinvest at a higher rate of return than individual shareholders can) and what earnings will the firm payout to the shareholders; (2) should the part be paid to shareholders be paid as a dividend or as buyback stocks? Once again, taxes are part of this financial decision, especially if the shareholder is an individual who is liable for personal income tax. Should the taxation of dividends and capital gains have different tax rates, then shareholders will prefer to be taxed the lowest.

Here is an example:

Suppose a firm has a 10% return on investment. A shareholder with 1000 invested in the firm can expect 100 of income. If dividends are taxed at 40%, but capital gains are only taxed at 20%, then an investor with a 10% opportunity cost would prefer to retain the stock for 5 years and then sell it with a capital gain of 500. The PV of selling the stock would then be 364, whereas the PV of the dividends would be 227.

Year	Dividends	Tax	Net income	Sale of stocks	Tax	Net income
1	100	40	60			
2	100	40	60			
3	100	40	60			
4	100	40	60			
5	100	40	60	500	100	400
	PV		227	PV		364

Another issue is that of dividend clientele (Barros et al., 2020). For the existence of a tax-induced clientele affects the equities marketplace (Lewellen et al., 1978). Dhaliwal et al. (1999) examine changes in ownership of firms that initiated the payment of dividends, with corporate investors and tax-exempt/tax-deferred investors preferring dividends. When firms are shareholders, they tend to prefer receiving higher dividends (Lee et al., 2006; Gallagher et al., 2011). Chetty and Saez (2005) and Kasozi and Ngwenya (2015) also claim that in the case of a newly formed firm, the effect of the existence of dividend clientele is to act as a strong influence on investors' investment decisions. However, investors see the repurchase of stock to be more flexible than dividend payouts (Brav et al., 2005). The clientele effect provides stability in the dividend yield, especially for the smaller and individual investors that constitute the majority of the firm's free float (Perez-Gonzalez, 2002). The dividend policy is less likely to be stable in the case of firms that experience increasing profitability at the operational level.

8.11 Exercises and Solutions

Exercise 1:

A firm has to decide between two projects: A—a new IT system, which will lower the costs or a new R&D project that has the potential to increase revenues. The corporate tax rate is: 35%.

	IT	New RD project scenario 1–50%	New RD project scenario 2–50%
Capex	1 M	1 M	1 M
Saving costs	3.5 M	0	0
Increasing revenues	0	7 M	0

- (a) What project should be chosen if the R&D investment has a tax benefit of 20% of Capex (which can be deducted from the amount payable)?
- (b) Which project without a tax benefit should be chosen?

Exercise 2:

A firm has to decide whether to invest in a new product with a Capex of 100 M. Scenario 1 is a 50% probability with EBT of 20 M; Scenario 2 is a 50% probability, with EBT of 0.

The firm has a cost of capital of 10% and the corporation tax rate is 30%.

Assume:

- (a) A tax benefit of 5 M is permitted (which is deducted from the EBT).
- (b) A tax benefit of 5 M is permitted deducting from the amount payable, no tax refund) of 5 M.
- (c) A tax benefit of 5 M is permitted allowing a tax benefit (which is deducted from the amount payable, in the form of a tax refund).

Should the firm invest in this new product?

Exercise 3:

A firm has two assets to sell.

Asset A has a sale value of 500, with a Book-Value (BV) of 700; Asset B has a sale value of 1100, and a BV of 700.

The firm has the possibility to sell both of the assets in the same year, or just one of the assets each year (year 1 and year 2). The corporate tax rate is 20% and capital gains are taxable just at 50% of the gain.

What should the firm decide to do (assume that this is the only operation of the firm)?

Exercise 4:

The owner of a firm has the possibility to sell all the firm's assets or to sell just the firm's stock.

Sell the assets: for a selling price of 1 M, with a BV of 200 k.

Sell the stocks: for a selling price of 1 M, with a BV of 300 k.

The corporate tax rate is 35% and the income tax rate is 20%.

Which is the best solution?

Exercise 5:

The same exercise as 4), but this time with the following information:

Sell the assets: for a selling price of 1 M, with a BV of 200 k, and debt of 500 k.

Sell the stocks: for a selling price of 400 k, with a BV of 300 k.

The corporate tax rate is 35% and income tax rate is 20%.

Which is the best solution?

Exercise 6:

A firm has the option to make an investment with the following scenarios of EBT:

Year	Scenario 1 (30%)	Scenario 2 (70%)
1	−100	−150
2	−50	−50
3	50	150
4	70	100
5	40	50

The firm has two options: (1) to create a specific firm for this project; or (2) to use an existing firm with a forecast EBT of 200 a year for the next 5 years.

What is the best option for the two following scenarios (with a corporate tax rate of 20% and using a 10% discount rate):

Scenario 1: that there are no tax losses carryforward.

Scenario 2: that a tax losses carry forward is permitted (with no time or profits limit).

Exercise 7:

A firm has 1000 to distribute to its owners. This can either be carried out by paying a dividend; by a stock buy-back; or through paying interest rate (whereby the owners make a loan to the firm, instead of owning equity in the firm). Assume that the corporate tax rate is 25% and that income tax payable on dividends is 10%, 5% on capital gains, and an interest rate of 30%. What is the best solution from a tax perspective?

Exercise 8:

Assume a project with the following forecasts for EBITDA:

Year	1	2	3	4	5	6	7	8	9	10
EBITDA	−200	−200	−100	−50	100	400	500	1000	1000	1000

Assume that Capex is 1000, that there are no interest costs, that the corporate tax rate is 25%, and that the discount rate is 10%.

The tax losses carried forward period is 3 years (with no profits limit) and the firm has the option of three ways to depreciate the Capex:

1. The straight-line method, at 20% (5-year depreciation).
2. The straight-line method, at 10% (10-year depreciation).
3. The decrease method, at 20% (5-year depreciation), with a coefficient of 2.

Which method maximizes tax savings?

Exercise 9:

The same example as Exercise 9, but this time there are no time limits for the tax losses carried forward.

Solutions:

Exercise 1:

With the tax benefit, the answer is:

	IT project	New product project
EBT	2.5 M [3.5 M – 1.5 M]	2.5 M [7 M*50% + 0*50% – 1 M]
Corporate tax	875 k [2.5 M*35%]	675 k [2.5 M*35% – 1 M*20%]
Net income	1.625 M	1.825

Without the tax benefit, the two projects are equivalent.

Exercise 2:

	(a)	(b)	(c)
EBT	10 M [20 M*50% + 0*50%]	10 M	10 M
Corporate tax	1.5 M [10 M – 5 M]*30%	Zero [10 M*30% – 3 M] (1)	–2 M (refund) [10 M*30% – 5 M]
Net income	8.5 M	10 M	12 M
ROE	8.5%	10%	12%
Decision	Reject	Accept	Accept

(1) That is, the 5 M of tax benefit can only be deducted up until the limit of 3 M of corporate tax. The additional 2 M would be lost or carried forward to the next years, depending on the tax law in force.

Exercise 3:

The capital gain/loss of Asset A is –200 (a loss) [500–700]; the capital gain/loss of Asset B is 400 (a gain) [1100–700]

If the firm sells the two assets in the same year:

Total Capital Gains:	200 [400–200]
Corporate tax:	20 [(200*50%)*20%]
Net gain:	180

If the firm sells one asset each year:

Year 1 (sell Asset A):	
Total Capital Gains:	–200
Corporate tax:	0
Total loss:	–200

Year 2 (sell Asset B)	
Total Capital Gains:	400
Corporate tax:	40 $[(400 * 50\%) * 20\%]$
Total gain:	360

Net gain for year 1 + year 2: 160

The firm should choose to sell both assets in the same year.

Exercise 4:

Selling the assets:

At the firm level	
EBT:	800 k [1 M – 200 k]
Corporate tax:	280 k $[800 \text{ k} * 35\%]$
Cash-flow to shareholders:	720 k [1 M – 280 k]

At the shareholder level	
Taxable income:	420 k $[720 \text{ k} - 300 \text{ k}]$
Income tax:	84 k $[420 \text{ k} * 20\%]$
Net income:	636 $[720 \text{ k} - 84 \text{ k}]$

Selling the stocks:

At the shareholder level	
Taxable Income:	700 k [1 M – 300 k]
Income tax:	140 k $[700 \text{ k} * 20\%]$
Net income:	860 $[1 \text{ M} - 140 \text{ k}]$

The owners should prefer the option to sell the stocks.

Exercise 5:

Selling the assets:

At the firm level	
EBT:	800 k
Corporate tax:	280 k $[800 \text{ k} * 35\%]$
Cash-flow to shareholders:	220 k $[1 \text{ M} - 280 \text{ k} - 500 \text{ k}]$

At the shareholder level	
Taxable Income:	zero $[220 \text{ k} - 300 \text{ k}]$
Income tax:	Zero
Net income:	220 k

Selling the stocks:

At the shareholder level	
Taxable Income:	100 k [400 k – 300 k]
Income tax:	20 k [100 k*20%]
Net income:	380 [400 k - 20 k]

The owner should prefer the option to sell the stocks.

Exercise 6:

First, the expected EBT of the two scenarios for this project needs to be calculated:

Year	Expected EBT
1	–135
2	–50
3	120
4	91
5	47

Then if there are no tax losses: create a specific firm (as the existing firm would have to pay 40 in corporate tax each year):

Year	Expected EBT	C. Tax for new firm	Total C. Tax
1	–135	0	40
2	–50	0	40
3	120	24	64
4	91	18.2	58.2
5	47	9.4	49.4

The NPV of the corporate taxes of this option is 187.9.

Placing the investment in the existing firm:

Year	EBT (firm + project)	C. Tax
1	65	13
2	150	30
3	320	64
4	291	58.2
5	247	49.4

The NPV of the corporate tax of this option is 155.1.

From a tax perspective, the best decision is to place the investment in the existing firm.

With tax losses carried forward:

Creating a specific firm (whereas the existing firm would have to pay 40 in corporate tax each year):

Year	Expected EBT	Tax losses	C. Tax new firm	Total C. Tax
1	−135	−	0	40
2	−50	−	0	40
3	120	120 (total of 185 from year 1 and 2)	0	40
4	91	65 (remaining losses from year 2)	5.2	42.2
5	47	−	9.4	49.4

The NPV of the corporate tax of this option is 159.

Placing the investment in the existing firm has a NPV of 155.1. Therefore, the best decision from a tax perspective is to place the investment in the existing firm.

Exercise 7:

If the firm received capital from the owners, then the net income of the firm is 750 (1000 minus the 250 of corporate tax).

Paying 750 of dividends generates 75 of income tax, and thus the owners would have a net income of 675.

Paying 750 in capital gains generates 37.5 of income tax, and thus the owners would have a net income of 712.5.

If the firm received loans from the owners, then the net income of the firm is zero (as it would pay 1000 of interest, assuming that the loans are fully tax deductible). In this case, the 1000 of income paid to the owners would generate 300 of income tax, resulting in a net income of 700.

In this example, the best solution is the capital gains option.

Exercise 8:

The straight-line method, at 20%:

[illegible]

The straight-line method, at 10%:

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
1	-200	0	0	100	-300	0	0.0	0.0
2	-200	0	0	100	-300	0	0.0	0.0
3	-100	0	0	100	-200	0	0.0	0.0
4	-50	0	0	100	-150	0	0.0	0.0
5	100	100	0	100	0	0	0.0	0.0
6	400	150	50	100	300	300	0.0	50.0
7	500	0	100	100	400	50	70.0	30.0
8	1000	0	200	100	900	0	180.0	20.0
9	1000	0	200	100	900	0	180.0	20.0
10	1000	0	200	100	900	0	180.0	20.0
							PV	69.1

The decrease method:

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
1	-200	0	0	400	-600	0	0.0	0.0
2	-200	0	0	240	-440	0	0.0	0.0
3	-100	0	0	144	-244	0	0.0	0.0
4	-50	0	0	108	-158	0	0.0	0.0
5	100	100	0	108	-8	0	0.0	0.0
6	400	150	50	0	400	400	0.0	50.0
7	500	0	100	0	500	10	98.0	2.0
8	1000	0	200	0	1000	0	200.0	0.0
9	1000	0	200	0	1000	0	200.0	0.0
10	1000	0	200	0	1000	0	200.0	0.0
							PV	29.3

It can be seen that the highest NPV of tax savings is derived from the straight-line method, with a 10% depreciation rate. This method not only pays the lowest amount of corporate tax over the 10 years, but it also has the lowest NPV of corporate tax, as seen below:

Year	C.Tax (1)	C. Tax (2)	C.Tax (3)
1	0.0	0.0	0.0
2	0.0	0.0	0.0

(continued)

Year	C.Tax (1)	C. Tax (2)	C.Tax (3)
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	50.0	70.0	98.0
8	200.0	180.0	200.0
9	200.0	180.0	200.0
10	200.0	180.0	200.0
Total	650.0	610.0	698.0
PV	280.9	265.6	305.5

Exercise 9:

The straight-line method, at 20%:

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
1	-200	0	0	200	-400	0	0.0	0.0
2	-200	0	0	200	-400	0	0.0	0.0
3	-100	0	0	200	-300	0	0.0	0.0
4	-50	0	0	200	-250	0	0.0	0.0
5	100	100	0	200	-100	0	0.0	0.0
6	400	400	0	0	400	400	0.0	0
7	500	50	90	0	500	500	0.0	90
8	1000	0	200	0	1000	550	90.0	110.0
9	1000	0	200	0	1000	0	200.0	0.0
10	1000	0	200	0	1000	0	200.0	0.0
							PV	97.5

The straight-line method, at 10%:

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
1	-200	0	0	100	-300	0	0.0	0.0
2	-200	0	0	100	-300	0	0.0	0.0
3	-100	0	0	100	-200	0	0.0	0.0
4	-50	0	0	100	-150	0	0.0	0.0

(continued)

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
5	100	100	0	100	0	0	0.0	0.0
6	400	400	0	100	300	300	0.0	0
7	500	50	90	100	400	400	0.0	90
8	1000	0	200	100	900	250	130.0	70.0
9	1000	0	200	100	900	0	180.0	20.0
10	1000	0	200	100	900	0	180.0	20.0
							PV	95

The decrease method

Year	EBITDA	Net losses	C. Tax (no deprec)	Deprec	EBT	Net losses	C. Tax	Tax savings
1	-200	0	0	400	-600	0	0.0	0.0
2	-200	0	0	240	-440	0	0.0	0.0
3	-100	0	0	144	-244	0	0.0	0.0
4	-50	0	0	108	-158	0	0.0	0.0
5	100	100	0	108	-8	0	0.0	0.0
6	400	400	0	0	400	400	0.0	0
7	500	50	90	0	500	500	0.0	90
8	1000	0	200	0	1000	550	90.0	110.0
9	1000	0	200	0	1000	0	200.0	0.0
10	1000	0	200	0	1000	0	200.0	0.0
							PV	97.5

In this case, the firm should use the straight-line method, at 20% (or the decrease method, as the results are equal), as this method results in a higher NPV of tax savings. In adopting this method, the firm would pay the same amount of tax (as the losses are fully used in each method), however, the payments would be delayed more by using the 20% depreciation rate, owing to the use of the tax losses:

Year	C.Tax (1)	C. Tax (2)	C.Tax (3)
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0
4	0.0	0.0	0.0
5	0.0	0.0	0.0
6	0.0	0.0	0.0
7	0.0	0.0	0.0
8	90.0	130.0	90.0
9	200.0	180.0	200.0

(continued)

Year	C.Tax (1)	C. Tax (2)	C.Tax (3)
10	200.0	180.0	200.0
Total	490.0	490.0	490.0
PV	203.9	206.4	203.9

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9.1 The Main Concepts of VAT

Despite not being used in some countries (the most relevant being the United States, which instead has a sales tax), VAT has become the most common and popular way of taxing consumption, with more than 170 countries and territories currently using it according to the OECD.¹

As described below, VAT is almost fully harmonized at the European Union (EU) level, and it is one of the pillars of the free movement of goods and services in European countries. VAT operates in a very similar way, regardless of whether the country is in the EU, or not. The main difference is the location of the operation in question (owing to the lack of internal borders within the EU, although VAT rates differ from country to country—which is the reason why the issue of location is introduced at the end of this chapter). The European Commission defines VAT as being: *“Value Added Tax, or VAT, in the European Union is a general, broadly-based consumption tax assessed on the value added to goods and services. It applies more or less to all goods and services that are bought and sold for use or consumption in the European Union. Thus, goods which are sold for export or services which are sold to customers abroad are normally not subject to VAT.*

All the values examples and exercises in this chapter are always without VAT, unless mentioned otherwise.

¹<https://www.oecd-ilibrary.org/sites/1ca62ced-en/index.html?itemId=/content/component/1ca62ced-en>.

Conversely, imports are taxed to keep the system fair for EU producers and to ensure that they can compete on equal terms in the European market with suppliers situated outside the Union.”

VAT is a general tax on consumption, based on “multiple phase form” (which is collected fractionally, i.e., it is charged at every stage of the economic process), but which is not cumulative (i.e., it adheres to the tax credit method, which is also called the “indirect subtractive method). In the case of the EU, ensuring that all countries apply VAT (which is almost fully harmonized) was a critical condition for the existence of the single market in Europe (Sarmiento, 2016). A neutral and transparent turnover tax system was required to ensure tax neutrality and to guarantee the exact amount of tax to be returned at the point of export. In turn, VAT ensures that exports are completely and transparently tax free.

VAT charge: The VAT that the firm collects from the consumer when it sells goods and services.

VAT deduction: The VAT that the firm paid to suppliers (goods and services) and accordingly has the right to deduct from its VAT declaration (however, as explained below, in accordance with the rules for VAT deduction, not all the VAT paid to suppliers can be deducted).

Figure 9.1 presents the conceptual framework of VAT registration. In this example, Firms A, B, and C only maintain this operation for their monthly VAT base, with a VAT rate of 20%. Assuming that firm A produces a good (and also, for simplicity’s sake, assume that A has no production costs for such a product, which means that A will not have any VAT deduction). A sells the product to B for $1000 + \text{VAT}$ (VAT charge of 200, which means that B has to pay 1200 to A). In turn, B sells to C for $1500 + \text{VAT}$ (the VAT charge being 300, whereas C has to pay B 1800). C sells to a final consumer for $3000 + \text{VAT}$ (where the VAT charge is 600 and the final consumer pays 3600 to C).

This example shows that VAT is economically supported by the final consumer. For in effect, A, B, and C just deliver VAT to the Tax Authority according to the value-added in their transaction: Firm A has a value-added of 1000, and therefore delivers 200 of VAT ($1000 \times 20\%$); Firm B has 500 of value-added ($1500 - 1000$) and therefore delivers 100 of VAT ($300 - 200$ or $500 \times 20\%$). Firm C has 1500 of value added ($3000 - 1500$) and delivers 300 of VAT ($600 - 300$ or $1500 \times 20\%$). Increasing or decreasing the VAT rate may impact aggregate demand (in the form of increased prices to final consumers), yet has no impact on the firm’s margin for each transaction. VAT has a characteristic of economic neutrality (which is discussed in the section at the end of the chapter on the location of operations and mainly applies to exports).

However, in practical terms, firms calculate VAT (usually on a monthly or quarterly basis) by employing the following formula:

Firm A →	Firm B →	Firm C →	Final consumer
Sell: 1,000	Sell: 1,500	Sell: 3,000	The final consumer pays 3,600 to C (3,000 + 600 of VAT)
VAT charge: 200 VAT deduction: 0	VAT charge: 300 VAT deduction: 200	VAT charge: 600 VAT deduction: 300	
VAT payable: 200	VAT payable: 100	VAT payable: 300	Total revenue of this transactions is 600
Value added of Firm A: 1,000 VAT: 1,000*20%	Value added of Firm B: 500 VAT: 500*20%	Value added of Firm C: 1,500 VAT: 1,500*20%	

Fig. 9.1 VAT conceptual framework. Source: Author

$$VAT_{\text{pay/receive}} = VAT_{\text{charge}} - VAT_{\text{deduction}} (+/-) VAT_{\text{regularization}}$$

There are five main reasons why the calculation of a firm's VAT is made by utilizing this formula and not by the previously presented scheme, namely: (1) it is more difficult for firms to isolate economic and financial activities; (2) most countries have different VAT rates, according to the type of goods and services; (3) VAT exemptions exist, which can allow for VAT deduction or not; (4) not all VAT supported in the acquisition of goods and services can be deductible; and (5) most importantly, it is much more simple to use the financial accounting system to simply fill out the VAT declaration (the accounting for VAT operations was explained in detail in Chap. 4).

Here is an example (note, all values are without VAT). Assume that a country has a standard VAT rate of 20% and a reduced VAT rate of 5%):

Sales of goods/services at 20%: 100 k

Sales of goods/services at 5%: 40 k

VAT-exempted sales of goods/services, but with VAT deduction: 50 k

Acquisition of goods/services at 20%: 60 k

Acquisition of goods/services at 5%: 10 k

Regularizations in favor of the firm: 3 k

Regularizations in favor of the State: 4 k

$$\text{VAT} = (100 \text{ k} * 20\% + 40 \text{ k} * 5\%) - (60 \text{ k} * 20\% + 10 * 5\%) + 4 \text{ k} - 3 \text{ k} = 22 \text{ k} - 12.5 \text{ k} + 4 \text{ k} - 3 \text{ k} = 10.5 \text{ k}$$
 (the firm has to deliver 10.5 k of VAT).

Here is another example:

A firm is selling a product for 1000 + VAT (20%). In this case:

Revenues: 1000

VAT charge: 200

Clients/Bank account: 1200

The firm buys a product for 600 + VAT (20%)

Costs/Inventories/PPE: 600

VAT deduction: 120

Suppliers/Bank account: (+) (–) 720

At the end of the month this firm has:

VAT charge: 200

VAT deduction: 120

VAT payable: $200 - 120 = 80$ —the 80 is also $(1000 - 600) * \text{the VAT rate}$ [Why?

Because the $(1000 - 600)$ is the Value added by this firm during this month]

VAT has no impact on the cash flow of the firm. Taking the example above, the firm received 1200 from clients and paid 720 VAT to suppliers and 80 to the government. Therefore, the cash flow of the firm was 400, which is the difference between the 1000 and the 600 (values net of VAT). Only in a few cases where VAT is non-deductible can it impact the cash flow of a firm.

Naturally, if the VAT charge is higher than the VAT deduction (and if there are no VAT regularizations), then the firm has VAT to deliver. On the contrary, if the VAT charge is lower than the VAT deduction (and if there are no VAT regularizations), then the firm can recover VAT.

Figure 9.2 presents a practical approach for assessing the VAT of each transaction of goods and services. The first issue to consider, as has been discussed in this book, is tax incidence. For a transaction will be subject to VAT in a specific country if it fulfils the following four (cumulative) conditions: (1) the transaction is a good or service; (2) the transaction is made by a VAT-registered person; (3) the transaction has a monetary value; and (4) the transaction is located in a specific country.

If just one of these four conditions is not fulfilled, then the transaction is not subject to VAT and in such a case, the transaction is not subject to a VAT charge in that specific country, and there is no obligation to declare VAT.

If the transaction is subject to VAT, then a second question arises: is the transaction exempt from VAT purposes? As explained in Chap. 2, an event can be subject to a tax but benefit from an exemption. These exemptions in VAT are divided into domestic exemptions, which are usually related to social services or with financial services (as they usually pay stamp duty), or with individuals with professional activities with low levels of income; or external exemptions, a typical example being exports, and, in the case of EU member states, intra-community transactions. If

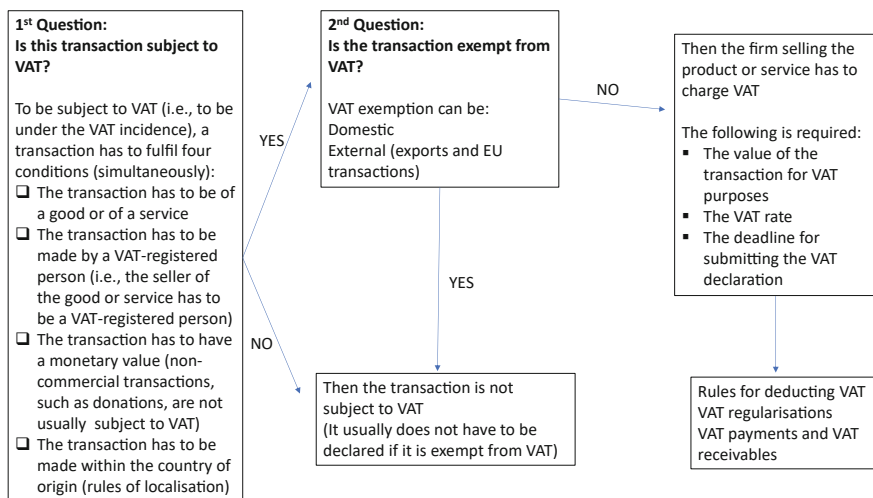


Fig. 9.2 VAT practical framework. Source: Author

the transaction is VAT-exempt, then there is no VAT charge and usually there is no obligation to declare it either.

If the transaction is subject to VAT and is not VAT exempt, then there is a need to calculate the VAT charge (calculated as the tax base times the VAT rate). On the one hand, if the firm charges VAT, then it has the right to deduct VAT from the acquisitions of goods and services (under certain conditions). On the other hand, if the firm charges and deducts VAT, then it also needs to know on which dates it has to deliver the VAT declaration and make the VAT payment, and also how it can recover the VAT if it has more VAT deducted than VAT charged.

For the purposes of charging VAT, a good is considered to be any tangible thing (note that in the EU, electricity, and gas are also considered to be a good, together with several minor transactions that can be also considered to be goods). All other transactions are considered to be services.²

VAT-registered persons³ are firms, individuals with professional activities, and individuals that import goods or services. Public services are only considered to be VAT-registered persons should they fail to meet one of the following two conditions⁴: (1) if they provide a good or a service that can only be provided by

²See Article 14 and 24 of the VAT Directive.

³Defined in Article 9 of the VAT Directive.

⁴See Article 13 of the VAT Directive.

Table 9.1 VAT-registered persons

VAT-registered person	Not a VAT-registered person
Firms	Final consumers (individuals)
Individuals with professional activities (category of income tax for professionals)	Government
Anyone (individuals) carries out an import (in that operation is a VAT-registered person)	Are public entities a VAT-registered persons:
Imports in VAT are acquisitions from outside the European Union	Public entities are not a VAT-registered persons when:
Only exports are considered for VAT (for outside the EU) and imports (from outside the EU)	<ul style="list-style-type: none"> • If they are providing goods/services which only the public sector can provide (if they are using the public authority—Such as ID cards, passports, and licenses). • If there is no competition with private sector (even if it is not a service under public authority).
(operations within the EU are known as “intra-community” operations)	
Government	
Are public entities a VAT-registered person:	
When they provide goods/services where there is competition with private sector (schools, hospitals, universities, etc.—These operations have private sector competition)	

Source: Author

public authorities, which are usually related to public authority powers; or (2) if there is no competition with the private sector for the supply of such a good or service (Table 9.1).

9.2 VAT Exemptions

VAT can have two types of exemption: domestic and external. Both have different types of applications and on the whole they produce different results, as the former does not permit the deduction of VAT, while the latter permits such deductions, which guarantees the economic neutrality of VAT.

Domestic exemptions are related to social services (such as health, education, culture or social assistance, and canteens), as it is considered that such basic goods and services should not be subject to additional taxation, as the extra burden would negatively affect the level of access, especially for low-income level individuals. Domestic exemptions are also applied to financial services in most countries, as such services are normally taxed by a stamp duty. Furthermore, in some countries, real estate transactions have a specific taxation and are therefore VAT exempted.⁵

⁵See Title IX of the VAT Directive.

These domestic exemptions are also known as “incomplete exemptions,” as those taxpayers subject to them do not charge VAT when selling their goods or services, albeit they cannot deduct the VAT of these acquisitions, in which case VAT becomes a cost to the firm. Nevertheless, despite this, VAT will still be economically neutral, as all economic agents in the country are subject to such an exemption, which means that the impact of VAT is equal for all of them alike, as can be seen in this example below:

A VAT-exempted firm (and also an incomplete exemption) sells goods and services for 1000 and buys goods and services for 600 (VAT 20%). The firm does not charge VAT and has no right to a VAT deduction (and thus does not have to deliver a VAT declaration). In this case, it receives 1000 from clients and pays 720 ($600 \text{ k} + 120 \text{ of VAT}$) to suppliers. As VAT becomes a cost, this means that the cash flow of the firm will be 280 (in the example of Page 3 of this chapter, the cash flow was 400, as the VAT was deductible).

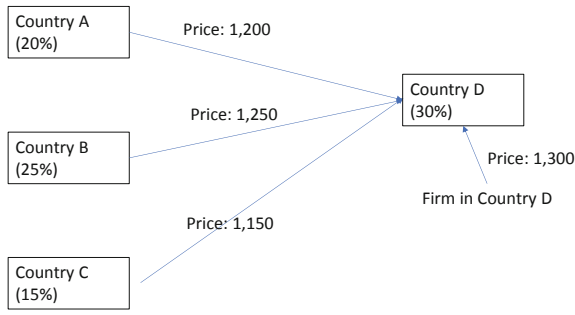
Countries usually also provide an exemption for exports (i.e., selling goods to other countries, however, as discussed later in this chapter, in the case of the EU, this book only uses the term exports when firms sell goods to consumers outside the EU). The main motivation for exempting exports from VAT is to ensure the economic neutrality of VAT (and accordingly ensure that the country suffers no disadvantage should it have higher rates of VAT than the other EU or non-EU countries). This exemption is called “complete exemption,” as the firm does not charge VAT on its exports but can deduct the VAT paid for its inputs (i.e., the acquisition of goods and services for production).

Figure 9.3 presents how VAT would not be economically neutral if exports were not subject to the aforementioned complete exemption. In the first case (1), if each country were to charge VAT on exports (with no VAT exemption), then country C would have an advantage in comparison to other countries. The price in D would not be affected by the VAT-registered rate of D, but by the others countries' VAT rates. In the second case (2), which applies to reality, as exports are VAT exempted, a firm selling to country D will have to pay the same VAT rate of 30%, whether the origin of the goods is country A, B, C, or D (the latter being a domestic transaction). This is an example of the VAT principle of taxation at the destination, which ensures the economic neutrality of the tax. The third case (3) shows why in addition to the VAT exemption on exports (which is also shown in the second case to ensure that the VAT rates of each country have no impact on the prices to the end consumer, but only on the VAT rate of the destination country where the goods are actually sold), it is also necessary to deduct the VAT of the inputs of such exports. If not, as the case demonstrates, the differing VAT rates of each country would have the effect of increasing the costs and would thus reduce the margin (e.g., in this example, the margin of each firm without VAT is 400, however, should VAT not be deducted, then the margin would be higher in country C, as it is the country with the lowest

1) Assume that there are no VAT exemptions

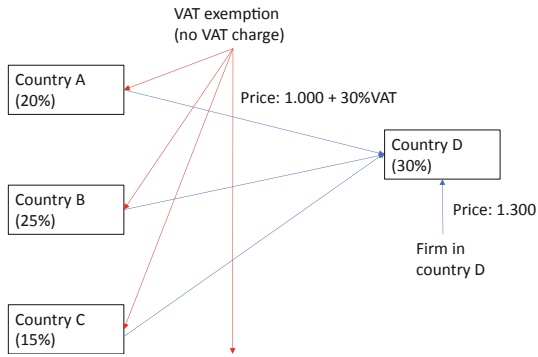
VAT affects the price in different countries
There is no VAT economic neutrality

Assume three firms (one in each country) that all sell the same product/service:
Price (without VAT): 1,000
Costs (without VAT): 600
Net margin: 400



2) Assume there is VAT exemption

VAT does not affect the price in different countries



All transactions of goods/services to country D will be located in Country D

Therefore, all transaction will pay 30% VAT

Fig. 9.3 VAT exemptions on exports. Source: Author

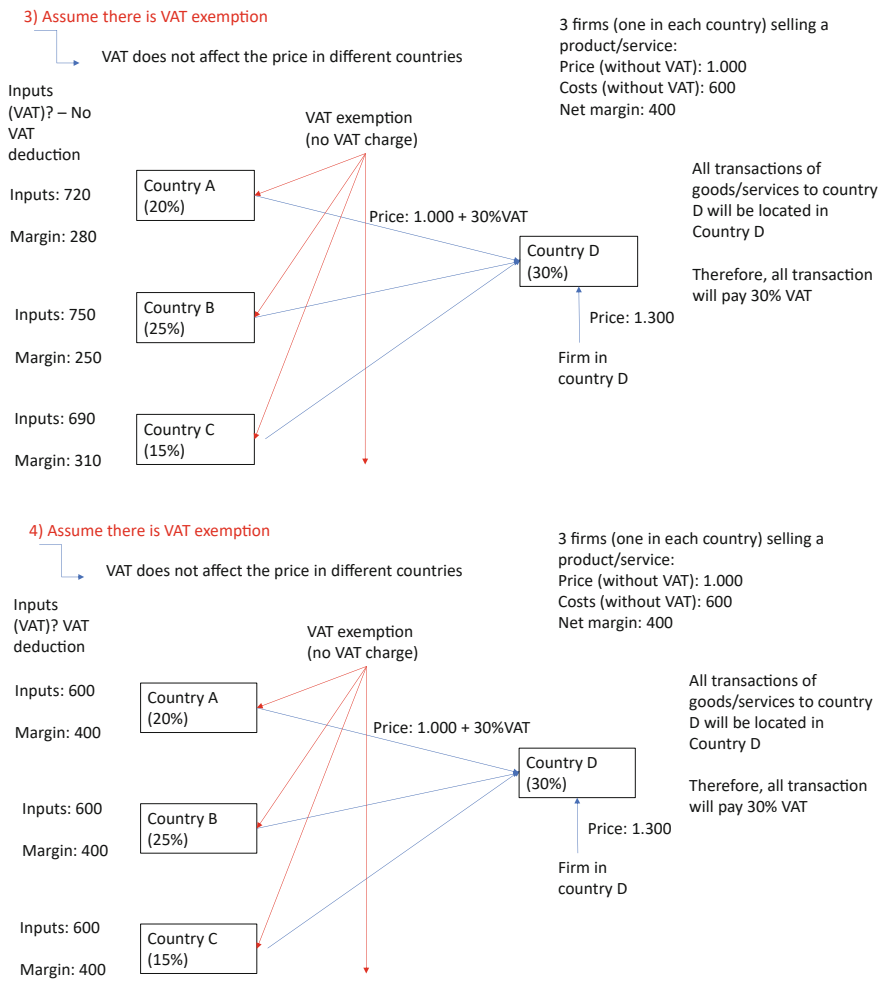


Fig. 9.3 (continued)

VAT rate). The fourth case (4) is an example of VAT exemption for exports (which does not affect the price of the end-product in country D, as all transactions are subject to the VAT rate of D) and also shows that for all firms, regardless of their country of origin, the margin of the operation is 400, as the VAT paid is fully deductible.

9.3 The VAT Charge and Deductions

To charge VAT (assuming that the transaction is subject to VAT and does not have any exemptions), it is necessary to know the value of the transaction and what VAT rate to apply, in order to calculate the VAT charge: *Value transaction * VAT rate*.

For instance, if the transaction has a VAT value of 20 k and a VAT rate of 25%, then the VAT charge is 5 k.

For VAT purposes, the value of the transaction is the financial amount due to be paid as agreed by both parties (i.e., the seller and the buyer). Three items need to be added to that agreed value (if applicable), namely: (1) any tax or fee, with the exception of VAT; (2) any additional cost that is considered to be indispensable for the transaction, such as transport, commissions, packing, etc.; and (3) any subsidy related to the final price.⁶

Any tax or fee that is related to the good or service needs to be added to the value of the transaction, a typical example being excise duty (see Chap. 3), which in most countries are taxes charged on vehicles, fuel, tobacco, and alcohol.

Suppose the case of the purchases of a vehicle with a base price without taxes of 30 k and a vehicle tax of 10 k, and that the VAT rate of the country is 20%. This case would result in a VAT charge of 8 k $[(30 \text{ k} + 10 \text{ k}) * 20\%]$, which would increase the final price of the vehicle to 48 k.

If applicable, price-related subsidies should be included in the value of the transaction for VAT purposes, for the simple reason of ensuring the economic neutrality of the tax (it should be remembered that the same happens in the case of grants for corporate tax—see Chap. 7).

Here is an example:

If firms A and B sell a good for 10, but A receives a subsidy of 3 to reduce the price and the VAT rate is 20%, then if the subsidy was not included for calculating the VAT, then the final price of A would be 8.4 (price of 7 + 1.4 of VAT $[(10-3)*20\%]$), and the final price of B would be 12 (price of 10 and VAT of 2). In this case, the difference in price between A and B would be 3.6, which is higher than the subsidy of 3. If this were to happen, the subsidy would provide A with not just a non-tax advantage, but also a tax advantage, as in effect what would happen is that the final price of A would be 9 (the price of 7 plus the VAT of 2, where $10*20\%$ could be considered for A also) and the final price of B would be 12. This results in a difference of final price between A and B of 3, which happens to be the exact amount of the subsidy, which proves that the advantage of choosing A over B is only provided by the non-tax event (i.e., the subsidy).

With regard to VAT rates,⁷ the only country in the EU that has a single VAT rate is Denmark, whereas all the other countries have two or three rates, which are often termed the “standard,” “intermediate,” and “reduced” rates. The VAT Directive

⁶See Article 73 of the VAT Directive.

⁷See Title VIII of the VAT Directive.

stipulates that each country should define the standard VAT rate (with a minimum of 15%, but with no maximum defined), with the flexibility for each country to decide on the number and level of the rates, following two basic rules: (1) the standard rate is for all goods and services; and (2) each country can apply one or two reduced rates (called reduced and intermediate rates), but only to goods or services that are listed in the VAT Directive (in Annex III of the VAT Directive), although this does not apply to electronically supplied services, which are subject to a minimum rate of 5%⁸ (albeit this rule is under revision at the EU level, and the new Directive, if approved, is likely to establish the rule in the opposite direction, i.e., rather than providing an approved list of goods/services for the reduced and intermediate rates are allowed, on the contrary, the rule will now provide a list of good/services that are excluded from the reduced and intermediate rates).

Based on the VAT directive, each country has the independence to establish the following two lists for VAT rates: List I—all goods and services where the reduced rate is applied; and List II—all goods and services where the intermediate rate is applied (note: if the good or service does not feature on List I or II, then the standard rate automatically applies). If the country of the EU has peripheral regions (for instance, Portugal with Madeira and the Azores, or Spain with the Balears and the Canaries), then such regions are permitted to have lower VAT rates than those of the mainland, with a limit of 30% less for each rate (i.e., standard, intermediate, and reduced). In those cases, for each transaction in a country that possesses such regions, it is necessary not only to assess the VAT rate according to the lists, but also to identify the location of the operations (i.e., on the mainland or in one of the regions—for further information, see the rules described in the last subsection of this chapter—‘VAT in the EU: rules regarding the location of operations’).

VAT deduction in the EU member states is dependent on four conditions (cumulative): (1) the firm needs to be in the possession of an invoice that is in accordance with the current EU VAT rules; (2) the firm needs to prove that the good/service was used in the activity; (3) the firm cannot be able to benefit from a domestic exemption (in which case the VAT is not deductible); and (4) most countries limit the deduction of VAT to certain goods and service, such as vehicles, travel, meals, and accommodation.⁹

⁸Exceptions to the rules—‘special rates’ of VAT:

“Special rates” refers to the multiple exceptions to the basic rules. Mainly for historical reasons and under certain conditions, many EU countries (in some instances, most of them) have been allowed to depart from these rules for a transitional period, with the objective to allow for the gradual alignment of national laws with the VAT Directive, pending the definitive adoption of agreed VAT arrangements by all EU countries. This enables them to keep “special rates”—reduced rates less than 5% (including zero rates) and also reduced rates for goods and services other than those listed in the directive (Articles 102–128 VAT Directive (source: European Commission).

⁹See Title X of the VAT Directive.

9.4 VAT Declarations, Payment, and Regularization

VAT declarations in the EU countries are on a monthly or quarterly basis (in the case of a quarterly basis, the first Quarter runs from 1 January to 31 March; the second Quarter from 1 April to 30 June; the third Quarter from 1 July to 30 September; and the fourth Quarter from 1 October to 31 December). Each country sets a minimum threshold limit for the obligatory submission of monthly declarations (whereby firms have to choose the regime for declarations for amounts of VAT below a certain value). The deadline established by the EU countries for the submission of the VAT declarations varies from 30 to 50 days after the end of the respective month/quarter, and another deadline for the payment of the VAT due.

VAT Regularization only occurs when the firm is selling a product (as only products can be returned by the consumer), but the VAT charged by the seller has already been delivered to the Government. In this case, if the firm receives a product that has been returned by the customer, it then has to carry out a VAT regularization (i.e., the firm has charged VAT that is now no longer due and its next VAT declaration the firm will be due a VAT regularization in favor of the firm (–)).

Example:

A sale is made in February for $1000 + 20\%$ VAT – the firm would have delivered 200 of VAT to the Tax Administration in April; then in May, the customer returns 400 worth of products, where the VAT already paid is $20\% \times 400 = 80$, resulting in the firm having the right to a VAT regularization of 80 in its May VAT declaration (i.e., the firm will pay less 80 in the May VAT declaration).

However, if the firm decides to return the products to its original suppliers, the VAT regularization due is now different, as the firm has in effect deducted VAT for which it no longer has a right, and in its next VAT declaration a VAT regularization will be made in favor of the Tax Administration (+).

Here is an example showing both types of regularization:

April (VAT is 20%)

Sale: 200 k

Costs: 140 k

Customer returned products worth 20 k

The firm returned products to the suppliers worth 30 k

VAT: 40 k (VAT charge) – 28 k (VAT deduction) – 4 k ($20 \text{ k} \times 20\%$ – customers' returns) + 6 k ($30 \text{ k} \times 20\%$ returns to suppliers): VAT payable: 14 k

If the firm has VAT to deliver to the Tax Administration, this payment is made at the time of submitting the periodic declaration. However, if the firm has VAT to recover, then it can adopt one of the following two procedures: (1) it can request to be reimbursed (resulting in an administrative act whereby the Tax Administration pays that VAT directly to the firm—in which case the VAT becomes an inflow—

which is very relevant for firms that are mainly exporters or which principally sell to other EU countries, as they have little VAT to charge and can accordingly deduct this VAT); or (2) the firm can accept a tax credit for the next VAT period (month/quarter).

Here is an example:

Suppose a firm has a VAT credit of 15 k in January. When it comes to the time of the January VAT declaration, the firm is obliged to decide whether to opt for the reimbursement or to settle for a tax credit (in this example, the latter will be assumed). Then in February, the firm is due a new VAT credit of 10 k, which when added to the 15 k, now represents a total revised VAT credit of 25 k (once again, the firm has to decide whether to opt for a reimbursement or a tax credit). In March yet another VAT credit is conceded of 20 k, which when added to the 25 k, represents a total credit of 45 k (again making the decision for reimbursement or credit). Then in the April VAT declaration, the firm is due to pay 5 k of VAT. By using the 45 k of credit it now has a revised credit of 40 k (once again, the decision has to be made whether to opt for a reimbursement or a tax credit). Then in May, the firm has to pay 10 k of VAT and uses the 40 k of credit, ending up with a credit of 30 k (again making the decision for reimbursement or credit). Next, in June it has to pay 70 k of VAT and uses the remaining credit (30 k) and just has to pay 40 k. Next month the firm will no longer have a VAT credit, and it will have to pay 50 k of VAT to the Tax Administration.

In what circumstances do firms normally opt for a VAT reimbursement? (as such a reimbursement has associated administrative costs and the firm will incur substantial administrative work). It is common for a firm to be due a VAT reimbursement by the Tax Administration, because when firms export/sell to other EU countries, they do not charge VAT on these transactions, although they have the right to deduct the VAT of the inputs.

In effect, those firms that are mainly exporters are recovering VAT on a permanent basis, with this VAT reimbursement being considered part of the cash flow if the amount due is very high, or if the VAT credit will take too much time to be used. On the contrary, if the amount of VAT due is low, or if the firm expects to use the VAT credit over the next months, then the common practice is to request a VAT credit from the Tax Administration (since there are no associated administrative costs).

January	February	March	April	May	June	July
VAT charge: 20k VAT deduction: 35k	VAT charge: 30k VAT deduction: 40k	VAT charge: 40k VAT deduction: 60k	VAT charge: 60k VAT deduction: 55k	VAT charge: 80k VAT deduction: 70k	VAT charge: 110k VAT deduction: 40k	VAT charge: 150k VAT deduction: 100k
VAT receive: 15k 2 options: Reimburse or VAT credit	VAT receive: 10k VAT credit: 15k VAT credit: 25 k	VAT receive: 20k VAT credit: 25k VAT credit: 45k	VAT pay: 5k VAT credit: 45k VAT credit: 40k	VAT pay: 10k VAT credit: 40k VAT credit: 30k	VAT pay: 70k VAT credit: 30k VAT pay: 40k	VAT payable: 50k Pay 50k of VAT
	2 options: Reimburse or VAT credit	2 options: Reimburse or VAT credit	2 options: Reimburse or VAT credit	2 options: Reimburse or VAT credit	Pay 40k of VAT	

9.5 VAT in the EU: Rules Regarding the Location of Operations

The location of operations in the EU is the cornerstone of this tax, which ensures VAT neutrality and competition among countries that operate with different VAT rates. The rules explained below are based on Title V—Place of Taxable Transactions section of the VAT Directive.

As has been seen above, the general rule of VAT is that exports are exempted (no VAT is charged under full exemption, and VAT paid on inputs is deductible). Imports tend to pay VAT at customs, and this is the way that countries ensure that an imported good is taxed at the destination country's VAT rate.

Nevertheless, in the EU, rules regarding the location of operations are far more complex. The reason for such complexity is mainly due to the fact that each Member State has its own VAT rates (which in 2022 for the standard rate currently ranges from a minimum of 17% in Luxembourg to a maximum of 27% in Hungary).

The rules regarding the location of operations for VAT in the EU are equal for all countries but are sub-divided between rules for goods and rules for services. These rules were established in the Council Directive 2006/112/EC of November 28, 2006, based on the common system of value-added tax. The main principle (albeit with exemptions) is the principle of taxation in the country of destiny of the goods and services.

Each rule (for goods or services) responds to two questions:

1. Where is the operation located? (i.e., in which Member State (MS) will the VAT be charged—which consequently impacts on how the rules governing the VAT rate are applied, as well the rules governing the delivery of VAT and VAT deductions, among others).
2. Who is responsible for charging the VAT (the seller or the buyer)?

Bearing in mind that someone selling a good or a service is a VAT-registered person, or at least they are for that the purposes of that transaction, the question then is that whoever buys the good or service could either be a VAT-registered person (B2B), or could be a final consumer (B2C), or in the case of the services they could be from outside the EU (either as a firm, or as an individual). It should be recalled that in the case of goods, if the buyer is from outside the EU, then the transaction is considered to be an export. A non-VAT-registered person (either the final consumer or outside the EU) is never attributed the responsibility to charge VAT.

The rules governing VAT for goods establish that exports (in the case of the EU, this only applies to selling goods outside the EU) are exempt (under a complete exemption), and that imports are liable to a VAT charge (with the exceptions being: if the good is VAT exempt in the country; or if the good entered the EU via one country, although the final destination is actually another country—e.g., goods being shipped from China that entering the EU via the port of Rotterdam in the Netherlands, but with the final destination being Germany are considered to be an import that is VAT exempt in Rotterdam, but which is liable for VAT in Germany).

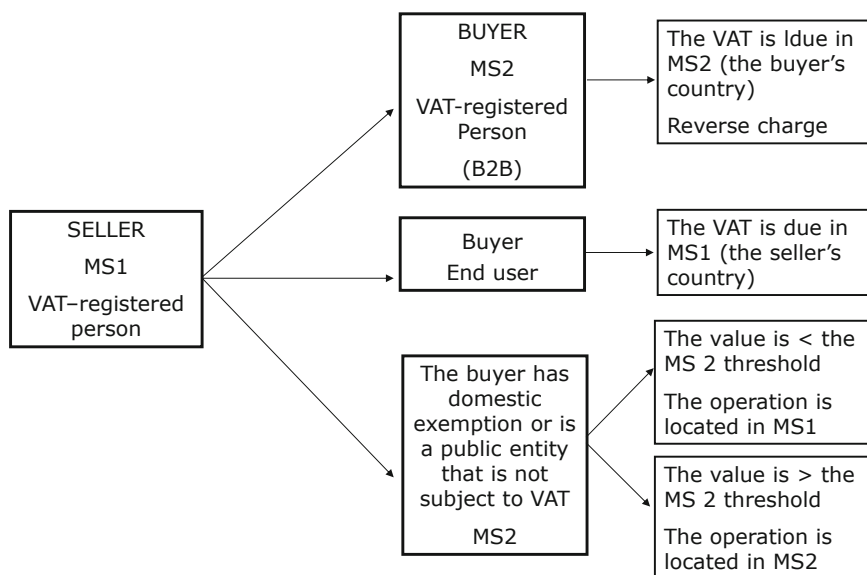


Fig. 9.4 Location of operation EU: goods. Source: Author

Transactions within the EU from one Member State to another (MS1 to MS2) of goods are called an “Intra-Community transaction of goods” for the firm selling, and an “Intra-Community acquisition of goods” for the buyer (see Fig. 9.4).

If the Intra-Community transaction of goods is a B2B operation (between two firms, both of which are VAT-registered persons, one located, for example, in MS1, and the other located in MS2), then the location of the operation is considered to be the MS of the firm that is buying the good (i.e., the MS where the Intra-Community acquisition of goods occurs). In order to avoid that a firm in MS1 that sells to all the other 26 MS in the EU is obliged to deliver VAT in each MS, a “reverse-charge”¹⁰ mechanism was introduced. For instance, as the destination of the B2B transaction of goods in this example involving the locations of MS1 and MS2 is located in MS2, it is thus be the buyer that charges VAT and then deducts this VAT (if it has such a right), as the buyer is located in MS2, and is therefore already obliged to deliver a VAT declaration in its own country. In this example, the firm in MS1 sells the good without VAT (and receives the amount for the good), and it is the firm in MS2 that charges and deducts the VAT at the MS2 VAT rate in their accounts and in their VAT declaration.

Here is a more detailed example:

Suppose a firm in Germany sells goods to a firm in Italy for 10,000. As the transaction is located in Italy and is a B2B operation, the firm in Germany is in effect carrying out an Intra-

¹⁰See Article 200 of the VAT Directive.

Community transaction, while the firm in Italy is carrying out an Intra-Community acquisition. The firm in Germany thus produces an invoice for the 10,000 and the firm in Italy pays the 10,000 and then carries out a reverse charge, whereby its accounting and VAT declaration will charge VAT at the Italian rate (22%), resulting in a VAT charge of 2200 and a VAT deduction of the same amount.

If the buyer is an individual (i.e., a final consumer, who is therefore not a VAT-registered person), this counts as a B2C operation which is considered to be located in the MS of the firm selling the good, where the seller thus has the responsibility to charge VAT as if it were a domestic transaction.

However, if the buyer is a VAT-registered person with domestic VAT exemption (incomplete) or a public entity that is not subject to VAT, then the buyer's location (MS2) will have established a specific threshold that determines whether the transaction is located in the MS of the seller (MS1) or the MS of the buyer (MS2). If the transaction is considered to be in MS1, then the seller is obliged to charge VAT (just as in any other domestic transaction), whereas if it is considered to be in MS2, then the buyer carries out a reverse charge, but only charges VAT, as it cannot deduct this VAT (due to the incomplete exemption status), and it therefore responsible for paying the amount of VAT in question.

For vehicles and for goods subject to excise duties, the VAT is always due in the MS of the final destination of the goods. Regarding online sales, the VAT could be due in the MS of the seller or of the buyer, depending on whether the firm selling the goods online has already surpassed the threshold limit fixed by the MS of the buyer. If not, then the VAT is due in the MS of the seller, however, if the limit has already been surpassed, then the firm is obliged to charge VAT in the MS of the buyer.

A specific set of rules for the location of operations exists for sales of electricity and gas (which are considered to be goods). If the selling of electricity and gas is between two utility firms (in effect B2B), then the obligation to pay VAT is located in the MS of the buyer—applying the B2B rule. However, if the selling is a B2C, then it is located in the MS where the electricity and gas are actually consumed (and not in the MS of the seller).

Moving to the selling of services, in this case, the VAT Directive stipulates two main rules, which in effect are no different from those established for goods, namely:

1. If it is a B2B transaction, the service is considered to be located in the MS of the buyer, which is consequently obliged to carry out a reverse charge.
2. If it is a B2C transaction, the service is considered to be located in the MS of the seller, and the seller is thus obliged to charge the VAT.

However, there are several exceptions to these two main rules, and exceptions prevail. Accordingly, in order to assess the correct localization of the service and to ascertain who is responsible for charging the VAT, it is necessary to first ensure whether the service can be categorized as being subject to one of the exemptions. Only once it has been proved that the selling of a specific service is definitely not under one of the exemptions, do the two main rules apply.

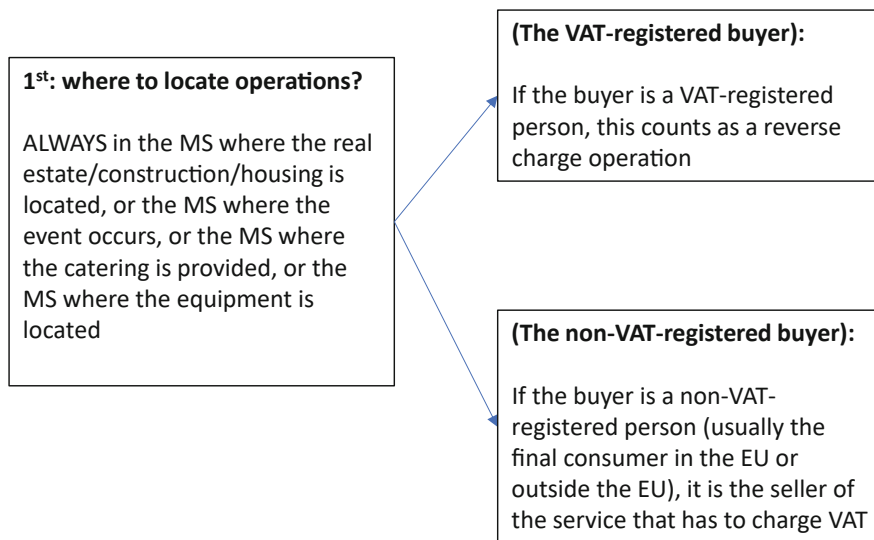


Fig. 9.5 Location of operation EU: real estate/events/catering. Source: Author

The first exemption concerns services related to real estate, as well as those providing catering and meals,¹¹ together with cultural, sporting, or any similar kind of event (see Fig. 9.5). Such services are considered to be located in the MS where the real estate is, or where the catering/meal was provided, or where the event occurred. If it is a B2B transaction, then the buyer is responsible for charging the VAT; however, if it is a B2C transaction, then it is the seller that is responsible for charging the VAT (in both cases in the MS of the actual location of the service).

Here are some examples of the selling of such services:

Suppose a Dutch firm provides a service regarding a real estate in Rome, for a Spanish firm. The service is located in Italy (Rome) and it is the Spanish firm (the buyer in this B2B transaction) that has to charge VAT at 22% (which is Italy's VAT rate) and deliver the VAT to the Italian Tax Administration.

Suppose a German firm is going to provide catering for a wedding in Athens for a French final consumer. The service is located in Greece (Athens) and as it is a B2C, it is the German firm that has to charge VAT in Greece and deliver the VAT to the Greek Tax Administration.

Suppose a Belgium firm provides service regarding a real estate in Madrid, to a US client. The service is located in Spain (Madrid) and it is the Belgium firm that has to charge VAT in Spain, as the buyer is a non-registered VAT (outside EU).

If the service is the provision of rent-a-car, and if it is for a short duration (of up to 30 days), then the location is considered to be the place where the vehicle was

¹¹ If the meals and catering are provided in an aircraft or on a train during the intra-community transportation of passengers, then the location is considered to be the origin of the transport.

delivered. However, if it is for a long duration, then if it is a B2B, the service is considered to be located in the MS of the buyer with a reverse charge, and if it is a B2C it is considered to be located in the MS of the residence of the individual (exception for boats) or the MS of the delivery of the service if the buyer of the service is from outside the EU.

The second exemption is related to services such as telecommunications, consulting, legal, financial, and advertising, among others. To qualify for this exemption depends on the provider of the service (Fig. 9.6). If the provider of the service is located in the EU, then there are three possibilities:

1. If it is a B2B transaction, then the service is considered to be located in the MS of the buyer, with a reverse charge.
2. If it is a B2C transaction, where the buyer is a final consumer located in the EU, then the service is considered to be located in the MS of the provider, with the firm being obliged to charge VAT as if it were a domestic transaction.
3. If the buyer is outside the EU (either a firm or an individual), then the transaction is VAT exempted.

Here are a few examples of this category of exemption:

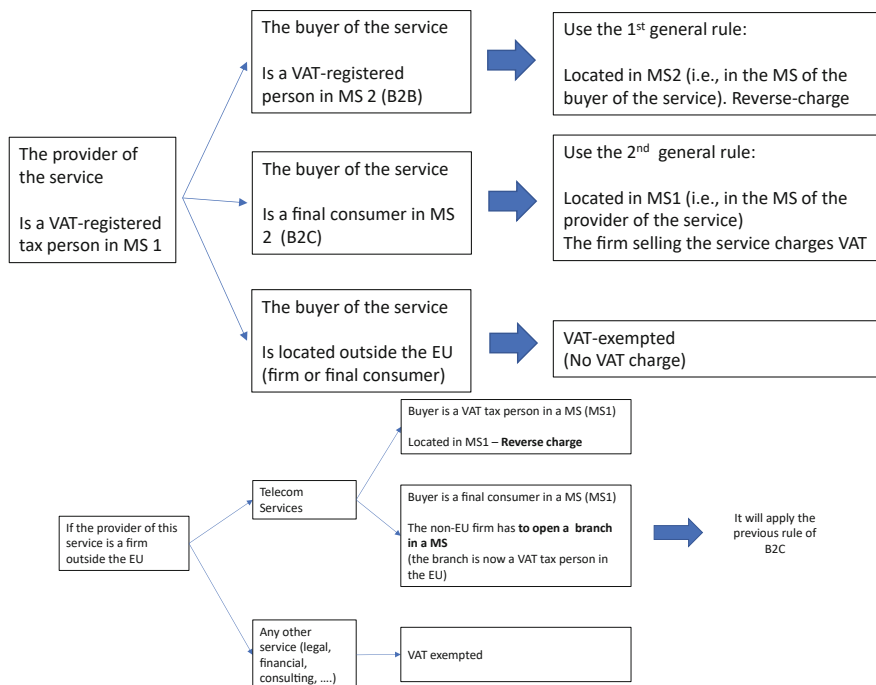


Fig. 9.6 Location of operation EU: telecom/consulting/financial/legal/etc. Source: Author

A firm in Ireland sells consulting services to a firm in the Netherlands. In this case, the service is considered to be located in the Netherlands, with a reverse charge.

A firm in Spain provides legal services to an individual who is resident of Germany. In this case, the service is considered to be located in Spain, with the firm charging VAT as if it were a domestic transaction.

A firm in Portugal provides a consulting service to a firm in the United States. In this case, the transaction is VAT exempted.

Telecommunication is subject to a specific consideration. For if the provider of such services is located outside the EU, then VAT is charged for such telecommunication services (whereas in all other cases services are not subject to VAT). If it is a B2B transaction, where the seller is outside the EU and the buyer of the telecommunication services is a firm located in an EU MS, then the operation is considered to be located in the MS of the buyer, and the buyer carries out a reverse charge. If it is a B2C transaction, then the firm selling the service has to register the service for VAT purposes in a EU MS, and the service is thus considered to be a transaction subject to the previously described rules for B2C transactions (which are considered to be located in the MS where the firm is registered for VAT).

In the case of intra-community transport of goods (i.e., goods that are transported from MS1 to MS2, for example, but which were not sold—for instance, in the case of a firm reallocating equipment or an individual moving their personal belongings), then two rules apply:

1. If it is a B2B transaction, then the service is considered to be located in the MS of the buyer, with a reverse charge.
2. If it is a B2C transaction (with individuals or non-EU), then the service is considered to be located in the MS where the goods were shipped from (the MS of the beginning of the transport).

Here are two examples of the VAT exemption for intra-community transport of goods:

A Dutch firm transports equipment for a Polish firm from a factory in Munich to a factory in Milan. The service is considered to be located in Poland, and as this is a B2B transaction, and it is thus the Polish firm that is obliged to carry out a reverse charge.

A Belgium firm transports the personal belongings of a German final consumer from Paris to Barcelona. The service is located in France (Paris), and as it is a B2C transaction, the Belgium firm is obliged to charge VAT in France.

Nevertheless, if the transport is related to exports or with the intra-community transaction of goods, such a transport service is exempted from VAT (as the selling of the goods in both cases are also VAT exempted).

All the above-described rules and exemptions are summarized in Table 9.2.

Regarding the location of operations of goods for VAT purposes, so far this chapter has only considered two economic agents (a seller and a buyer). But where

Table 9.2 Summary of the VAT localization of services

Services	B2B		B2C	
	Location	VAT Charge	Location	VAT Charge
Real estate	The MS of the real estate	Buyer	The MS of the real estate	Seller
Catering and meals	The MS where the service was provided	Buyer	The MS where the service was provided	Seller
Catering and meals in a plane, ship, or train	The departure MS	Seller	The departure MS	Seller
Rent-a-car (short duration)	The MS where the vehicle is delivered	Seller	The MS where the vehicle is delivered	Seller
Rent-a-car (long duration)	The MS of the buyer	Buyer	The MS of the buyer (except for boats)	Seller
Renting of other assets and equipment	The MS of the buyer	Buyer	The MS of the seller (if the buyer is the final consumer) The MS where the service is provided (if the buyer is outside the EU)	Seller
Events	The MS where the event occurs	Buyer	The MS where the event occurs	Seller
Intra-community transport of goods	The MS of the buyer	Buyer	The MS of the departure of the goods	Seller
Intra-community transport of goods (accessory goods)	The MS of the buyer	Buyer	The MS where the service is provided	Seller

Source: Author

are operations localized if three economic agents are involved in the transactions—which are known as “triangular”¹² or “false triangular” operations? Triangulation involves two supplies of goods between three Value-Added Tax (VAT)-registered traders located in three different European Union (EU) Member States.

First, the “triangular” operation is analyzed (see Fig. 9.7): assume that Firm A (located in MS1) sells goods to Firm B (located in MS2), and that Firm B then sells those same goods to Firm C (located in MS3), with the goods being delivered directly from A to C (i.e., the goods travel from MS1 directly to MS3). In this case, the selling of the goods from A to B is exempted from VAT in MS1 (i.e., Firm A is carrying out an intra-community transaction, and is thus VAT exempted) and Firm B will not be charged VAT in MS2. However, Firm B will charge VAT for this acquisition in MS3 (which it can deduct), and afterward, in turn, it will charge VAT in MS3 for the transaction from B to C.

¹²The European Commission defines triangular operations as: “A triangular transaction is one in which a business established in EU country A supplies goods to a customer in EU country B, but the goods are shipped directly to the customer from a third EU country (C).”

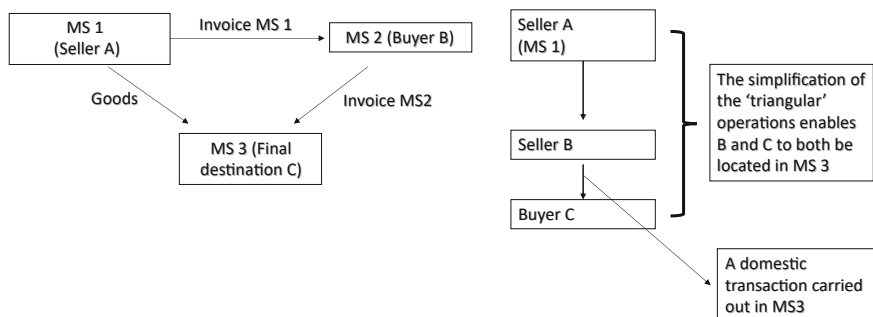


Fig. 9.7 VAT triangular operation. Source: Author

Here is an example:

Suppose a firm in the Netherlands sells goods to a client in Germany, but the goods are delivered to another firm in Italy (with the German firm selling those goods to the Italian client). In this case, the Dutch firm will be VAT exempted from the transaction, and the German firm will carry out a reverse charge for this intra-community acquisition, not in Germany, but in Italy (charging and deducting the VAT), and next the German firm will charge VAT to the Italian client in Italy.

A “false triangular” operation occurs when one of the three economic agents is located outside the EU. Here are a few examples:

Example 1: Assume that Firm A (located in MS1) sells goods to Firm B (located in MS2), and that Firm B then sells those goods to Firm C (located in Country Z outside the EU), with the goods being delivered directly from A to C (i.e., the goods travel from MS1 directly to Country Z). In this case, Firm A in MS1 is in effect exporting the goods (which is VAT exempted) and Firm B is not obliged to carry out a reverse charge for the intra-community acquisition in M2. In turn, Firm C is carrying out an import in Country Z, which is outside the scope of VAT.

Suppose a Polish firm sells goods to a Greek firm, but it delivers the goods to a client of a Greek firm located in Egypt. In this case, the Polish firm is exporting the goods and is VAT exempted. The Greek firm will not be charged VAT in Greece for the intra-community acquisition, as the goods left the EU space. However, as the Egyptian client is importing the goods, it is obliged to pay whatever taxes Egypt applies to imports.

Example 2: Assume that Firm A (located in MS1) sells goods to Firm B (located in Country Y, outside the EU), and that Firm B sells those goods to Firm C (located in MS2), with the goods being delivered directly from A to C (i.e., the goods travel directly from MS1 to MS2). In this case, Firm A is not doing an export (i.e., the goods do not leave the EU space and no intra-community transaction takes place as the buyer is located outside the EU). Firm A will have to charge VAT in MS1, unless firm B is registered for VAT in a MS in the EU (in which case, Firm A is in effect

carrying out an intra-community transaction, and is thus VAT exempted, and Firm B is carrying out an intra-community acquisition, and can thus carry out a reverse charge in the MS where it is registered for VAT).

Suppose a Spanish firm is selling goods to a firm in Tunisia, but delivers those goods in Portugal to a client of the Tunisian firm. If the Tunisian firm is not registered for VAT in the EU, then the Spanish firm must charge VAT in Spain. However, if the Tunisian firm is registered in Spain, this operation counts as a domestic transaction. Likewise, if the Tunisian firm is registered in Portugal, then the Spanish firm is in effect carrying out an intra-community transaction and the Tunisian firm is making an intra-community acquisition in Portugal and next make a domestic transaction to the Portuguese client. If the Tunisian firm is registered in another MS besides Spain or Portugal, then this is a “triangular” operation.

Example 3: Assume that Firm A (located in Country X, outside the EU) sells goods to Firm B (located in MS1), and that Firm B then sells those goods to Firm C (located in MS2), with the goods being delivered directly from A to C (i.e., the goods travel from Country X directly to MS2). In this case, Firm A, which is located outside the EU, is in effect carrying out an export (which will be taxed or not according to the tax law of the country). In turn, Firm B is carrying out an import and thus is obliged to pay VAT. On the other hand, Firm C is carrying out an intra-community acquisition.

Suppose a US firm is selling goods to a French firm, but delivers those goods in Germany, to a client of the French firm. The US firm is in effect exporting from the United States (and will thus be subject to the US tax code), and the French firm is carrying out an import and is thus obliged to pay VAT in France (and will be able to deduct such VAT), whereas the German client is carrying out an intra-community acquisition, with a reverse charge.

Example 4: Assume that Firm A (located in MS1) sells goods to Firm B (located in Country Y, outside the EU), and Firm B then sells those goods to Firm C (located in MS1—the same country as Firm A), with the goods being delivered directly from A to C (i.e., the goods do not physically leave MS1 in the EU). Firm A is carrying out a domestic transaction, charging VAT to firm B (and will thus be able to ask for the reimbursement of the VAT), and Firm B will have to charge VAT to Firm C.

Suppose Firm A in Austria sells goods to a client in China, but the goods are delivered directly to an Austrian client of the Chinese firm. In Austria, Firm A will charge VAT to the Chinese client and in turn, the Chinese firm will charge VAT to the Austrian client.

9.6 VAT Evasion and Fraud

As mentioned by de La Feria (2020), the multi-stage nature of VAT (it should be recalled that it was explained at the beginning of this chapter that VAT is collected by each firm operating in the economic cycle of the product, thus enabling firms to deduct the VAT of their inputs) ensures that buyers of intermediate goods have

opposing interests to those of sellers, thus reducing the scope for tax evasion, which in turn, spreads the risk of tax evasion across what could be a very long production and distribution chain. Despite VAT being considered to be a tax that is less prone to evasion, it still poses difficulties for tax administrations all around the world, and particularly in the EU.

The elimination of border controls within the then European Economic Community (EEC) as of January 01, 1993, led the European Commission to establish a transitional VAT system in 1991. The transitional regime established the concept of the “Intra-Community Acquisition of Goods and Intra-Community Transfer of Goods,” which stipulated that the taxation of intra-Community trade between two taxable persons would continue to be taxed in the country of destination, thereby exempting the transaction in the country of origin.

The move in 1993 to instigate the administrative control of goods in the Intra-community transactions resulted in the EU being confronted with a new type of VAT-related fraud—carousel fraud.

When conceptualizing carousel fraud, Swinkels (2008) uses the same definitions as the European Commission in 2004¹³: Firm (A), which is a *conduit company*,¹⁴ makes a Intra-Community transaction of goods (VAT free) for Firm (B), which is a *missing trader*¹⁵ from another Member State. (B) acquires the good and then sells it to Firm (C), which is a *broker*¹⁶ in the same Member State. (B) receives the VAT from the sale, but does not deliver it to the tax authorities, and the VAT disappears. (C) then asks for reimbursement of the purchase made to (B), and the loss to the State

¹³Report of the Commission for the Council and the European Parliament on improving administrative cooperation in the fight against VAT fraud, April 16, 2004, COM (2004) 260 final, Sect. 3.2.2.

¹⁴“A *Conduit Company* operates from another Member State. It makes exempt intra-Community transactions and asks for reimbursement of the VAT contained in its purchases made in the national territory, which will be delivered by its supplier (usually a wholesaler) to the State. Consequently, there is no loss of VAT in the Member State of the *Conduit Company*. In other cases, it acquires assets from an undertaking which is located in another Member State. (...) The *Conduit Company* is often a company created with the objective to serve the fraud mechanism, but it may also be a wholesaler which, depending on the circumstances, may or may not be aware of the fraud mechanism.”

¹⁵“*Missing Trader* is an undertaking that does not comply with its tax obligations (non-payment of VAT and in most cases, lack of declarations). It usually has a mailbox or domicile address, or even a false official address and does not carry out a well-defined activity. A *Missing Trader* is often a limited liability company, whose directors/partners are ‘iron foreheads’ or foreign companies (established in a tax haven). The tax administration does not have access to the *Missing Trader*’s accounting or any other documents. In the (apparent) chain of transactions, it makes upstream acquisitions (albeit associated with other transactions) and also downstream transactions in the internal market to a *buffer* or to a *Broker*.”

¹⁶“The *Broker* buys the goods from a *buffer* (or more rarely, directly from a *Missing Trader*), or it makes intra-Community transfers to an operator in another Member State, or it sells them on the internal market. The *Broker* then claims a refund of the VAT paid on its purchases, or it pays a minimum difference between the *output* and the *input* VAT. A *Broker* is always established in the same Member State as the *Missing Trader*.”

Table 9.3 Carrousel fraud

	Cost price (m€)	Sale price (m€)	Profit (m€)	VAT to be deducted (m€)	VAT due (m€)	Net VAT due (m€)	Net VAT paid/refunded (m€)
Missing Trader	110	100	−10	0	21	21	0
Buffer 1	100	102	2	21	21,42	0,42	0,42
Buffer 2	102	104	2	21.42	21.84	0.42	0.42
Buffer 3	104	106	2	21.84	22.26	0.42	0.42
Broker	106	110	4	22.26	0	−22.26	−22.26
Net Profit (m€)							−21
Net Income (%)							21%

Source: Author

is equal to the amount paid by (C) to (B). (C) then performs an Intra-Community transaction of goods for (A), which is exempt from VAT, and which returns to sell to (B) and the “carousel” resumes. To make investigations more difficult, the transaction between (B) and (C) passes through several intermediaries, which is called buffering.^{17,18}

Table 9.3 shows how carousel fraud progresses from the *missing trader*, which is the party that fails to deliver the VAT to the State, through to the *broker*, passing through several *buffers* which have the function of hindering the discovery of fraud. It is important to note that in order to ensure that it can sell its products and commit fraud, the *missing trader* sells the products at a price below the market level, and it thus makes a loss on the sale, which, in turn, is compensated by the amount of VAT that the *missing trader* fails to deliver to the Government.

Carousel fraud takes advantage of the fact that Intra-Community transactions of goods are exempted from paying VAT at the origin. It is for this reason that this type of exchange is so frequently used for the practice of fraudulent schemes. Without physical control of goods entering and departing from one Member State to another,

¹⁷“The *buffer* is an intermediary company between the *Missing Trader* (or other *buffer*) and a *Broker*. It acquires the goods via a *Missing Trader* and provides them immediately to the *Broker*. If the *buffer* is compliant, it submits the VAT returns and pays the tax due. The role of the buffer is to confuse investigations by ensuring that there is no direct contact between the *Missing Trader* and the company requesting a VAT refund. (...) A *buffer* can be a well-known to the tax authorities and is not necessarily an enterprise specifically created for the fraud mechanism. Although sometimes it not known to be involved in this scheme, in most cases one is aware that the *buffer* is participating in a fraud mechanism (albeit not necessarily because of the unusual nature of the commercial operation). This company (the *buffer*) normally benefits from a small profit margin, but is not exposed to any commercial risk.”

¹⁸Often buffers are unaware that they are getting involved in a carousel fraud scheme.

and by only being able to count on administrative control, it becomes difficult for tax authorities to monitor trade between EU countries. According to Ruffles et al. (2003), Amand and De Rick (2005), and Brederode and Robert (2008), the type of goods transacted in fraudulent schemes are often of high value and are easy to transport (e.g., mobile phones, computer components, scraps, telephone cards, motorcycles, and motor vehicles). However, new trends have emerged for the use of other goods in carousel fraud (e.g., food and non-alcoholic beverages, precious metals, and petroleum products).

Therefore, without improvements in the tax system of the destination country, it becomes increasingly difficult to combat carousel fraud (Ainsworth, 2006, 2008). The existence of an efficient tax system in the country of origin would end discrimination between internal and external trade in goods and would facilitate the fight against VAT fraud. However, there is still a long way to go with regard to the taxation of operations at source, as this requires greater harmonization among the tax rates practiced by the Member States. In addition, it is also important to be able to guarantee the operational integration of the tax administrations of the various EU States. The main reasons why carousel fraud is still successful are the quality of the tax system of the destination country and also the asymmetries that exist concerning internal and intra-Community trade, which consequently often result in the deferral of VAT payments.

9.7 The VAT Revenue Gap

The VAT revenue gap is defined by the European Commission as follows: “*The VAT Gap is the difference between the expected VAT revenue (or ‘VAT Total Tax Liability’ - VTTL) and the amount actually collected, in absolute or percentage terms. The VAT Total Tax Liability is an estimated amount of VAT that is theoretically collectable based on VAT legislation and ancillary regulations. This figure represents revenues lost to: (1) VAT fraud and evasion, (2) VAT avoidance and optimisation practices, (3) bankruptcies and financial insolvencies, as well as (4) miscalculations and administrative errors.*” In 2019, the European Commission reported that the VAT gap in the EU amounted to 134 billion €. Zídková (2014) also defines the VAT gap as being the difference between the theoretical VAT liability and accrued VAT receipts in a respective State and year. The calculation of the theoretical VAT liability is usually made by applying the type of “top-down” methodology designed by Reckon (2009) or by Hutton (2017).

Zídková (2014) and Zídková and Pavel (2016) found evidence that some variables increase the VAT gap, such as the final consumption of households and of non-profit organizations, as well as the share of the shadow economy and the standard VAT rate. Conversely, the VAT gap is reduced according to the share of VAT in the GDP, and its share in intra-community trade, final consumption of restaurants and hotel services, and the number of VAT rates. Barbone et al. (2013) provide evidence of the estimates of the VAT Gaps for 26 of the 28 EU countries for the period of 2000–2011. The authors found that there are large disparities exits with

regard to the performance of countries, where the “worst performers” are unable to improve their situation substantially over time, although the data used reports a moderate declining trend prior to 2008. The level of VAT compliance appears to decrease when tax rates are increased, at least in countries with weaker tax enforcement. Poniatowski et al. (2018) also studied the VAT gap in the EU and found that the productive structure of each economy has a significant impact on the VAT gap, together with the percentage share of retailers in the market. In addition, liquidity constraints are also relevant in determining VAT compliance.

9.8 VAT and Inequality

As discussed in Chaps. 2 and 3, taxes can be used to reduce inequality and improve income distribution. In this sense, VAT is sometimes perceived to be a regressive tax, as it can lead to an increase in inequality (as mentioned above, the effect of VAT can be regressive, although this should not be confused with a regressive tax rate, as described in Chap. 6, as VAT rates are proportional, as explained before).

VAT can have a regressive effect because the VAT rate is applied to goods and services, regardless of the level of consumers' incomes. As discussed in Chap. 6, most income taxes are progressive, in the sense that taxpayers with higher incomes tend to pay more taxes, which reduces inequality more than just the “flat rate” proportional tax. However, in the case of VAT, when examining the level of consumption of just one individual good or service, all taxpayers are obliged to pay exactly the same rate of tax. When analyzed at the aggregated level, it can indeed be seen that taxpayers with higher incomes are most likely to consume more, and thus pay more VAT. Nevertheless, both regression and an increase in inequality can be a result of applying VAT, although the use of reduced rates for essential goods and services would mitigate this potential impact. As referred to by Thomas (2021), several studies have found that VAT is regressive when an analysis is carried out of VAT burdens measured as a percentage of current income across income distribution (O'Donoghue et al., 2004; Ruiz & Trannoy, 2008; Leahy et al., 2011). On the other hand, other studies that present VAT burdens as a proportion of current expenditure across both income and expenditure distribution tend to find that VAT systems are relatively proportional, or are even slightly progressive (Metcalf, 1994; Bird & Smart, 2016).

As referred to by Alavuotunki et al. (2019), VAT can be regressive if the alternative is a well-functioning income tax, albeit if VAT is considered to be a “money machine,” then the increased level of revenues generated could be used to finance public expenditure—which in turn would reduce inequality. These authors state that the overall impact of VAT on inequality is therefore ambiguous in theory. By using data on VAT and inequality from a large dataset of countries, they conclude that on average, VAT adoption has not necessarily led to increased inequality. However, the same authors also emphasize that when inequality is measured based on disposable income, countries that have implemented VAT tend to experience an increase in inequality, whereas in countries where inequality is

measured based on consumption, inequality has not increased after the implementation of VAT. There is some evidence (albeit weak) that the criticism levelled against the implementation of VAT is partly misplaced within the context of low-income countries.

Pestel and Sommer (2017) analyze the impact of shifting taxes from labor to consumption and found evidence of the regressive impact of such a tax shift in the short term, albeit the overall effects on inequality and progressivity become lower when payroll taxes are reduced. This is partly due to increases in aggregate labor supply, resulting from the existence of more incentives to work.

Using microdata from the OECD countries, Thomas (2021) found that VAT is either approximately proportional or slightly progressive in most of the 27 OECD countries under analysis. However, the results of the data from a restricted number of countries highlight that broad-based VAT systems with very few reduced VAT rates or exemptions tend to produce only a small degree of regression and that an approximately proportional system of VAT can still have significant implications for the poor in terms of equality.

Exercises and Solutions

1. From the following four operations, indicate which is a provision of services:
 - (a) The sale of industrial equipment.
 - (b) The supply of electricity.
 - (c) The supply of natural gas.
 - (d) The repair of industrial equipment.
2. When a public entity provides a legal document, for VAT purposes, such an operation is:
 - (a) VAT exempt.
 - (b) Not subject to VAT.
 - (c) A transaction of a service.
 - (d) A transaction of a good.
3. For VAT purpose, electricity is considered to be:
 - (a) A good.
 - (b) A service.
 - (c) It depends on the seller.
 - (d) It depends on the buyer.
4. The taxable value of the transfer of goods and the provision of services subject to VAT excludes which of the following:
 - (a) Taxes, duties, fees, and all other charges, with the exception of the actual VAT.
 - (b) Subsidies are directly linked with the price of each operation.
 - (c) Discounts, rebates, and bonuses.
 - (d) Ancillary expenses related to commissions.
5. A firm sold equipment for 10,000, with an additional 1000 in transport expenses, 100 in interest payments, and offered a discount of 500. Calculate the taxable value of this transaction for VAT purposes.

- (a) 10,600
 - (b) 10,500
 - (c) 11,000
 - (d) 11,600
6. A firm in Country X sold goods to a firm in Country Z (both in the EU). In which country is this operation considered to be located?
- (a) Country X.
 - (b) Country Z.
 - (c) Depends on the type of goods.
 - (d) Depends on the value of the goods.
7. A firm in Country X sold goods to a firm in Country Z, but the goods were delivered directly to Country Y (all in the EU). For VAT purposes, where is this operation located?
- (a) Country X.
 - (b) Country Z.
 - (c) Country Y.
 - (d) Depends on the type of goods.
8. Which one of these transportation services provided by a firm in Country X is considered to be located in the country for VAT purposes (All within the EU)?
- (a) The transportation of goods from Country Z to Country Y to a firm from Country W.
 - (b) The transportation of goods from Country X to Country Y to an individual from Country Y.
 - (c) The transportation of goods from Country Z to Country Y to an individual from Country Y.
 - (d) The transportation of goods from Country Z to Country Y is provided to a firm from outside the EU.
9. A firm in the US sells goods to a firm in Country X (in the EU), however, the goods enter via a port in Country Y (also in the EU), having been transported from Country Y to Country X. Is a VAT payment due in Country Y?
- (a) Yes, because it is an import of goods into Country Y.
 - (b) Yes, because it is the entrance of goods into the EU.
 - (c) No, because the final destination of the goods is not Country Y.
 - (d) No, because the firm is from Country X.
10. Which of the following operations is considered to be located in Country X (all in the EU)?
- (a) An architect from Country X provides a project for a real estate located in Country Y, for a client that is VAT-registered in Country Y.
 - (b) An architect from Country X provides a project for a real estate located in Country Y, for a client that is VAT-registered in Country X.
 - (c) An architect from country Y provides a project for a real estate located in Country Y, for a client that is VAT-registered in Country X.
 - (d) An architect from Country Y provides a project for a real estate located in Country X, for a client that is VAT-registered in Country Y.

11. Firm A in Country X (in the EU) sells to Firm B located in the same country goods that were then sent outside the EU. What is Firm A's tax liability for this transaction in Country X?
 - (a) It has to charge VAT.
 - (b) It is exempted from VAT.
 - (c) It is not subject to VAT.
 - (d) Both A and B have to charge VAT.
12. Which transaction is located in Country X (EU)?
 - (a) Selling a real estate in the capital of Country X.
 - (b) A lawyer from Country X providing a service to a firm in Country Y (in the EU).
 - (c) A consulting firm from Country X selling services to a firm in Country Y (in the EU).
 - (d) A bank from Country X selling financial services to a firm in Country Y (in the EU).
13. A firm in Country X has to pay a fee to a firm in Country Y (a commission) for the intermediation in the selling of goods to a client in Country Z, with the goods being transported from Country W to Country A (all in the EU). In which country is the transaction of the commission considered to be located?
 - (a) Country X.
 - (b) Country Y.
 - (c) Country Z.
 - (d) Country W.
14. A firm in Country X (in the EU) sells goods to a firm in a country outside the EU. This operation in Country X:
 - (a) Is liable to the charging of VAT.
 - (b) Is liable to the charge of VAT, but depending on the type of goods.
 - (c) Is VAT exempted, because it is an export.
 - (d) Is not subject to VAT, because it is an export.

Solutions: 1 – d); 2 – b); 3 – a); 4- c); 5- b); 6- b); 7- c); 8- b); 9- c); 10- d); 11- b); 12 – a); 13-a); 14- c)

Exercise 1:

How much VAT does a firm have to pay/receive in the following (values without VAT)?

Sales at 20% VAT: 400 k

Sales at 5% VAT: 200 k

Exports: 300 k

Acquisitions at 20% VAT: 250 k

Acquisitions at 5% VAT: 50 k

Exercise 2:

Assume a firm in MS1, with a VAT rate of 20% and a reduced rate of 5%. Classify each transaction for VAT purposes and calculate the amount of VAT to pay/receive:

- (a) Sells goods with a value of 300 k to clients in MS1, at the standard rate.
- (b) Sells goods with a value of 100 k to clients in MS1, at a reduced rate.
- (c) Sells goods with a value of 200 k to the United States.
- (d) Sells goods with a value of 50 k to a firm in MS2.
- (e) Sells goods with a value of 10 k to an individual resident in MS3, at the standard rate.
- (f) Buys goods with a value of 150 k from suppliers in MS1, at the standard rate.
- (g) Buys goods with a value of 60 k from suppliers in MS1, at a reduced rate.
- (h) Buys goods with a value of 50 k from a supplier in China, at the standard rate, with the goods entering the EU via MS1.
- (i) Buys goods with a value of 40 k from a supplier from India, at the standard rate, with the goods entering the EU via MS4, followed by transportation to MS1.
- (j) Buys goods with a value of 100 k from a firm in MS5, at the standard rate. The goods were delivered to a firm in MS6, to which the firm sold the goods for 150 k.

Solutions:

Exercise 1:

VAT charge: $(400 \text{ k} \cdot 20\%) + (200 \text{ k} \cdot 5\%) = 80 \text{ k} + 10 = 90 \text{ k}$

VAT deduction: $(250 \text{ k} \cdot 20\%) + (50 \text{ k} \cdot 5\%) = 50 \text{ k} + 2.5 \text{ k} = 52.5 \text{ k}$

VAT payable: $(90 \text{ k} - 52.5 \text{ k}) = 37.5 \text{ k}$

Exercise 2:

- (a) A domestic transaction. The firm charges VAT of 60 k $(300 \text{ k} \cdot 20\%)$.
- (b) A domestic transaction. The firm charges VAT of 5 k $(100 \text{ k} \cdot 5\%)$.
- (c) An export, which is therefore exempt from VAT.
- (d) An intra-community transaction, which is therefore exempt from VAT in MS1 (it is the firm in MS2 that has to carry out a reverse charge).
- (e) The operation is considered to be located in MS1, as the buyer is “non-VAT-registered.” The firm charges VAT of 2 k $(10 \text{ k} \cdot 20\%)$.
- (f) A domestic transaction, as it is considered to be located in MS1. The firm pays VAT of 30 k $(150 \text{ k} \cdot 20\%)$ to the supplier and is eligible to deduct the same VAT.
- (g) A domestic transaction as it is considered to be located in MS1. The firm pays VAT of 3 k $(60 \text{ k} \cdot 5\%)$ to the supplier and is eligible to deduct the same VAT.
- (h) An import in MS1, as it is considered to be located in this MS. The firm charges VAT of 10 k $(50 \text{ k} \cdot 20\%)$ and is eligible to deduct the same VAT.
- (i) A VAT-exempt import in MS4, as the final destination of the goods is not considered to be located in MS4, but rather in another MS (MS1). In effect, the

firm is carrying out an intra-community acquisition in MS1, and thus charges VAT of 8 k ($40 \text{ k} \times 20\%$) and is eligible to deduct the same VAT.

- (j) In effect, the firm in MS5 is carrying out an intra-community transaction, which is exempt from VAT. The operation is not considered to be located in MS1, but in MS6. VAT charge: 85 k

VAT deduction: 51 k

VAT payable: 34 k

Classify each transaction according to the localization of operations and identify who is responsible for charging the VAT?

No	Operation	VAT localization (country)	Responsible for charging VAT (Buyer/Seller)
1	A Portuguese lawyer provides a service to a French firm		
2	A French firm sells a product to a Portuguese firm		
3	A Portuguese firm sells products in Angola		
4	A Portuguese firm transports the products of Operation No.3 from Lisbon to Luanda (Angola)		
5	A Portuguese firm transports goods from Athens to Warsaw for an Italian citizen (final consumer)		
6	A Portuguese magazine/journal sells publicity to a UK firm		
7	A Portuguese firm buys products from a US firm		
8	A Portuguese firm buys a cargo of medical drugs (that are exempted from VAT in the domestic market) from a Canadian firm		
9	A French firm buys products from a Chinese firm. The products enter the EU via Sines (Portugal) and are then transported to Paris		
10	A Portuguese firm sells a product to a French citizen (final consumer)		
11	A Spanish firm supplies a real estate-related service located in Berlin, to a Belgian firm		
12	A Dutch firm supplies a real estate-related service located in Rome to a French citizen (final consumer)		
13	A Dutch firm transports goods from Barcelona to Milan to a Polish firm		
14	A Portuguese lawyer provides a service to a Spanish citizen		
15	A Portuguese firm buys products from a Chinese firm. The products enter the EU via Rotterdam harbor and are then transported to Lisbon		

Solution:

No	Operation	VAT Localization (country)	Responsible for charging VAT (buyer/seller)
1	A Portuguese lawyer provides a service to a French firm	France (as in the rule of law services, B2B is located in the MS of the buyer of the service)	The buyer (a reverse charge)
2	A French firm sells a product to a Portuguese firm	Portugal (the first rule of goods—a B2B intra-Community operation that is located in the MS of the buyer)	The buyer (a reverse charge)
3	A Portuguese firm sells products in Angola	An export—and therefore VAT exempted	—
4	A Portuguese firm transports the products of operation No. 3 from Lisbon to Luanda	This transport service is also VAT exempted, as this is the transport of goods outside the EU and also the transport of an export	—
5	A Portuguese firm transports goods from Athens to Warsaw for an Italian citizen (final consumer)	The MS of the departure of the goods, as this is the Intra-Community transport of goods where a buyer is a non-VAT-registered person located in Greece	The Portuguese firm (i.e., the seller of the service) charges VAT in Greece
6	A Portuguese magazine/journal sells publicity to a Dutch firm	Located in the MS of the buyer, as this is a B2B service providing advertising. The second exception of the location of services is used, as the service is located in the Netherlands	The buyer (a reverse charge)
7	A Portuguese firm buys products from a US firm	This is an import and thus the Portuguese firm is liable to pay VAT (assuming that the product is not VAT-exempt in Portugal or the final destination of the product is Portugal and not another MS—in which case the import would be VAT exempted)	The Portuguese firm charges this VAT in their VAT declaration
8	A Portuguese firm buys a cargo of medical drugs (that are exempted from VAT in the domestic market) from a Canadian firm	This is an import but is VAT exempted as the product is VAT-exempt in Portugal	—
9	A French firm buys products from a Chinese firm. The	The location is Portugal, as this is an import (as the	

(continued)

No	Operation	VAT Localization (country)	Responsible for charging VAT (buyer/seller)
	products then enter the EU via Sines (Portugal) and are then transported to Paris	products entered the EU space via Portugal) but it is a VAT-exempt import, as the final destination of the products is another MS (France) and thus it is an intra-Community acquisition	The French firm, which is the buyer (a reverse charge)
10	A Portuguese firm sells a product to a Belgium citizen (final consumer)	Located in Portugal, as it is a B2C intra-Community transaction located in the MS of the seller of the good, i.e., Portugal	The Portuguese firm
11	A Spanish firm supplies a real estate-related service located in Berlin, to a Belgian firm	The first exemption of services is used Located in Germany, the MS of the location of the real estate	The buyer (B2B) The Belgian firm charges VAT in Germany
12	A Dutch firm supplies a real estate-related service located in Rome to a French citizen (final consumer)	The first exemption of services is used Located in Italy, i.e., the MS of the location of the real estate	The seller of the service (B2C) The Dutch firm charges VAT in Italy
13	A Dutch firm transports goods from Barcelona to Milan to a Polish firm	The third exemption of services is used, being B2B intra-Community transport of goods Located in Poland, the MS of the location of the buyer of the service	The Polish firm (a reverse charge)
14	A Portuguese lawyer provides a service to a Spanish citizen	The 2nd exemption is used, being B2C. Located in Portugal, the MS of the service provider	The Portuguese lawyer
15	A Portuguese firm buys products from a Chinese firm. The products enter the EU via Rotterdam harbor and are then transported to Lisbon	In the Netherlands, this counts as an import (although it is VAT-exempt, as the final destination of the products is another EU MS). However, the operation is considered to be located in Portugal, as this is an intra-Community acquisition	The Portuguese firm (a reverse charge)

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10.1 Main Concepts

International double taxation is one of the biggest obstacles to cross-border trade and investment relations and the freedom of movement of persons, goods, services, and capital between countries (Rasmussen, 2011). The need to eliminate or mitigate international double taxation has become increasingly imperative as this has become a potential competitive advantage in the current international economic context that is dominated by new technologies, digitization, and increasing globalization. Should they be residents in a country that imposes worldwide taxation (as most states do), multinational firms are at risk of being subject to international double taxation on any income generated by subsidiaries located in other countries (Huizinga & Voget, 2009). With the intention to remove or mitigate such obstacles, governments seek to regulate and define the tax rights of each country in situations where cross-border transactions occur. The principal objectives are to reduce capital evasion, attract investment, and increase tax competition. Radu (2012) mentioned that “*double taxation affects the efficiency and competitiveness of exports of foreign goods, the removal of international double taxation is necessary to ensure an economic development of relations at the international level.*”

International double taxation refers to the obligation of the same taxpayer to pay income or corporate tax in more than one country (Radu, 2012), an example being having to pay the same type of tax in two different states: one being that of the origin of the income (a local obligation), and the other being the taxpayer’s declared residence (i.e., a worldwide obligation). DTA reduces double taxation by allocating taxation rights between residence and source states for various categories of income, typically by eliminating or limiting source state taxation or by obliging the residence state to grant relief for taxation in the source state through a credit or via an exemption mechanism, or by establishing criteria for residence (thus avoiding the situation where both states considering the taxpayer to be resident in their own state).

Economic double taxation means when the tax administrations include exactly the same income in the tax base of different taxpayers (Lang, 2021).

10.2 Double Taxation Agreements

Over the last decades, the OECD has been promoting Double Taxation Agreements (DTA), not just among their members, but also among OECD members and non-members, and even among two non-member states (Hongler, 2021; Esteves & Sarmento, 2021). The main objective of DTA is to support international trade and investment by, among other things, reducing the risk to a business of double taxation resulting from the overlapping of two countries' tax jurisdictions (Kobetsky, 2011).

According to Lang (2021), there are more than 3000 DTA in existence, with the Netherlands, for instance, having more than 90, and Switzerland has more than 80. The OECD (2017a) defines DTA as being *"A tax convention, or tax treaty as it is often called, is an official agreement between two countries on the administration of taxation when the domestic tax laws of the two countries apply simultaneously to a particular issue or taxpayer (e.g., when a taxpayer resident in one country derives income from sources in the other country). Tax conventions provide a means of settling on a uniform basis the most common problems that arise in the field of international double taxation."*

The base for such agreements is the Model Tax Convention on Income and Capital. In addition, the United Nations (UN) has also been an important force in bringing about this tax harmonization, and it too has a convention model in force (United Nations, 2017).

The Model Tax Convention applies to all persons residing in one or both Contracting States (see Article 1). In addition, the Convention applies to income and property taxes, as described in general terms in Article 2 and Chap. 2 sets out the terminology used in the various articles of the Convention, and other expressions such as "dividends," "interest," "royalties," and "real estate," are defined in the respective topical article.

The categories determining which income and assets may be taxed without any limitation regarding the State of source or situs are as follows: income from real estate situated in that state (including income from agricultural and forestry holdings), gains from the disposal of such assets and other assets acquired (Paragraphs 6 and 1 of Articles 13 and 22, respectively); the profits of a permanent establishment situated in that country, together with the gains arising from the disposal of that permanent establishment and any non-fixed asset which is an integral part of the assets of that permanent establishment (Paragraph 7 and 2 of Articles 13 and 22, respectively) (with an exception in the case when the permanent establishment is used for the business of international maritime transport, inland water transport, and international air transport); income arising from the activities of artists and sportsmen carried out in the country, when such income is attributed to the artist or sportsman themselves or another person (Article 17).

To eliminate double taxation, the Convention establishes two categories of standards, which are stipulated in the following articles: (1) Articles 6–21 define the different income categories, namely the tax powers of the State of source or situs and the country of residence, respectively; and (2) Article 22 establishes the tax law regarding assets, where in the case of income and assets, when the exclusive right of

taxation is granted to one of the Contracting States, the other Contracting State is prevented from levying taxes, and thus double taxation is eliminated. The exclusive right to tax is, as a rule, granted to the country of residence, whereas although both countries have the right to levy taxes, the amount of tax levied by the source state is limited to other elements of income and assets, such as dividends and interest, although this right to tax is not exclusive. In turn, the provisions of Articles 23a and 23b give the source state or situs the whole or partial right of taxation, in which case the country of residence should concede tax relief in order to avoid double taxation, whereby the Convention provides for the Contracting States to choose between two methods of relief, e.g., the exemption method and the imputation method or tax credit.

Depending on the applicability of the regime in force in the State of source or situs, income and assets can be classified into three categories, namely: income and assets which may be taxed without any limitation in the State of source or situs; income which may be subject to limited taxation in the State of source or situs; and income and assets which cannot be taxed in the State of source or situs.

These bilateral agreements are aimed at eliminating or reducing international double taxation, not only by imposing restrictions on tax duties and fees (e.g., dividends, interest, and royalties) of the Contracting States themselves (particularly the state of the source of income), but also through the obligation of the country of residence to grant an exemption or tax credit for taxes paid in the source state.

The primary purpose of DTA is to eliminate double taxation and to prevent fiscal evasion, although they also serve to allocate tax revenues on transactions taking place between residents of the signatory countries. To this end, a tax convention may resolve some common disputes and provide rules which determine the following: the country in which a taxpayer is a resident; the treatment given to specific types of income; the allowable rates for withholding tax from specific types of cross-border payments; and how to resolve tax issues that are beyond the scope of a tax convention (OECD, 2017b).

The content of most DTA typically includes the following items: a preliminary section on the scope of the convention (covering taxes on income, capital, and property) and the definition of terms used; The main body of the convention lays out the extent to which each of the two contracting states may tax income (which naturally depends on the different classes of income and capital and also on whether the state is a source state or a residence state) and determines how international juridical double taxation and international economic double taxation are to be eliminated; next follows a key section on special provisions, such as details regarding the MAP—Mutual Agreement Procedures,¹ which establishes the mutual agreement procedures for eliminating double taxation and for resolving conflicts of

¹According to the OECD (2017b): “The MAP article in tax conventions allows designated representatives (the ‘competent authorities’) from the governments of the contracting states to interact with the intent to resolve international tax disputes. These disputes involve cases of double taxation (juridical and economic) as well as inconsistencies in the interpretation and application of a convention.”

interpretation of the convention; a section on the implementation of provisions such as the entry into force and termination provisions of the convention (OECD, 2017b).

More recently, the OECD launched the Base Erosion and Profit Shift Project (BEPS), an initiative designed to reduce tax evasion and increase tax cooperation (see Chap. 2 for more details). As an international version of the BEPS, the Multilateral Convention to Implement Tax Treaty Related Measures to Prevent Base Erosion and Profit Shifting (MLI) was launched on June 07, 2017, which constitutes a common reaction mechanism to combat certain practices that lead to the erosion of the tax base and the transfer of profits and other abusive practices within the context of the OECD. The majority of these states have signed the MLI, or have already expressed their intention to be bound by the terms of the Instrument, and the possibility of further states adhering to it is not excluded.

The MLI is an almost unprecedented Multilateral Treaty at the international level and has been drafted in a particularly flexible manner, which enables adhering parties to incorporate the following in their tax law: an indication of which DTA the MLI applies to; the choice of one of the provisions for a minimal standard; the application of optional, supplementary, or alternative provisions; and to establish reservations, e.g., the exclusion of the application, of part or all of the provisions of the MLI. In addition, in some cases the MLI amends the terminology and even the title of existing DTA or amends the way that specific provisions are applied, and in other cases, it replaces or introduces existing provisions in the DTA and can even repeal a specific provision of the DTA, as it is duplicated by the provision of the MLI. The impact of the MLI on relations between signatory jurisdictions depends on the positions of the respective states regarding the application of the Instrument.

10.3 Methods to Eliminate Double Taxation

If no DTA exists between the residence state and the source of income state, most states (in this case, the residence state, where there is a tax obligation on worldwide income—see Chap. 2) include methods to eliminate (in some cases only mitigate) the international double taxation problem in their income and corporate tax law. According to Lang (2021), this varies from country to country, with two standard approaches being adopted in effect, whereby either: (1) precise rules are established in the law (e.g., Germany); or the tax authorities are granted a wide degree of flexibility (e.g., Austria). Unilateral relief from international double taxation is sometimes granted subject to reciprocity (e.g., Brazil). Furthermore, as referred to by Dickscheid (2004), different double taxation relief methods exercise a substantial impact on the taxation of internationally-mobile capital.

Theoretically, countries can adopt one of the following four methods of double taxation relief: (1) full exemption; (2) exemption with progressivity; (3) a full tax credit; or (4) a partial tax credit. In general, countries around the world usually choose the second method (exemption with progressivity) for cases related to the exercise of official duties abroad, such as military and diplomatic missions, and the

fourth method (a partial tax credit) for the remaining taxpayers). Each of the four methods is examined below, together with examples.

1. Full exemption: In this method, Country A (residence) fully exempts income earned from country B. Here is an example:

Country A has the following tax brackets: [0–30 k]: 10%; [30 k–100 k]: 25%, [100 k–150 k]: 40%, > 150 k: 45%. On the other hand, Country B just has a single tax rate for non-residents of 20%.

Individual in A	Individual in B
Income: 200 k	Income: 40 k
Tax due in A: 63 k	Tax due in B: 8 k
Total taxation (A + B): 71 k	

2. Exemption with progressivity: Applying the same values cited in the example for the first method, in this exemption with progressivity method, the tax due to be paid in B is still 8 k. However, in A, the taxpayer still has an exemption on the 40 k of B, although that income is taken into account when calculating the income tax liability in A. Accordingly, the Tax Administration of A will consider that the 40 k of B is the first 40 k of income in A. As the taxpayer does not pay taxes from income earned in B, the practical consequence is that the 200 k of income in A now starts with the higher tax bracket at the 40 k level and not zero as in the example of the first method above (and usually in the case of income tax).

Individual in A	Individual in B
Income: 200 k	Income: 40 k
Tax due in A: 75.5 k (1)	Tax due in B: 8 k
Total taxation (A + B): 83.5 k	

(1) $(60 \text{ k} \times 25\% + 50 \text{ k} \times 40\% + 90 \text{ k} \times 45\%)$

3. Full tax credit: In this method, the taxpayer in A has to consider the income earned in B when calculating the tax liability in A, but is allowed to deduct the full amount of taxes paid in B, regardless of whether such tax is higher or lower than the tax that would be due in A. By again applying the same values cited in the example for Method 1), the calculation is:

Individual in A	Individual in B
Income: 240 k	Income: 40 k
Tax due in A: 73 k (1)	Tax due in B: 8 k
Total taxation (A + B): 81 k	

(1) $(30 \text{ k} \times 10\% + 70 \text{ k} \times 25\% + 50 \text{ k} \times 40\% + 90 \text{ k} \times 45\% - 8 \text{ k of B})$

However, if the tax rate for B were 50% (rather than 20%), the taxes in A would then be:

Individual in A	Individual in B
Income:240 k	Income: 40 k
Tax due in A: 61 k (1)	Tax due in B: 20 k
Total taxation (A + B): 81 k	

(1) $(30\text{ k} \cdot 10\% + 70\text{ k} \cdot 25\% + 50\text{ k} \cdot 40\% + 90\text{ k} \cdot 45\% - 20\text{ k of B})$

Using this revised tax rate, despite the tax in B of 50% being higher than the marginal tax rate of A (which is 45%), the taxpayer can still deduct the full amount of the tax paid in A. In practice, countries usually do not use this method, as it is seen as they may be subsidizing the taxation in other countries.

4. A partial tax credit: This is the most commonly used method, whereby the taxpayer can deduct the amount of tax paid in B, but just up to the limit of tax that such income would have to pay in A. Therefore, for example, if the tax rate in B is lower than the marginal tax rate of A, the taxpayer can then deduct the full amount of taxes paid in B but is still taxed on the difference between the taxes in A.

In effect, the calculations are the same as the previous example (full tax credit), for the case in which B is subject to a 20% tax rate:

Individual in A	Individual in B
Income:240 k	Income: 40 k
Tax due in A: 73 k (1)	Tax due in B: 8 k
Total taxation (A + B): 81 k	

(1) $(30\text{ k} \cdot 10\% + 70\text{ k} \cdot 25\% + 50\text{ k} \cdot 40\% + 90\text{ k} \cdot 45\% - 8\text{ k of B})$

However, adopting this partial tax credit method, if the case in which B is subject to a 50% tax rate is applied (insured of the 20% rate), then the deduction in A would no longer be 20 k, but just 18 k (1):

Individual in A	Individual in B
Income:240 k	Income: 40 k
Tax due in A: 63 k (2)	Tax due in B: 20 k
Total taxation (A + B): 83 k	

(1) (the 40 k of income of B is subject to a marginal tax rate of 45% in A: $40\text{ k} \cdot 45\% = 18\text{ k}$)
(2) $(30\text{ k} \cdot 10\% + 70\text{ k} \cdot 25\% + 50\text{ k} \cdot 40\% + 90\text{ k} \cdot 45\% - 18\text{ k of B})$

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11.1 Main Concepts

As the world becomes more and more globalized and multinational corporations become more and more relevant and as they operate worldwide, it has become essential, to ensure a substantial harmonization of transfer prices (Tang, 2002). This has led to increasingly complex taxation issues for both tax administrations and the multinationals themselves since separate country rules for the taxation of multinationals cannot be viewed in isolation but should rather be addressed in a broad international context. An extensive literature review exists on transfer prices, as well as the impact of tax rates and legislation on financial and economic decisions such as investment, production, prices, and profit distribution (Smith, 2002; Bartelsman & Beetsma, 2003; Hanlon & Heitzman, 2010; Cristea & Nguyen, 2016; Klassen et al., 2017; Davies et al., 2018; Kumar et al., 2021).

Transfer prices can be defined as “*a price, adopted for book-keeping purposes, which is used to value transactions between affiliated enterprises integrated under the same management at artificially high or low levels in order to effect an unspecified income payment or capital transfer between those enterprises.*” (OECD, 2006). In other words, transfer prices refer to the pricing between associated enterprises regarding the transfer of goods, services, and intangibles (including financial operations), in accordance with the arm’s length principle for cross-border operations, and also in the case of domestic operations. Transfer Prices are also an anti-avoidance measure and can be considered to be a tax planning tool and a compliance obligation.

Quite often, the price of a transaction between related parties does not follow the “*arm’s length principle.*” The OECD refers that the “arm’s length principle” is based on the supposition that “*transactions should be valued as if they had been carried out between unrelated parties, each acting in his own best interest.*” The OECD further defines the “arm’s length principle” as being when “*if conditions are made or imposed between the two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises,*

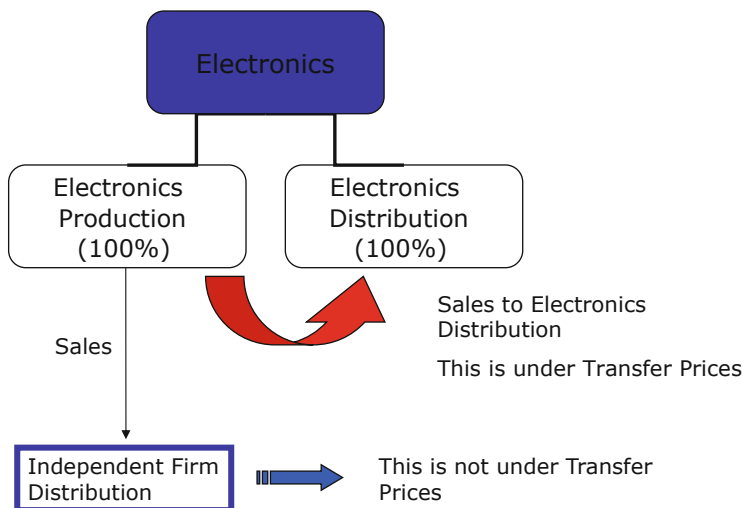


Fig. 11.1 The transfer prices framework. Source: Author

then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly” (OECD, 2017). The “arm’s length principle” is therefore the notion that prices in intercompany transactions should not differ from the prices determined by unrelated parties and that the profit or income accrued from intercompany transactions should not differ from the profit or income earned from transactions between unrelated parties.¹

Figure 11.1 presents an example of the Transfer Prices framework: the “Electronics” group owns two firms—Electronics “Production” and Electronics “Distribution.” Production not only sells to Distribution but also to the market in general (to non-related firms). Intergroup transactions (marked with a red arrow) are those that are subject to Transfer Prices and the arm’s length principle.

As mentioned by Feinschreiber and Kent (2012): “The OECD, in terming the arm’s length principle the international pricing standard, specifies that OECD member countries have agreed that multinational businesses and tax administrations are to use the arm’s length principle for tax purposes. The arm’s length principle applies to other subject matters other than taxation; the arm’s length principle often goes far beyond taxation itself.”

¹“Profit potential”: is the value of expected future profits. In some cases, it may encompass losses. The notion of profit potential is often used for valuation purposes in the determination of an arm’s length compensation for a transfer of intangibles or of an ongoing concern, and also for the determination of an arm’s length indemnification for the termination or substantial renegotiation of existing arrangements, once it is found that such compensation or indemnification would have taken place between independent parties in comparable circumstances.

The term “related parties” (which the OECD model calls “associated enterprises,” but which in this chapter are referred to as related and unrelated parties) means “*when two enterprises are associated enterprises with respect to each other if one of the enterprises meets the conditions of Article 9, sub-paragraphs 1a) or 1b) of the OECD Model Tax Convention with respect to the other enterprise.*” Article 9 is reproduced below:

Article 9

ASSOCIATED ENTERPRISES

1. Where an enterprise of a Contracting State participates directly or indirectly in the management, control or capital of an enterprise of the other Contracting State,
or

(b) If the same persons participate directly or indirectly in the management, control or capital of an enterprise of a Contracting State and an enterprise of the other Contracting State, and in either case conditions are made or imposed between the two enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly.

2. Where a Contracting State includes in the profits of an enterprise of that State—and taxes accordingly—profits on which an enterprise of the other Contracting State has been charged to tax in that other State and the profits so included are profits which would have accrued to the enterprise of the first-mentioned State if the conditions made between the two enterprises had been those which would have been made between independent enterprises, then that other State shall make an appropriate adjustment to the amount of the tax charged therein on those profits. In determining such adjustment, due regard shall be had to the other provisions of this Convention and the competent authorities of the Contracting States shall, if necessary, consult each other.

OECD Guidelines 2017, Paragraphs 1.33 and 1.34

The application of the arm’s length principle is based on a comparison of the conditions in a controlled transaction with the conditions that would have been made had the parties been independent and were undertaking a comparable transaction under comparable circumstances.

1. *There is a need to identify the commercial relations between the associated enterprises and the conditions and economically relevant circumstances attaching to those relations in order that the controlled transaction is accurately delineated.*
2. *The typical process of identifying the commercial relations between the associated enterprises and the conditions and economically relevant circumstances attached to those relations requires a broad-based understanding of the industry sector in which the MNE group operates and of the factors affecting the performance of any business operating in that sector.*

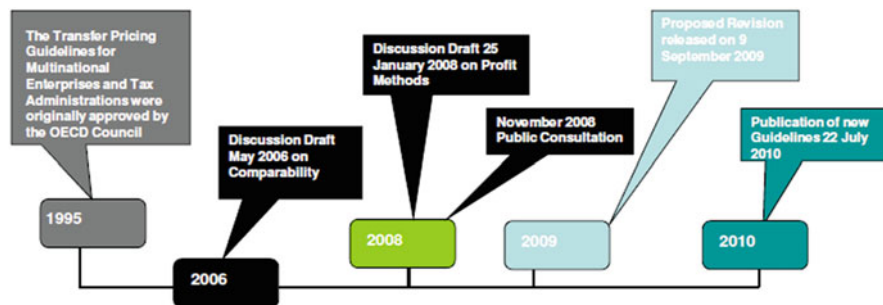


Fig. 11.2 Transfer prices guidelines timeline. Source: IFBD

OECD Guidelines 2017, Paragraph 1.51

In transactions between two independent enterprises, compensation usually will reflect the functions that each enterprise performs (taking into account assets used and risks assumed).

The analysis focuses on what the parties actually do and the capabilities they provide. In particular, it is important to understand how value is generated by the group as a whole, the interdependencies of the functions performed by the associated enterprises with the rest of the group, and the contribution that the associated enterprises make to that value creation.

While one party may provide a large number of functions relative to that of the other party to the transaction, it is the economic significance of those functions in terms of their frequency, nature, and value to the respective parties to the transactions that are important.

The OECD definition of the arm's length principle (OECD model convention—Paragraph 1.6):

The authoritative statement of the arm's length principle is found in paragraph 1 of Article 9 of the OECD Model Tax Convention, which forms the basis of bilateral tax treaties involving OECD member countries and an increasing number of non-member countries. Article 9 provides:

[Where] conditions are made or imposed between the two [associated] enterprises in their commercial or financial relations which differ from those which would be made between independent enterprises, then any profits which would, but for those conditions, have accrued to one of the enterprises, but, by reason of those conditions, have not so accrued, may be included in the profits of that enterprise and taxed accordingly.

Definition of the range of the OECD “arm's length”:

A range of figures that are acceptable for establishing whether the conditions of a controlled transaction are arm's length and that are derived either from applying the same transfer pricing method to multiple comparable data or from applying different transfer pricing methods.

Figure 11.2 presents a timeline of the evolution of Transfer Prices.

In compliance with the principle of full competition and making use of the arm's length principle, the transaction between such entities must be contracted, accepted, and practised with terms or conditions that are substantially identical to those which

“normally” would be contracted, accepted, and practised between independent entities in comparable operations. When examining in detail the OECD Model Tax Convention—which established the above-described principle—and also Article 9 of the OECD Model—which stipulates the rules for entities concerning “associated enterprises,” it can be seen that, in practice, the price charged by a firm in a linked transaction does not always reflect its overall interest because, all too often, the price charged is defined according to the broader interests (e.g., those of the group, shareholders, or planning and tax).

The determination of the price of full competition is generally based on the comparison between the terms and conditions of a linked operation and those of a comparable operation between independent parties. Transactions do not have to be identical to be comparable. However, they do need to be sufficiently similar in order to be able to serve as a basis for calculating the prices market. The comparability factors usually include, but are not limited to, the following: the characteristics of the goods and services, the functions performed by the entities in question (taking into account the assets used and the risks assumed), the market position, and the economic and financial situation, the market strategy adopted, and also any other relevant characteristics of the entities involved in the transaction.

Accordingly, it is intended that the linked operations attain the highest degree of comparability with non-linked transactions, while considering the characteristics of the transactions, which, in turn, result, *inter alia*, from the characteristics of goods, services and rights, and market position, and also the economic and financial situation of the parties involved, as well as that of the business, and also the functions performed by each party, the assets used, and the risks assumed. For each of these characteristics, a series of criteria has to be determined for subjective impacts, such as participation in capital and voting rights, participation in management, the existence of subordination contracts, existing relationships, or the dependence on the exercise of the activity or the relationships with those entities that are resident in tax havens. The transactions are subject to an individualized analysis, except for the continued supply of goods or services governed by the right to the exploitation of intangible assets, if accompanied by other benefits or when the pricing of goods is complementary, an example being product lines.

In practice, two operations accordingly meet the conditions to be considered comparable if they are substantially similar, which means that their relevant economic and financial characteristics are analogous or sufficiently similar in such a way that the differences between transactions or between the undertakings involved in them are not likely to significantly affect the terms and conditions that would be practised in a normal market situation, or if this is so when it is possible to make the necessary adjustments that eliminate the relevant effects caused by such differences. The application of the arm’s length principle involves a comparison of the terms and conditions in a controlled transaction between related parties with the terms and conditions in transactions between independent parties. The degree of comparability depends on various factors, namely: the characteristics of goods, property or services, the contractual terms, economic circumstances, functions performed, risk assumed, business strategies, etc.

The method chosen should be the most appropriate for each operation or series of operations. This is the method that is most likely to provide the best and most reliable estimate of the terms and conditions in question, i.e., whichever method is most capable of providing the highest degree of comparability between related and unrelated transactions and also between the entities selected for the comparison. In essence, the method that has the best quality and the greatest amount of information available for the justification and application and which implies the least number of adjustments for the purpose of eliminating the differences between the facts and the comparable situations.

As is explained below, Transfer Prices are also mainly based on agreements between the tax administrations of different countries and consequently the OECD guidelines (which are discussed in full below) are fundamental. An example of such an agreement is the “Advance Pricing Arrangement” (APA), which is an arrangement that determines, in advance of controlled transactions, an appropriate series of criteria for determining the transfer pricing for those transactions over a fixed period of time. An advance pricing arrangement may be unilateral, involving just one tax administration and a taxpayer, or it may be multilateral, in which case it involves the agreement of two or more tax administrations (OECD, 2017).

To evaluate whether a transaction between two related parties has a price that can be considered for tax purposes, it is necessary to carry out a “Comparability Analysis.” This is a comparison of a controlled transaction with an uncontrolled transaction or transaction. Controlled and uncontrolled transactions are comparable if none of the differences between the transactions materially affect the factor being examined in the methodology (e.g., the price or the margin), or if reasonably accurate adjustments can be made to eliminate the material effects of any such differences. As is seen further below, this comparison is mainly based on the five transfer price methods mentioned above (Solilova & Nerudova, 2018).

Here are a few examples of when transfer prices need to be addressed for a domestic and international group:

Example 1: Assume an international group composed of Firm A (in Country X, with a corporate tax rate of 30%) and Firm B (in Country Y with a corporate tax rate of 20%):

Firm A	Firm B
EBT: 5 M	EBT: 2 M
Corporate tax (30%): 1.5 M	Corporate tax (20%): 0.4 M
Total corporate tax of the group: 1.9	

If the group ‘transfers’ the 5 M EBT of A to B, that would represent a 500 k saving in taxes (as A would have EBT = 0 and a corporate tax = 0, while B would have EBT = 7 M and a corporate tax = 1.4 M). There are various ways to “transfer” these 5 M EBT from A to B, namely: A can buy a product/service from B, or it could pay royalties on patents, pay management fees, or B could contract a loan to A and receive interests from that loan, etc.

Example 2: Assume a national group composed of Firm A and Firm B (with a corporate tax rate of 25%):

Firm A	Firm B
EBT: 4 M	EBT: (1)M (loss of 1 M)
Corporate tax: 1 M	Corporate tax: 0
Total corporate tax of the group: 1 M	

If the group “transfers” the 1 M Profits of A to B, this would represent a tax saving of 250 k (where A would have an EBT = 3 M, with a corporate tax = 750 k, and B would have an EBT = 0 and a corporate tax = 0).

Example 3: Assume a national group composed of just Firm A and Firm B (with a corporate tax rate of 20%):

Firm A	Firm B
EBT: 2 M	EBT: 4 M
Tax benefit: 5M (1)	
Tax EBT: 0	
Corporate tax: 0	Corporate tax: 0.8 M
Total corporate tax of the group: 0.8 M	

1. Assuming that the tax benefit of Firm A cannot reduce its EBT to become negative.

However, in this case the tax benefit of A was not fully used (with 3 M being left to use). If the group ‘transfers’ 3 M from B to A, then A could use the full tax benefit and thus there would be a tax saving of 600 k:

Firm A	Firm B
EBT: 5 M	EBT: 1 M
Tax benefit: 5 M	
Tax EBT: 0	
Corporate tax: 0	Corporate tax: 0.2 M
Total corporate tax of the group: 0.2 M	

Example 4: Assume a national group composed of Firm A and Firm B (with a corporate tax rate of 20%).

Firm A	Firm B
EBT: 20 M	EBT: 3 M
	Tax loss carried forward: 8 M
	Tax EBT: 0 (1)
Corporate tax: 4 M	Corporate tax: 0 M
Total corporate tax of the group: 4 M	

- (1) As 3 M of the 8 M tax losses result in 5 M being carried forward to the next year.

If the profits of Firm A are transferred to Firm B in the value of 5 M, then the group saves 1 M, being the equivalent of the 5 M transferred from A to B at a 20% corporate tax rate:

Firm A	Firm B
EBT: 15 M	EBT: 8 M
	Tax loss carried forward: 8 M
	Tax EBT: 0 (1)
Corporate tax: 3 M	Corporate tax: 0 M
Total corporate tax of the group: 3 M	

(1) As all of the 8 M tax losses are used (assuming that the 8 M of the tax loss carried forward can be totally deducted—as no limits are applicable, as seen in Chapters 7 and 8).

Example 5: Assume a national group composed of Firm A and Firm B (with a corporate tax rate of 20%, and also a surcharge (see Chap. 8) of 5% on profits above a threshold of 10 M.

Firm A	Firm B
EBT: 25 M	EBT: 2 M
Corporate tax: 5.75 M (1)	Corporate tax: 0.4 M (2)
Total corporate tax of the group: 6.15 M	

- (1) $(25\text{ M} \cdot 20\% + 15\text{ M} \cdot 5\%)$.
- (2) $(2\text{ M} \cdot 20\%)$ Firm B is not subject to the surcharge, as the profits are less than 10 M.

If the profits of Firm A are transferred to Firm B in the value of 8 M (meaning that the profits of B still remain less than the surcharge threshold), then the group saves 400 k, which is the 8 M transferred from A to B at the 5% surcharge:

Firm A	Firm B
EBT: 17 M	EBT: 10 M
Corporate tax: 3.75 M (1)	Corporate tax: 2 M (2)
Total corporate tax of the group: 5.75 M	

- (1) $(17\text{ M} \cdot 20\% + 7\text{ M} \cdot 5\%)$.
- (2) $(10\text{ M} \cdot 20\%)$ Firm B is not subject to the surcharge, as the profits are below 10 M.

Transfer Prices also have several internal functions, mainly for accounting (especially cost accounting) and finance purposes, e.g., profit allocation; coordination, influence, and guidance; cost accounting; regulatory; and simplification (Schuster, 2015).

States and their governments have a justifiable concern about Transfer Prices, partially because they impact on the total amount of profit generated by groups of firms, but mainly because they impact on the profit of such firms in one specific country, which in turn can reduce the tax revenues of that country. The aim of

governments is to ensure a fair share of taxable profits and thus collecting a fair amount of tax revenues. Governments want to protect their tax base, but they also need to incentivize international trade and foreign direct investment. Therefore, the majority accept the arm's length principle and have continually been establishing more robust laws and administrative frameworks to provide for the challenge of Transfer Prices. In particular, the number of countries using Transfer Prices and adopting the OECD model has increased substantially over the last 20 years, which has implied considerable investment in the resources available to tax administrations. Indeed, there has been an increase in the level of awareness about Transfer Prices among tax administrations, which are becoming more adept at dealing with such cases. In turn, this has also led to an increase in APA and the frequency of audits, as well as the fact that a substantial amount of documentation is required for the carrying out of Transfer Price operations.

Transfer Prices have a substantial impact on other areas of taxation, beyond that of corporate tax, such as indirect taxation (VAT or excise duties) and income tax, as well as in the areas of Corporate Finance and Accounting, such as the P&L and management accounting.

11.2 The OECD Model

The "OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations" is the basis for all transfer price regimes around the world. Indeed, the need for harmonized rules between countries and tax administrations has meant that the OECD has had to assume a leading role in this area since 1995, in conjunction with the introduction of the OECD Model Tax Convention on Income and on Capital (otherwise known as the "OECD Model Tax Convention").

These international taxation principles have two main objectives: (1) to secure the appropriate tax base for each country and avoid double taxation and (2) reduce conflict between tax administrations and taxpayers, and also amongst the tax administrations of diverse countries. As the world becomes more and more global and integrated, this coordination and harmonization are even more fundamental. The OECD Guidelines on transfer prices are primarily intended to govern the resolution of transfer pricing cases during mutual agreement proceedings² between OECD member countries and, where appropriate, during arbitration proceedings.

These Guidelines also help the tax administrations of OECD and non-OECD countries alike and multinational firms to find ways of resolving transfer price cases with mutual agreement. Accordingly, the Guidelines have assumed a key role in minimizing conflict and in avoiding cost litigation, risk, and uncertainty, while at the

²According to the OECD, a mutual agreement procedure is a means by which various tax administrations consult to resolve disputes regarding the application of double tax conventions. As described and authorised by Article 25 of the OECD Model Tax Convention, this procedure can be used to eliminate double taxation that could arise from a transfer pricing adjustment.

same time they contribute to the effort to allocate an international tax base and avoid double taxation, which consequently reduces tax avoidance.

In addition, the OECD Transfer Pricing Guidelines provide a definition of the “arm’s length principle,” together with the other main concepts described above, as well as a detailed explanation of the methods (see below) and of various administrative issues, such as disputes, documentation, and agreements. Furthermore, they also establish guidelines regarding intangibles, intra-group services, cost contribution arrangements, and business restructuring, among other relevant issues.

11.3 Transfer Prices Methods

The transfer prices methods are divided into “traditional transaction methods” and “transactional profit methods,” both of which can be used to establish whether the conditions imposed in the commercial or financial relations between associated enterprises are consistent with the arm’s length principle (King, 2009).

On the one hand, the traditional transaction methods are the comparable uncontrolled price method (the CUP method), the resale price method, and the cost plus method. On the other hand, the transactional profit methods are the transactional net margin method and the transactional profit split method. As the OECD (2017) refers: *“The selection of a transfer pricing method always aims at finding the most appropriate method for a particular case. For this purpose, the selection process should take account of the respective strengths and weaknesses of the OECD recognised methods; the appropriateness of the method considered in view of the nature of the controlled transaction, determined in particular through a functional analysis; the availability of reliable information (in particular on uncontrolled comparables) needed to apply the selected method and/or other methods; and the degree of comparability between controlled and uncontrolled transactions, including the reliability of comparability adjustments that may be needed to eliminate material differences between them. No one method is suitable in every possible situation, nor is it necessary to prove that a particular method is not suitable under the circumstances.”*

The choice of the method is also influenced by the information and data available for the transaction. This information and data may come from firm-generated data, such as interviews, presentations, site visits, and marketing materials, as well as from public data, in the form of firms’ financial statements, industry analyses, and published articles. Furthermore, inter-company agreements play a key role in functional analysis. Regarding the firm-generated data, it is important not only to review external firm information (global, regional, industry, or country databases, together with reports and other technical sources), but mainly internal information (such as reports, and technical documents)—indeed, interviews with key firm personnel is usually the main source of such internal information. It is also important to consider diverse multiple sources to obtain qualitative data and to develop the ability to analyze the facts and always ask if there are doubts!

Fig. 11.3 Transfer prices search for comparables.
Source: IBDF

-
- Set the Search Criteria
 - Accept/Reject process based on elimination criteria
 - Set of potential comparables
 - May need to review the search criteria
 - Further analysis
 - Second round of Accept/Reject process
 - May need to review the search criteria
 - Adjustment may need to be made

Should there be a material difference that affects methodology and it is possible to adjust for this difference (or if there is no material difference), then a comparable can always be found. Such adjustments (comparability adjustments³) can range from accounting adjustments (such as LIFO/FIFO adjustment, capitalizing versus using expenses, or reclassifying expenses) to economic adjustments (e.g., working capital adjustments, other assets, capacity utilization adjustments, and currency adjustments).

It needs to be recognized that functional analysis is not an exact science and that judgement calls are part of the process, as long as the process and the decision-making are consistent and fully documented. Figure 11.3 presents an example of a transfer price search for comparable criteria.

In addition, Fig. 11.4 presents a possible (and fairly common) flowchart of the process of Transfer Prices regarding one specific transaction. Nevertheless, no method is suitable for every possible circumstance, and firms are free to apply another method, as long they can demonstrate that such a method provides a price based on the arm's length principle. The use of more than one method is permitted and even recommended in some cases.

It is important to identify the main functions in the flowchart of Fig. 11.4, namely: Manufacturing/Processing; Research & Development; Quality Control; Advertising/Marketing; Sales; Purchasing and Distribution; Invoicing and Accounts Receivable; Inventory; Service, Warranty and Spare Parts; and Administrative, Financial and

³The OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations, Page 42, 1.34: "Independent enterprises, when evaluating the terms of a potential transaction, will compare the transaction to the other options realistically available to them, and they will only enter into the transaction if they see no alternative that is clearly more attractive. For example, one enterprise is unlikely to accept a price offered for its product by an independent enterprise if it knows that other potential customers are willing to pay more under similar conditions. This point is relevant to the question of comparability, since independent enterprises would generally take into account any economically relevant differences between the options realistically available to them (such as differences in the level of risk or other comparability factors discussed below) when valuing those options. Therefore, when making the comparisons entailed by application of the arm's length principle, tax administrations should also take these differences into account when establishing whether there is comparability between the situations being compared and what adjustments may be necessary to achieve comparability."

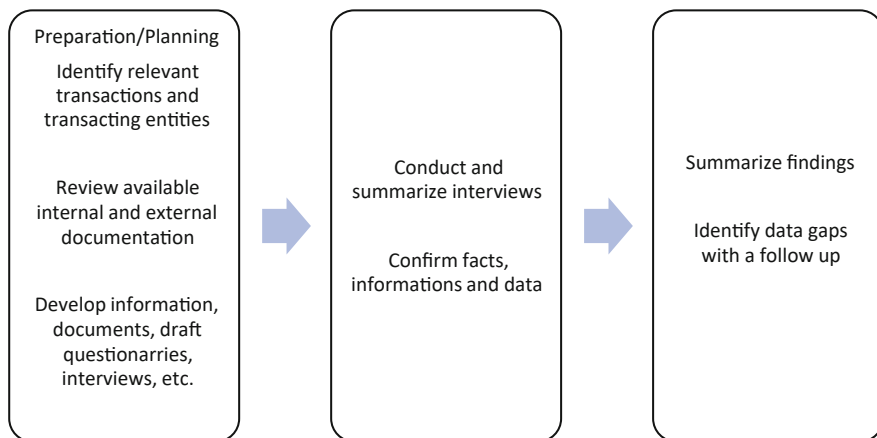


Fig. 11.4 Transfer prices flowchart. Source: Author

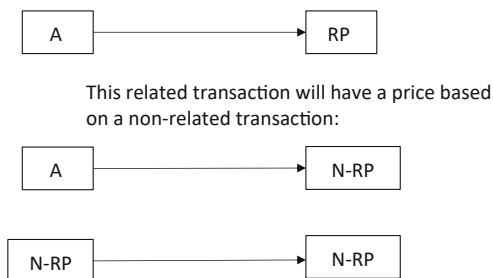
Legal Matters. The following risks also need to be assessed: Inventory Risk; Credit Risk; Foreign Exchange Risk; Product Liability Risk; Market Risks (input costs and output sales price fluctuations); Human Resources Risks; and Regulatory Risks. The use of assets or other resources also needs to be evaluated (e.g., assets such as Manufacturing Intangibles; Marketing Intangibles; Plant and Equipment; Employees (the workforce); and Equity vs. Investments). If the firm involved is a manufacturer, then it is important to understand what is the level of technology, innovation, and added value the firm is incorporating in its product and to ascertain whether the firm is just a subcontractor or the main innovator? Should the firm be a distributor, then it is important to assess issues such as the value-adding functions, whether there are separate services? what is the relative importance of inventory? what is the value of the marketing intangibles? and what are the special risks that the firm might incur? If the firm is a service provider, then it is important to analyze the complexity and the added value of the services provided. It is also important to know who is providing the R&D and who owns it.

The comparability analysis consists in understanding the controlled transaction and also having the ability to identify and analyze uncontrolled transactions (which are comparable transactions) and next select and apply the appropriate method. There are five main comparability factors, namely: (1) the characteristics of the property or services, which in the cases of tangible property can be the physical features, quality, volume of supply, or the availability of supply, whereas in the case of tangible services they can be the nature, extent, and quality of the service; the characteristics of intangible property or services can be the form, type, duration, protection, or the associated benefits; (2) functional analyses; (3) contractual terms; (4) economic circumstances; and (5) business strategies.

The following five methods are the most commonly used for ascertaining Transfer Prices: (1) the Comparable Uncontrolled Price Method; (2) the Resale Price

Fig. 11.5 CUP method.

Source: Author (note: RP is a related party and N-RP is a non-related party)



Method; (3) the Cost Plus Method; (4) the Profit Split Method; and (5) the Transactional Net Margin Method. A detailed explanation of each of these methods, supported by examples, now follows:

1. The Comparable Uncontrolled Price Method (see Fig. 11.5): This method is based on comparing a linked operation with a transaction of the same nature, the object of which is a service/ similar product in terms of both analogous quantity/value and conditions. An uncontrolled transaction is comparable to a controlled transaction (i.e., it is a comparable uncontrolled transaction) for purposes of the CUP method if one of the following two conditions is met: a) none of the differences (if any) between the transactions being compared or between the enterprises undertaking those transactions could materially affect the price in the open market; or, b) reasonably accurate adjustments can be made to eliminate the material effects of such differences. Where it is possible to identify comparable uncontrolled transactions, the CUP method is the most direct and reliable way to apply the arm's length principle. Consequently, the CUP method is preferable in such cases over all other methods (OECD, 2017). This is the method that is considered by many authors to be both the most direct and reliable one and the one most appropriate for situations where an entity carries out simultaneous operations with related entities and independent entities for the same good, or for the same service. Examples include bank loans, products with a publicly traded official market price (i.e., commodities.), financial investments, foreign exchange operations, and real estate rents.

Example 1: Firm X, which is located in Country A, sells a commodity product to its overseas subsidiary, Firm Y, which is located in Country B. This commodity product is widely and competitively traded in country B and the price of the commodity at any point in time is easily available. In this case, the market price would be the CUP used to determine whether the transfer price between X and Y is at arm's length. The market price adopted in the above example is commonly termed an "external CUP." Many taxpayers tend to rely on such external data when they carry out price comparisons in their independent transactions. In practice, many tax administrations have found internal comparable transactions (commonly termed as an "internal CUP") to also be useful and reliable in establishing the arm's length

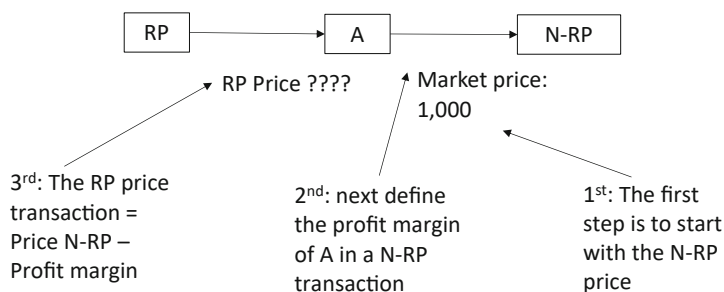


Fig. 11.6 The Resale Price Method. Source: the Author (note: RP is a related party; N-RP is a non-related party)

price. An internal comparable can occur in cases when a taxpayer or another member of a group buys or sells the particular product, in similar quantities, and under similar terms to independent parties in similar markets.

Example 2: Firm A, which is located in Country X, sells only one type of hardware drive. In turn, the hardware drive is only sold to two entities: Firm B, which is Firm A's overseas subsidiary and Firm C, a local unrelated firm. Under the agreement between Firm A and Firm B, Firm A ships the hard disks to Country Y, where firm B is located. On the other hand, Firm C takes delivery of the hardware drives on-site directly from firm A's factory. Assuming that the volume of sales of Firm A's hardware drives to both parties are similar at any one particular period, then the CUP for the hardware drives sold to firm B could be computed as follows: The price of the hardware drives sold to Firm C (per container of goods) + an adjustment for insurance and freight.

2. The Resale Price Method (Fig. 11.6): This method is based on the resale price charged by a firm to an independent entity for a product acquired from a related entity, to which the gross profit margin is added. This gross profit margin serves as the basis for determining the comparable price of the related entity, which is obtained by taking as a reference the margin of the resale price quoted for a comparable non-linked transaction carried out by an entity that belongs to the same group, or by an independent entity. This margin should enable the firm carrying out the resale to cover its selling costs and other operating costs and to also be able to make a profit which is comparable to that obtained by independent entities in comparable transactions. After subtracting this resale price from the gross profit margin the transfer price or full competitive price is obtained for the transaction carried out between the related undertakings. This method is used for the sale of goods, but only provided that the goods in question are comparable in terms of all characteristics, except those products where the firm carrying out the resale does not add substantial value to the product. The adoption of this method, therefore, requires the highest degree of comparability which results in an impact on both the object and the other terms and conditions of the operation

and also on the functional analysis of the intervening entities. Where a linked transaction and an unrelated transaction are not substantially comparable, the taxable person is then required to identify and quantify the effects caused by the differences in transfer prices which are of a secondary nature, and then carries out the necessary adjustments to eliminate these effects with the aim to determine an adjusted price that corresponds to that of a comparable non-linked transaction. Nevertheless, the resale price method tends to experience certain difficulties when it comes to practical application, in particular regarding assembling various components to obtain a product when a substantial time lapse occurs between the purchase of these components and the resale, or when the firm carrying out the resale has contributed significantly to the creation/improvement of an intangible asset/s. With regard to intra-group service agreements, in determining the transfer price of a service whose economic value is justified by the comparable market price method, this method should be considered to be the most appropriate method where the services are identical or substantially similar in terms of their nature, quality, quantity, and frequency as those provided by independent entities or where, in the context of a normal and habitual activity, these services are provided to independent entities in similar markets and under comparable terms and conditions.

Example: Firm A distributes laptop computers in Country X for its overseas parent company, Firm A1. Firm B (an unrelated to firm A), which is located in Country X, has also been appointed by A to distribute desktop computers for it in Country X.

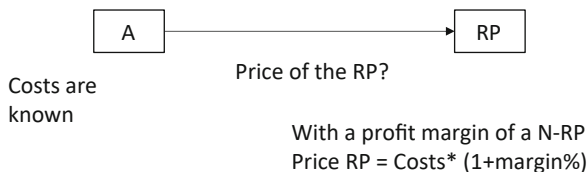
In this example, it is assumed that the laptop and desktop markets are similar in Country X. The main difference between the two distributorship agreements is that Firm A carries out promotional and marketing functions for Firm A1, whereas Firm B does not. The gross profit margin of Firm B from the resale of desktops to consumers was discovered to be 20%. The arm's length price for the related party transaction is computed as follows:

The non-related resale price of laptops sold by Firm A is 2000. The arm's length resale price margin based on the transactions of Firm B = $1600 (2000 - 20\% \times 2000)$; then subtract the adjustment for marketing costs of 100 = Transfer Price) of 1500 (based on the resale price method).

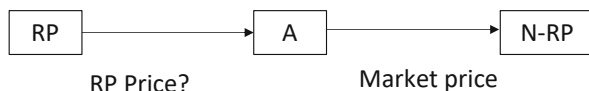
3. The Cost Plus Method (Fig. 11.7): This method is based on the amount of costs borne by a supplier in a linked transaction, to which the gross profit margin practiced in a comparable non-linked transaction is added (reflecting the functions performed, or the assets used, or the risk assumed, or the market conditions, etc.). This gross profit margin may be determined on the basis of the gross profit margin practiced in a comparable non-linked transaction carried out by the taxable person, or by an entity belonging to the same group, or by an independent entity. The transfer price or the price of full competition for the transaction carried out between the related undertakings is deemed to be the one attained after the gross profit margin has been added to the production costs. The scope of this method mainly refers to the sale of semi-finished products between

Fig. 11.7 Cost Plus Method.

Source: Author (note: RP is a related party; N-RP is a non-related party)

**Fig. 11.8** Profit Split

Method. Source: Author
 (note: RP is a related party;
 N-RP is a non-related party)



There is no comparable
 N-RP transaction

In such a case, it is necessary to
 calculate both the total profit of both
 operations and also how each entity (A
 and the RP) would split the profit

related products, the common enjoyment of equipment, and the provision of services. However, it is subject to limitations of application as it may not necessarily reflect the efficiency levels of the manufacturer, either because the price of goods is not always directly related to production costs, or because it can lead to problems if there is no compatibility or consistency of accounting standards.

4. The Profit Split Method (Fig. 11.8): This method is designed to divide the overall profit derived from complex transactions or series of linked transactions carried out in an integrated manner between the intervening entities. It can be applied in two ways: (1) by allocating the overall profit obtained, which is calculated as follows: the overall profit obtained by the intervening parties in the linked transactions is determined and this is then divided between the related entities on the basis of a valid basis, which reflects the value of the contribution of each entity, based on market data (i.e., depending on the value that each would obtain in transactions carried out with independent companies). In other words, a breakdown is carried out of the functions performed, the assets used, and the risks assumed, etc.; (2) by dividing (splitting) the profit obtained into two distinct fractions: first the overall profit fraction, which reflects the appropriate remuneration for the operations carried out; and second, the fraction that represents the residual profit (or loss) between the intervening entities.

The scope of this method presupposes that the linked transactions show a high degree of integration, as well as the existence of intangible assets of high value and specificity. This method is specifically indicated for partnerships and joint ventures, however, it still tends to present some difficulties at the time of its application, as it is relatively difficult to determine the revenue and overall burden of all the related entities and relate them with the standardized

accounting documents and adjustments that are an integral requirement to correct the effects of the differences identified between transactions and the entities.

The “contribution analysis” can also be used in this method, which, according to the OECD, is an analysis used in the profit split method under which the combined profits from controlled transactions are divided between the associated enterprises based upon the relative value of the functions performed (taking into account the assets used and risks assumed) by each of the associated enterprises participating in those transactions, supplemented as much as possible by external market data which help indicate how independent enterprises would have divided profits in similar circumstances.

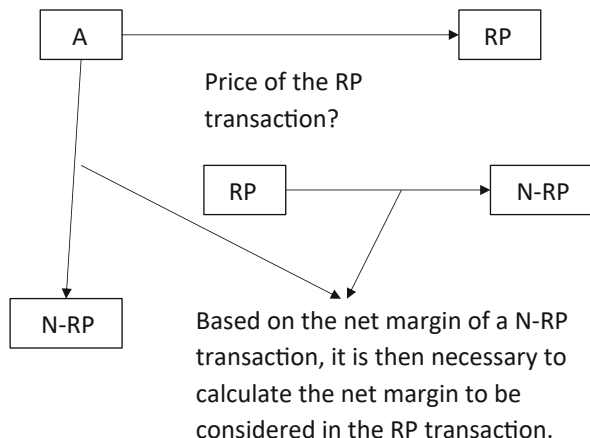
In addition, a “residual analysis” can also be carried out in the profit split method, which divides the combined profit from the controlled transactions under analysis into two stages. In the first stage, each entity is allocated sufficient profit to provide it with a basic return that is considered to be appropriate for the type of transactions in question. This basic return is determined by comparing it with market returns achieved for similar types of transactions by independent entities. Accordingly, such a basic return does not generally account for the return that would potentially be generated by any unique and valuable assets possessed by the entities under analysis. Moving to the second stage, any residual profit (or loss) remaining after the first stage division is now allocated among the entities, based on an analysis of the facts and circumstances that could help indicate how this residual profit or loss would have been divided between independent entities.

5. The Transactional Net Margin Method (Fig. 11.9): This is a method that employs the comparison between the net margin of transactions with related entities and the net margin of transactions with unrelated entities. The profit margin is calculated against an appropriate indicator based on sales, costs, assets used, and other relevant quantities.

Examples of such indicators include: Net Cost Plus = operating results/operating costs; Operating Profitability = operating results/operating income; CPR = operating results/CP; Operating Margin Profit (operating profit/sales); Gross Profit Margin = (sales – cost of goods)/(operating costs – costs of goods); and ROA (return on assets, i.e., operating profits/operating assets). The most commonly used indicator for the transactional net margin method is Gross Profit Margin (which can also be used in the resale price method), as it is sensitive to both differences in functions (e.g., expense and capital intensity) and differences in the expenses classifications for the cost of goods sold (COGS)⁴ as well as all

⁴Which is also known as the cost of sales, i.e., the direct costs of producing the goods sold by a firm, which is calculated by including the cost of the materials and labour directly used to create the good, but excluding all indirect expenses, such as distribution costs and sales force costs.

Fig. 11.9 Transactional Net Margin Method. Source: Author (note: RP is a related party; N-RP is a non-related party)



selling, general, and administrative expenses (SG&A).⁵ Gross profit margin can also be a relevant indicator to measure firm competitiveness at industry level and market strategy as well. Another common indicator is the Operating Margin Profit (operating profit/sales), which is an adaption of the gross margin to functional differences that are reflected in the SG&A expenses (and which is not sensitive to expense classification). Operating margin profit is normally used more frequently by labor-intensive firms (i.e., those that require similar capital intensity for both comparables). Net Cost Plus Margin (e.g., operating profit/[COGS+SG&A expenses]) measures profits in comparison to the total operating costs and while it is sensitive to differences in capital intensity, it is not sensitive to the classification of expenses between COGS and SG&A. ROA (return on assets, i.e., operating profits/operating assets) is more reliable when substantial fixed assets and/or operating assets generate significant revenues. Not only is it not sensitive to differences in accounting classifications for COGS and operating expenses, but it is also less sensitive to functional differences than other indicators, as long as the risks incurred are similar between comparables (albeit it is sensitive to differences in the age of assets and ownership versus leasing).

It is important to note that certain factors and risks exist with regard to the transactional net margin method which needs to be highlighted, such as the consistency of accounting policies, the calculation of costs (e.g., amortizations and personnel), the correct valuation of the assets used, the fullness of intangible assets, and the use of multiannual data. Indeed, this method can only really be used to analyze individual transactions or groups of the same transaction and if firms carry out one or more different types of transactions, it is then necessary to analyze each transaction individually.

⁵Which includes all general and administrative expenses (G&A), as well as the direct and indirect selling expenses of the business.

Table 11.1 Main characteristics of each method for ascertaining transfer prices

Method	Comparability	Type of operations	Approach
CUP	Very high	Any with a large and liquidity market	Price test
Resale Price method	High	Marketing/distribution	Gross margin test
Cost plus method	High	Production/services	Gross margin test
Profit Split method Transactional net margin method	Moderate	Overall	Net margin test or return on assets test

Source: Author

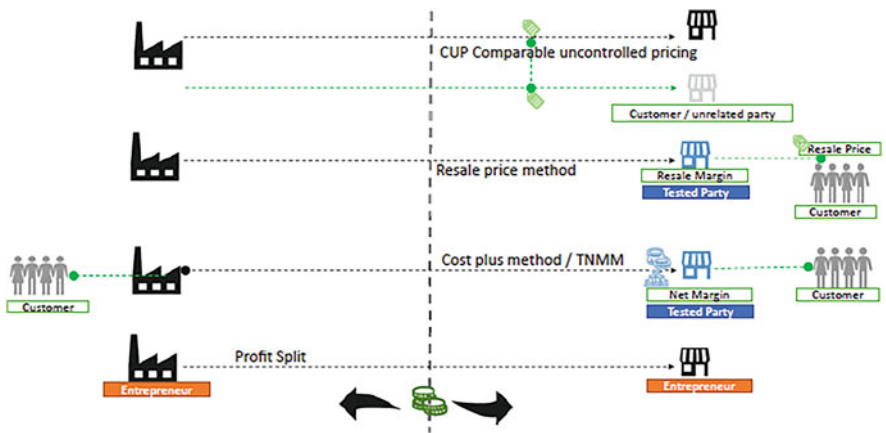


Fig. 11.10 Overview of the transfer prices methods. Source: Treidler (2020)

The transactional net margin method is widely used, owing to the lack of readily available public information resulting from the difficulty for independent entities to sell products/services with the same characteristics and under similar conditions, which is why, as mentioned above, this method can only be used in the case of individual transactions or groups of the same transaction.

Table 11.1 and Fig. 11.10 summarize the main characteristics of the five Transfer Price Methods.

When ascertaining a Transfer Price, based on international experience, the documentation is usually prepared in line with the guidance of Chap. 5 of the OECD guidelines (although each country decides on the type and format of the documentation and information required). The OECD states that: “It would be reasonable for tax administrations to expect taxpayers when establishing their transfer pricing for a particular business activity to prepare or to obtain such materials regarding the nature of the activity and the transfer pricing, and to retain such material for production, if necessary, in the course of a tax examination. Such actions should assist taxpayers in filing correct tax returns.” However, this orientation is under review under BEPS13.

To date, the above-mentioned documentation is usually prepared and presented in the following order: (1) an industry analysis: analyses of market trends and critical success factors; (2) a company analysis: a business overview with the financial results of the entities involved in the transaction as well as a description of each of their business strategy; (3) a functional analysis: based on a description of the functions performed, the level of risk assumed, and the assets engaged by the related entities; (4) a description of similar intercompany transactions: listing the characteristics of the subject of the transaction and an analysis of the costs borne by the related entities and also the calculation of the benefits derived from the intercompany transactions under analysis; and (5) an economic analysis: entailing a description of the pricing methodology used and of the transfer pricing method selected, as well as a benchmarking study and a financial analysis.

In addition to having collected all this information in accordance with the OECD model and the recommended methods (as described above), it must be borne in mind that each country has its own domestic transfer pricing law. In each country, the legislation, albeit maybe similar to that of other countries, still addresses some important issues, such as: who (taxpayers) and what (transactions) are covered by Transfer Prices; which methods should be used; and whether a hierarchy of methods exists? Furthermore, most countries tend to have specific regulations, guidance, and rulings on specific matters in place, particularly regarding the administrative documentation and penalties for noncompliance.

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12.1 Historical Background of EU Tax Harmonization

The “European tax law” is essentially a set of regulations issued by the EU institutions which are designed to provide a centralized control of all tax matters incorporated in the tax legislations of each Member State (Boria, 2017). The fundamental freedoms in force in the EU Treaty are the cornerstone of the European internal market (Kopits, 2002).

According to Boria (2017): “*The sources of European law can be distinguished essentially in two basic types: i) the primary law established in the Treaty of the European Union; ii) the derivative legislation, defined in legal acts issued by the EU institutions (and thus typically in the regulations and the directives, as well as in the so-called soft law).*”

Several aspects of direct taxation (in the case of income tax and corporate tax) are harmonized within the EU, particularly through a set of directives, such as the following:

Council Directive No. 2009/133/EC, of October 19, on the common system of taxation applicable to mergers, divisions, partial divisions, transfers of assets, and exchanges of shares concerning firms of different Member States and to the transfer of the registered office, of an SE or SCE, between Member States (Merger Directive—seeking to remove tax obstacles in cross-border restructuring, including mergers, divisions, asset transfer, and exchange or exchange of holdings).

Council Directive No. 2003/49/EC, of June 03, on a common system of taxation applicable to interest and royalty payments made between associated firms of different Member States (Interest and Royalties Directive—which allows the elimination of double taxation in the payment of interest and royalties between associated or dependent firms).

Council Directive No. 2011/96/EU of November 30, 2011, on the common system of taxation applicable in the case of parent companies and subsidiaries of different Member States, which broaden the scope and improve Council Directive of July 23, 1990, on the common system of taxation applicable in the case of parent companies and subsidiaries of

different Member States (90/435/EEC) (also called the Mothers-Daughters Directive, which aims to eliminate international double taxation in the context of non-portfolio investments).

Council Directive No. 2014/107/EU, of December 09, on automatic exchange of information in the field of taxation.

Council Directive (EU) No. 2017/1852 of October 10, 2017, on tax dispute resolution mechanisms in the European Union (The Tax Dispute Resolution Directive which aims, in general terms, to extend the objective and subjective scope of the resolution of these disputes and to make the Mutual Agreement Procedure, which should be decided by tax administrations within 2–3 years, more dynamic, efficient, and speedy).

The Anti-Avoidance Directive (“ATAD 1” and “ATAD 2”) which harmonized certain rules on tax avoidance, erosion of the tax base, and the transfer of profits to other jurisdictions.

Profound developments have taken place regarding transparency and the structure for exchanging tax and financial information, both at the European level, with the so-called DAC Directives 1–6, but also as well as the introduction of the Central Register of Beneficial Owners, and also at the international level, in particular with the strengthening of the Multilateral Convention on Mutual Administrative Assistance and Peer Review Procedure in order to establish high international standards.

12.2 VAT Harmonization

The harmonization of indirect taxation was a pillar of the free market and the fundamental liberties of Europe. In the case of VAT, as was seen in Chap. 9, this tax is almost fully harmonized (with the exception of VAT rates and certain VAT administrative issues). VAT concerns the tax regulation of trade, both domestic and at the EU level. The first two Directives on VAT were the ‘First Directive’, No. 227/67 and the ‘Second Directive’, No. 228/67, both of which were designed to introduce a general criterion for the definition and operation of value-added tax. The ‘Sixth Directive’, No. 388/77, 5/17/1977, established the homogenization of VAT in most of the key aspects of the tax.

VAT was further amended by Directives No. 680/91 of 16.12.1991, No. 77/92, 10/19/1992, and No. 111 of 12/14/1992, which opened the EU to the free market and the end of internal frontiers within the EU as from January 01, 1993. These Directives stipulated that taxation is in the country of destination, adhering to the principle of taxation in the country of source for Member States, as well as the approximation of the rates and tax bases and also the introduction of the compensation mechanism for VAT paid during intra-Community trade.

More recently, VAT was substantially reviewed with regard to the location of operations with the scope of Council Directive No. 2006/112/EC of 28 November 2006 for a common system of VAT.

12.3 Corporate Tax Harmonization and CCCTB

Corporate taxation has become increasingly important in the economic context (Hanlon & Heitzman, 2010). In an area of economic and monetary integration, such as the European Union and the Euro area, this is even more relevant (see for instance Devereux et al., 2002; Mintz, 2002, 2004). However, economic integration in the EU is not yet fully achieved, largely because the increasing enlargement of the EU with the adoption of new Member States has revealed the presence of several obstacles, among which the divergence between different Community tax systems stands out (Bettendorf et al., 2010). The Treaty of Rome is sparse in terms of direct taxation directives and only includes the “General Provisions” (Part VI, Article 293). Thus, the principle of legislative subsidiarity, enshrined in Article 5 of the Treaty, prevails for direct taxation, under which some aspects of direct taxation are left to the free judgement of each of the Member States. This is not the case for indirect taxation, which is specifically provided for in Article 93 as a necessary condition for the objective of the free movement of goods and services and the creation of a common market.

Several studies have shown that the decisions by groups operating at a transnational level are affected by taxation issues (see among others, Celebi, 2013; Desai et al., 2005), particularly in terms of rules and tax rates. Accordingly, these multinational groups tend to act and invest according to the tax framework of each country and in doing so they naturally seek to reduce their level of taxation. In practice, firms increasingly act in function of existing tax differences between states and are becoming increasingly receptive (and involved) to aggressive tax planning and taking tax evasion to the limit. The response of states has been an increase in the implementation of anti-abuse standards and greater control by their tax authorities. Naturally, the effect of globalization has only accentuated this trend, as a result of the increase in both capital mobility and the internal nature of business. In fact, the difference in taxation systems and the context costs that they generate act as a disincentive factor for investment and increases the cost of entry for new competitors, especially non-resident ones (Jaatinen, 2012).

Tax harmonization has clearly followed a two-speed principle: a faster integration of indirect taxation, especially in terms of customs duties and VAT, followed by direct taxation. The latter is thus the “poor relative” of tax harmonization, remaining mainly in the sphere of national taxation.

Over the last 10 years, the EU has been discussing the need for strong corporate tax harmonization, under the CCCTB proposal (Common Consolidated Corporate Tax Base) (Nerudová & Solilová, 2019). Despite the lack of success, the EU recently presented the white paper on “Communication on Business Taxation for the 21st century” and the EU Commission is committed to presenting a new framework for business taxation in the EU by 2023, which will reduce administrative burdens, remove tax obstacles, and create a more business-friendly environment in the Single Market. The “Business in Europe: Framework for Income Taxation” proposal (or BEFIT) will provide a single corporate tax set of rules for the EU, providing for a fairer allocation of taxation rights between Member States. BEFIT will cut red tape, reduce compliance costs, minimize tax avoidance opportunities, and support the creation of jobs and

investment in the Single Market. BEFIT will replace the pending proposal for a Common Consolidated Corporate Tax Base, which will be withdrawn.

BEFIT will provide common rules for determining the corporate tax base and for the allocation of profits between Member States, based on a pre-defined formula (a formulary apportionment). The proposal will build on the principles agreed upon under Pillar 1 and Pillar 2 of the OCED¹ and will further adapt these to ensure suitability for extended use within the EU Single Market. In addition, BEFIT will consolidate the profits of the EU members of multinationals into a single tax base, which is to subsequently be allocated to the Member States using a formula that will replace the current transfer pricing rules. This formula will be developed by considering issues such as attributing appropriate weight to sales by destination, reflecting the importance of the market where a multinational group does business, as well as its assets (including intangibles) and labor (personnel and salaries). Once allocated, profits will be taxed using the common principles of a newly created EU corporate tax base.

Despite the announcement of BEFIT, the new proposal will be mainly based on the existing proposal of CCCTB, and accordingly the 2016 Directive (which is also based on the 2011 Directive) is summarized below.

The CCCTB was launched in 2011 through the COM(2011) 121/4: Proposal for a COUNCIL DIRECTIVE on a Common Consolidated Corporate Tax Base (CCCTB) and it was relaunched in 2016, through COM(2016) 685 final: Proposal for a COUNCIL DIRECTIVE on a Common Corporate Tax Base, and subsequently through COM(2016) 683 final Proposal for a COUNCIL DIRECTIVE on a Common Consolidated Corporate Tax Base (CCCTB). The Proposal for a Directive only concentrated on the so-called “first step” of that phased approach and is therefore limited to the rules for calculating the corporate tax base (MCCIS), including certain provisions to confront tax avoidance and others related to the international dimension of the proposed tax regime. With regards to the Proposal for a Directive 2011, the 2016 Directive covers the consolidation of the common tax base and includes two additional topics, namely: (1) rules against tax distortion in favor of corporate indebtedness and (2) the granting of an over-deduction for research and development (R&D) (Fuest, 2008; Hentze, 2019).

Apart from the 2011 proposal, which set up an optional system for all sizes of firms, the 2016 Directive was to be mandatory for firms belonging to groups with a stipulated minimum size. The criterion for setting a size-related threshold refers to the total consolidated revenue of a group, based on consolidated financial statements.

The concept of a “permanent establishment” in the 2016 Directive is close to the definition of post-BEPS² permanent establishment recommended in the OECD Tax Convention Model. Separate from the 2011 proposal, the revised definition covers

¹The OECD’s Inclusive Framework on BEPS (base erosion and profit shifting) addresses key terms for an agreement on a two-pillar approach to help address tax avoidance, ensure coherence of international tax rules, and attain a more transparent tax environment, including confronting the challenges arising from taxation in a digital economy. Pillar 1 concerns profit allocation, and Pillar 2 regards global minimum taxation.

²BEPS—Base erosion and profit shifting.

only permanent establishments located in the Union that are owned by taxpayers' residents in the Union for tax purposes.

The tax base is understood in its broad sense. All revenues are taxable, unless they are expressly exempt. Income in the form of dividends or gains from the disposal of shares held in a firm outside the group is exempt from holdings of at least 10% in order to avoid double taxation of foreign direct investment. Similarly, the profits of permanent establishments are also exempt from tax in the State where they are registered for tax purposes.

Moving to the interest limitation rule, this is a new rule (which was non-existent in the 2011 proposal) which introduces limits for the deductibility of interest expenses (and other financial expenses) with the aim to discourage profit-transferring practices to low-tax countries.

The content of the rule that fixed assets are subject to depreciation for tax purposes remains the same as the 2011 proposal, albeit with certain exceptions. However, a larger number of assets are now covered by individual depreciation, because medium-term tangible fixed assets have now been removed from the asset mix.

Indeed, the discussion regarding assets revolves around the non-inclusion of spending on intangible assets and inventories. According to the EU Commission, the reason for this non-inclusion is because both intangible assets and inventories are easily relocated assets, and thus their integration into the allocation formula would pose a high risk to tax manipulation/planning.

The desire of the European Council was for this allocation to be an easily applicable mechanism for taxpayers and the relevant tax administrations, based on factors that reflect the business reality as much as possible (in order to avoid the potential manipulation/relocation of the factors). In addition, the objective was for this to be as fair as possible and to be evenly distributed (with the aim to be as close as possible to the tax due case calculation in individual terms) and not to promote harmful tax competition between member states. The intention of the European Council was that this allocation formula would, above all, correctly take into account the location of the factors establishing the attainment of taxable income, and to ensure that the proportion of the CCCTB resulting from the application of the CCCTB would be as close as possible to the tax base that would result for each individual entity of a group of firms.

As determined under the 2011 proposal, taxpayers are allowed to carry over losses for subsequent years indefinitely and without restriction regarding the yearly deductible amount. The Directive establishes a link between the rules for limiting interest and the tax treatment of losses.

The main objective of the CCCTB is to ensure that the profit of a group of firms is allocated on the basis of an objective allocation formula, rather than by internal transfer prices (with criteria that are not always verifiable), thus generating a fairer and fairer taxation of each Member State.

The formula of appropriation is the following:

Share firm A

$$= \left[\frac{1}{3} \frac{\text{Sales}_A}{\text{Sales}_{\text{Group}}} + \frac{1}{3} \left(\frac{1}{2} \frac{\text{Salaries}_A}{\text{Salaries}_{\text{Group}}} + \frac{1}{2} \frac{\text{FTE}_A}{\text{FTE}_{\text{Group}}} \right) + \frac{1}{3} \frac{\text{Assets}_A}{\text{Assets}_{\text{Group}}} \right]$$

* Tax base

With regard to the sales factor, it is considered that sales should not be valued through “sales by origin” (i.e., where goods or services are manufactured or acquired), but rather through the “Sales by Destination” (i.e., by considering the destination of sales and services according to the rules of VAT), as a further initiative to confront tax avoidance/evasion.

As for the payroll factor, it should be noted first of all that the Council has proposed adopting the sum of salaries and the number of employees as a measure to correct such situations as when a firm has a very high payroll, even though it has already reduced the number of staff (e.g., in the case of firms that have many high paid top management or/and a large group administrative staff).

12.4 Financial Transaction Tax

12.4.1 The Main Concepts of FTTs

Over the last decade, the introduction of a Financial Transaction Tax (FTT) has returned to the domain of public and political discussion as a result of the financial crisis of 2008 and the subsequent European crisis (known as the “sovereign debt crisis”).

The financial crisis of 2008 caused a significant increase in fiscal deficits, and consequently in public debt, both in the United States and in the EU. Between 2010 and 2015, the sovereign debt crisis in Europe forced Member States to face up to the fact that they had to reduce their fiscal deficits, which, in turn, brought about a forced increase in taxation and a reduction in public spending, especially investments, as well as by cutting benefits and social support.

This need for greater fiscal control, as well as being subject to criticism for maintaining certain recurrent financial sector practices, has led to the global need for greater financial capital taxation.³ In fact, the financial sector has experienced very significant growth over the last two decades, both in terms of transactions, volume of business, and net gains (Darvas & Weizsäcker, 2011). This exponential growth in financial markets since the mid-1980s is the result of a combination of several factors, namely: technology (which has substantially reduced transaction costs and information asymmetry, the globalization of financial markets (with the opening of new markets, notably in Asia), and the deregulation of financial activities (Schulmeister, 2009). According to Darvas and Weizsäcker (2011), the total

³For example, in 2009, the G-20 asked the IMF to prepare a report on how the financial sector could make a greater contribution to counteracting the fiscal costs associated with the crisis.

turnover of financial markets in 2007 amounted to 70 times the world's GDP, with 88% of this value being in the derivatives and futures markets (Vlasenko, 2016). In the United States alone, the value of financial assets traded on the stock exchange in 2010 amounted to 43 trillion dollars (Capelle-Blancard, 2017).

In this sense, the need to introduce a FTT has been widely discussed at the global level. In a very polarized debate, supporters of the adoption of a FTT invoke the following four main arguments: (1) the need for greater revenue; (2) the sharing of sacrifices by all (in opposition to the argument that financial capital is often privileged in terms of tax burden); (3) the use of the tax factor as a way of regulating financial markets; and, finally (4) considering that the deregulation of the financial system was in effect the origin of the financial crisis (and that it would be eminently just for the financial sector to contribute more significantly to the reduction of fiscal deficits⁴). On the other hand, opponents of a FTT mainly argue that such taxation would increase transaction costs and also the associated inefficiencies and distortions that such taxation generates in financial markets, including a reduction in the volume of financial transactions, which in turn would affect investment, GDP, and tax revenue forecasts, as well as reduce liquidity in the markets.

It should be highlighted that, according to Capelle-Blancard and Havrylchyk (2016), there is a good level of acceptance for the introduction of a FTT in terms of public opinion, although this varies widely between countries. As is discussed below, there is also a heated ongoing debate about the merits and demerits of a FTT in the economic debate also.

The concept of a FTT is not exactly recent. It was first theorized by Keynes in 1936 in his paper on *The General Theory of Employment, Interest, and Currency*. The intention of the proposal was to achieve two main objectives: to bring about greater stability to financial markets and to increase public revenues. More recently, in the 1970s, a proposal by the Nobel Laureate, James Tobin, generated misconceptions about what is actually regarded as a FTT. For, in reality, the "Tobin rate" is a tax on foreign exchange transactions, which was defined as being a fee charged on spot exchanges of currency transactions (Tobin, 1996). The objective of the "Tobin rate" was to create a financial penalty for speculative movements of financial capital (albeit this would be subject to enormous difficulty in distinguishing between what is "normal trading" that would ensure stability and liquidity in the market (i.e., guarantee the proper functioning of financial markets) and what is speculation or "trading" that destabilizes markets, better known as "noise trading" (Smith, 1997; Raffer, 1998). The "Tobin rate" was proposed in 1972 as an alternative system to the existing "Bretton Woods system," which in effect became discredited with the onset of the international monetary crisis of 1971.

⁴ As the European Commission states in its communication on FTT: "*The recent financial crisis has highlighted the need for a more robust financial system, given the costs of financial instability for the real economy. On the other hand, important development, resource efficiency and climate change challenges are identified with significant budgetary implications. Given this, it is lawful to ask whether the introduction of new taxes on the financial sector could potentially be a revenue-generating solution.*"

This original principle of the “Tobin rate” was a defense against speculative exchange movements which cause negative effects on the economy (i.e., to create a deterrent against short-term speculative investments and volatility intrinsic to such movements that would not affect long-term investments). Tobin never intended to impose additional taxation on financial markets, as he later pointed out. A similar measure was also proposed later on by Stiglitz (1989).

In this respect, by proposing a FTT, the EU Commission is in effect reinforcing the idea that the 2008 financial crisis has highlighted the need for a more robust financial system, given the costs of financial instability for the real economy worldwide. On the other hand, the need for public investment and social expenses have significant fiscal implications. Bearing this in mind, it is therefore admissible to question whether the introduction of new taxes on the financial sector could indeed potentially be a revenue-generating solution.

As mentioned above, the 2008 financial crisis and the subsequent economic crisis, especially in the Eurozone, caused the EU Commission to move forward with a proposal to create a FTT rate. The rate under discussion in the EU is an additional taxation⁵ on financial transactions, the main motivation for which is perfectly legitimate—namely to increase tax revenue. On the other hand, some countries have moved forward with their own FTT independently, such as Italy and France, in frustration at the enormous difficulty of reaching a consensus among the 27 Member States. The two main objectives of a FTT: (1) to reduce the risks in the financial sector by reducing market volatility; and (2) to increase tax revenue. However, there is little evidence that these objectives are being achieved, both in the EU Commission’s proposal, and also in the practical implementation already underway in Italy and France. Furthermore, no estimate has been made of the adverse impact on economic growth of such a tax, nor has consideration been given about how to use this additional revenue and what measures are required to minimize the potential negative impact. However, it should be noted that some of these negative economic impacts are, in fact, specific objectives of this taxation, examples being the objective to reduce and penalize certain types of operations that are considered in the proposal and theory regarding socially undesirable FTTs. As Capelle-Blancard and Havrylchuk (2016) conclude from a theoretical point-of-view, the objective of a FTT is to reduce the volume of transaction due to rising transaction costs (see McCulloch & Pacillo, 2011), but rather its impact on volatility depends on the type of market investors in question. Additionally, a FTT is not the solution to high leverage problems, nor to problems of insufficient liquidity or to similar causes that led to the 2008 financial crisis.

⁵In Words Of Commission: “*The proposed FTT goes far beyond a simple stock exchange transaction tax of the kind that used to exist or has recently been introduced in some EU Member States. It is clearly different from traditional ‘stamp taxes’, for example British ‘stamp duty’, as it also applies to financial transactions that take place on unregulated markets or that are carried out directly between financial institutions without the medium of a trading platform (so-called ‘over-the-counter’ transactions.*”

There are accordingly several reasons why it is important to examine FTTs closely: (1) it is a topic that will remain on the European agenda over the coming years; (2) despite being a topic that is still under review, its final model is still very much under discussion and promises much debate and controversy; (3) when, or if it comes to making a political decision, the experience of France and Italy should be taken into account, which has proven that a FTT can be implemented in a short period of time; and (4) if implemented at the European level, a FTT will have a universally strong impact on financial institutions and markets.

12.4.2 How FTTs Potentially Operate?

According to Schulmeister (2011), a general-based FTT would be charged on all transactions involving the purchase/sale of financial assets and derivatives, considering the value of the underlying asset as the taxable value, with a reduced rate (excluding the payment of goods/labor or long-term investments), and then dividing the tax burden between both the seller and the buyer. The EU Commission believes that the proposed FTT should focus on the value of each operation with as wide a scope as possible, which thus implies that the new tax should be applied to as many financial instruments as possible (e.g., stocks, bonds, currencies, and derivatives), although some of the current proposals are designed to restrict the tax's impact on a certain subset (e.g., on foreign exchange transactions).

Studies analyzing the impact of FTTs are basically divided into two groups: on the one hand, those that analyze the impact in those countries that have already introduced a FTT (based on data prior to and after the introduction of the FTT in question—for example, in France and Italy—including an appraisal of the degree of impact on the volume, volatility, prices, and tax revenues of transaction); and on the other hand, those that seek to estimate the impacts of the adoption of already implemented FTTs, either globally or at the European level, or the theoretical impact in countries that have not yet introduced a FTT. To date, the main conclusions in the economic literature can be summarized as confirming that a FTT, just like any other tax, has three main functions, namely: (1) to obtain revenues, (2) to redistribute the tax burden, and (3) to promote economic development. Additionally, by contributing to the creation of more efficient financial markets, FTTs lead financial institutions to adopt a fairer and more significant tax contribution, albeit, on the other hand, FTTs have a more general scope and can better relate financial markets with the real economy and help minimize negative externalities (especially volatility and asymmetric shocks) through a contributing to a greater regulation of financial markets, even though the tax itself may have a negative impact in this area.

As mentioned by Coelho (2016), the “optimal design” of FTTs is particularly complex. From an administrative point-of-view, this type of tax involves high transaction costs and can become inefficient. In addition, the design of the tax and the level of taxation must be defined according to the financial product—i.e., different types of financial instruments imply different solutions. Based on the evidence that the number of different financial instruments continues to be on the increase, as well as their

complexity, it becomes difficult to have a tax that applies to all the types of existing “securities” and financial products, in compliance with the principle of general tax law. Coelho (2016) highlights that this issue is more sensitive in the case of derivatives, partly as a result of the existence of an even greater multiplicity of contracts, but also due to the existence of a “strike price” and a financial premium. There is no cumulative consensus from the point-of-view of the economic literature regarding the estimated elasticities of financial transactions in relation to transaction costs (Matheson, 2011), although Griffith-Jones and Persaud (2012) estimate that FTTs do not represent more than 10% of transaction costs (albeit this estimate should be considered with caution). Most studies tend to focus on country-specific tax reform events and very few take into account the responses of different asset markets. More importantly, FTTs are expected to be particularly conducive to the relocation of financial activity to other countries if the tax measures in question are not implemented globally, given the exceptionally mobile nature of financial services.

It is important that FTTs are implemented in a coordinated manner, otherwise, differences between national tax-based systems could create incentives for tax arbitrage and result in distortions in the distribution among EU financial markets. The emergence of uncoordinated national solutions could also lead to double taxation and a fragmentation of the financial market, which in turn would be detrimental to the functioning of the single market.

Two FTTs are currently in place in the Eurozone: in Italy and France (PWC, 2014). In Italy, this tax is levied on equity transactions, high-frequency transactions, CDS, and derivatives. The revenue collected has been lower than expected (Gullo, 2016) and there is evidence of a significant negative impact on the financial market, although it is unclear whether political instability might have contributed to this effect (Galvani & Ackman, 2021). Ruhl and Stein (2014) found evidence that market-wide taxation on high-frequency trading and financial transactions leads to an increase in bid-ask spreads and market volatility. According to Svinukhova (2018), the results of the implementation of the FTT in Italy suggest that the tax has increased stock market volatility, whereas it has no impact on liquidity. Furthermore, a study by Hvozdyk and Rustanov (2016) found that just the announcement of a FTT affects market liquidity, leading to a strong decrease in liquidity after the introduction of the tax. The authors also discovered that trading costs of the affected equities decrease after the announcement of the impending introduction of a FTT. Regarding volatility, this study found no indication of statistically significant changes between pre- and post-tax announcement and introduction events. The differences between the French and Italian FTT mainly concern the higher incidence of the Italian tax. This could well be the cause for the more severe impact of the application of this tax in Italy when compared with France.

Still within the European Union, although outside the Eurozone, Hungary has introduced a FTT, and in Europe, but outside the EU, the United Kingdom has also (in the form of a “Stamp Tax” which has been in force for several years now, which focusses on equity, options, and “securities,” with a one-time rate of 0.5%). In the case of Hungary, the creation of this tax resulted from the financial rescue plan that the country had to request from the IMF (although by not belonging to the Eurozone,

unlike Portugal, Greece, and Ireland, Hungary's bail out was not too reliant on the EU institutions, namely the EFSF and the EFSM, since these two instruments—as well as the creation of the ensuing ESM—are only participated in by the member countries of the single currency Eurozone). Hungary's FTT has a different scope, in that it levies a tax on transfers, deposits, and withdrawals, except for transfers between accounts of the same person or firm. In practice, the revenue collected in Hungary resulting from this tax has fallen far short of what was initially projected, with evidence of a negative impact on the local financial market.

12.5 The Main Advantages and Disadvantages of FTTs

There is an already extensive debate in the economic and legal literature regarding the advantages and disadvantages of introducing a FTT (Table 12.1).

Among the main arguments in favor of introducing this type of tax, the following are highlighted:

- *An increase in tax revenues:* The introduction of this type of taxation should result in additional public revenues, mitigating the effect of fiscal adjustment processes. By adding tax collection from the financial sector, governments would have the fiscal scope to reduce the burden on households and non-financial enterprises, or, on the other hand, increase public spending on automatic stabilizers, benefits and social benefits, and/or public investment. The EU Commission argues that it is important to take into account the economic burden of a new tax. In general, taxes on the financial sector tend to involve a certain redistribution of income from shareholders, managers, and financial market agents to the general population, with this added tax burden tending to have an impact on customers and consumers, albeit depending on the taxpayer's ability to avoid tax.
- *Compensation for VAT exemption:* This taxation also serves as compensation for the VAT exemption that the vast majority of financial transactions enjoy in the EU countries. However, it should be noted that in most countries these transactions are already subject to paying stamp duty. In addition, the VAT exemption is incomplete, i.e., the economic agents involved do not deduct the VAT incurred (see Chap. 9 on VAT). According to some studies, the non-deductibility of VAT represented a loss of 33,000 M€ in 2007 (PWC, 2013a, 2013b), which is a significant economic distortion (Gottfried and Wiegard, 1991; Adam et al., 2011). The EU Commission itself argued that considering VAT exemption as a tax benefit for the financial sector was an “*unsettled empirical question*” (EC, 2011a). However, it should be added that the absence of such a VAT exemption (which would involve replacing stamp duty with VAT) would be passed on to the final consumer, which in most transactions would lead to an aggravation of the tax burden.
- *A reduction in the profitability of certain investment and risk profiles:* The effect of this proposal would be to reduce the incentive to use certain practices that are considered “harmful,” or at least reprehensible, as is the case with “High

Table 12.1 Main advantages and disadvantages of an FTT in the economic literature

	Description	Authors
<i>Advantages</i>		
Prevents and supports recovery during financial crises	Due to the tax specifications, a FTT creates disincentives for transactions that do not pursue market efficiency; concerning tax revenue, it is possible to use the amounts to help recover savings/firms.	Schäfer et al. (2012); EC (2011b); Schulmeister (2009).
Compensates for distorting the effects of the economic neutrality of financial markets.	Due to the exemption from VAT in the financial sector, a FTT compensates for the distorting effects caused by VAT.	Schulmeister (2014); Schulmeister (2009).
Increases tax revenues.	Tax revenue is collected due to low-tax rates and a high volume of transactions.	Burman et al. (2016); Vlasenko (2016); Hemmelgarn and Nicodème (2010); Hemmelgarn et al. (2016); Schulmeister (2009); Baker (2008); Baker et al. (2009, Baker and Woo 2015); ECB, E. C. (2004).
Reduces the excess of “trading” and combats financial speculation.	With a uniform FTT, the transaction cost will be higher, reducing excessive trading (speculative transactions).	Schulmeister (2009); Habermeier and Kirilenko (2003); Tobin (1978).
The economic stabilization effect.	Speculation about firms tends to increase due to the excess of exchange rates, stock prices, interest rates, and commodity prices leading to a decline in economic growth and employment; A FTT may have a stabilizing effect on this issue.	Vlasenko (2016); Hemmelgarn and Nicodème (2010); Schulmeister (2009); Spahn (1996); Stiglitz (1989); Keynes (1936).
Discourages high-frequency trading practices.	A FTT discourages certain types of order flows, such as high-frequency trade, and thus reduces profitability.	Buckley (2012); Schäfer et al. (2012).
Reduces the attractiveness of certain financial instruments.	CDS (“credit default swaps”) tend to grow exponentially, due to the low cost of market entry with a FTT, leading to a decrease in the attractiveness of these instruments.	Schäfer et al. (2012).
<i>Disadvantages</i>		
A potentially negative impact on economic growth.	There may be a negative impact on economic growth resulting from the structure of a FTT, especially at the	EC (2013a, 2013b); Oxera (2012); Oxera (2011).

(continued)

Table 12.1 (continued)

	Description	Authors
	beginning of its implementation.	
A reduction in the liquidity of financial markets.	Although a FTT restricts speculative trading, this also causes a reduction in market liquidity, increasing the cost of capital and discouraging investments. This is more pronounced in the case of speculative strategies involving high volumes of transactions, where the taxation of each transaction reduces the volume of transactions, especially in the short term.	Burman et al. (2016); Habermeier and Kirilenko (2003); Summers and Summers (1989); Tobin (1974).
An increased tax burden.	Increased tax burden, mainly through the cascading effect.	Deutsche Borse Group (2013); Oxera (2011).
An increase in the financing costs of economic operators	The cost of financing (when using the stock market) is more expensive with a FTT, as it is necessary to pay taxes when the shares are traded.	Darvas & Weizsäcker, 2010; Summers and Summers (1989).
Reduces the volume of transactions.	A FTT may cause a reduction of the transaction to other markets which are liable to pay FTT.	ECB, E. C. (2004); Habermeier and Kirilenko (2003); Raffer (1998); Campbell and Froot (1994).
Financial crises	The imposition of a FTT increases market fragility and is likely to increase the possibility of the occurrence of a financial crisis.	Wang and Yau (2012).

Source: Author

frequency trading” and furthermore it would also give greater stability to the financial markets (as increasing transaction costs would bring fewer short-term operations and limit speculation and volatility—Schulmeister, 2008).

- *A FTT does not necessarily set a tax precedent:* As a significant number of countries and jurisdictions already apply some kind of taxation on financial transactions. However, the EU Commission’s proposal would have a greater impact, as the majority of FTTs are either a stamp duty or in effect are tax transactions on equity and non-debt-related transactions.
- *Harmonization at the EU level:* As provided in Article 113 of the TFEU.⁶
- *A broad objective and subjective incidence:* With very low-tax rates in percentage terms.

⁶Treaty on the Functioning of the European Union.

- *The cost or complexity of implementation is not very high:* Although this is a very debatable point (see Schulmeister, 2011).

The disadvantages of introducing a FTT are the following:

- *A reduction of financial transaction volumes:* which thus reduces the FTT's tax revenue forecasts.
- *A negative impact on economic activity:* reflected in GDP and job creation (see, among others, Matheson, 2011). The EU Commission's own proposal recognizes this negative impact, estimating it to be 0.3% of GDP (EC., 2013a, 2013b), whereas other independent calculations can be as high as 2.4% of GDP (Oxera, 2012).
- *The financial sector is already facing a very high level of taxation:* for despite the VAT already-mentioned exemption, the latest statistics show that the financial sector already has a higher level of taxation than most sectors. Taxation on the financial sector has increased significantly since the 2008 crisis (Kastner, 2018).
- *The effect of the "flight" of capital:* which results in the relocation of financial operations to countries that do not apply the FTT, and thus increases vulnerability to tax evasion. The EU Commission itself considers that if it is possible to implement a financial transaction tax only at the EU level, then it is nevertheless necessary to take into account that the financial industry is a global and interconnected world. Financial activities are concentrated in a small number of financial centers, both inside and outside the EU, which compete on a global scale. Finance is also a complex and evolving area, where key players are able to look for new and innovative ways to do business and structure financial operations.
- *Legal doubts, in the case of the European FTT proposal:* regarding its adequacy and legality vis-à-vis the European Treaties (see, among others, Allen and Overy, 2013; Englisch et al., 2013).

12.5.1 The Main Literature on the Implementation of FTTs

As mentioned above, a certain amount of economic literature attempts to analyze the impacts of FTTs. This literature analyses both the impacts of FTTs on financial markets (i.e., transaction volume, volatility, and prices) and on tax revenue. The studies are divided into two main groups: (1) those that analyze the impact of experiments that have already been implemented (i.e., in countries that have already introduced a FTT); (2) those that attempt to estimate the impact of potential FTTs in countries (or at the European level, in accordance with the proposal presented in the previous chapter) which have not yet implemented this type of taxation.

One of the first experiences of applying a FTT occurred in Sweden in the 1980s. Umlauf (1993) analyzed the period between 1980 and 1987 and concluded that the introduction of the tax did not lead to a drop in volatility, although share prices and turnover decreased as some of the existing financial activity migrated to London (indeed, by the end of the application period of the FTT, 40% of the shares of Swedish firms were traded on the London market, with fixed income securities

trading decreasing by 85% during the first week after the introduction of the FTT alone). However, the limitation of this study is that it analyses a period a relatively long time ago, prior to various major changes that have since been implemented in the financial markets (mainly from the 1990s onward). It is also important to consider that the introduction of a FTT in Sweden in the 1980s was the direct consequence of political motivations, and that it had no effect on changing tax avoidance behavior in terms of financial markets.

Another experiment that was carried out a long time ago was analyzed by Pomeranets and Weaver (2011), who examined the taxation of financial transactions on the New York Stock Exchange between 1932 and 1981. The authors concluded that this type of taxation had a negative impact on the volume of transactions, but no impact on volatility.

In a study of an experience implemented on the Tokyo stock exchange, Liu (2007) concluded that volatility increased after the introduction of a FTT. Similar results were obtained by Zhang et al. (2001) and Baltagi et al. (2006) in the Chinese market.

The French experience was analyzed by Capelle-Blancard and Havrylchyk (2016). In this case, as the FTT only applied to large French firms, the authors were able to create two control groups: medium and small French firms, and foreign firms which are also listed on Euronext. Through utilizing a “difference in difference” methodology, the authors were able to isolate the impact of the introduction of FTT from those of other economic changes that occurred during the same period. They concluded that the FTT in question decreased the volume of transactions and found no evidence that it had an impact on prices and volatility. Several other studies⁷ support the findings of these authors regarding the effect of the introduction of a FTT in France. Another study by Meyer et al. (2013) also concluded that there was a significant drop in the volume of financial asset transactions on the stock exchange after the introduction of the FTT in France (a 20% reduction from the previous volume). However, despite this reduced volume, there were no significant changes in spreads and prices. The authors conclude that there is a need for policymakers to have a clear understanding of the relationship between the design of the tax and the behavior of economic actors in the case of a FTT before decision-making (in particular, investors).

Ruhl and Stein (2014) analyzed the impact of a FTT in Italy and concluded that there had been an increase in volatility and spreads after the introduction of the tax. With regard to the relationship between volatility and liquidity, the increase in spreads indicates a restriction on liquidity caused by the fiscal effect. This raises some doubts about the effectiveness of the tax. Another study on Italy is that of Capelle-Blancard (2017), in which the author analyzed the volatility and liquidity of the market in the Italian stock exchange for the period from 2011 to 2013 (before and after the entry into force of the FTT). This study concluded that following on from high order-to-trade and the OTR penalty that was introduced in April 2012, the FTT

⁷For more about the French experience, see Becchetti et al. (2013); Haferkorn & Zimmermann, 2013; and Meyer et al., 2013.

introduced in 2013 had no impact on liquidity or volatility, but that there had been a significant drop in transaction volume (which implied the collection of much less tax revenue than forecast by the Italian government).

Coelho (2016) studied the impact of the introduction of FTTs in France and Italy and examined the implementation of the tax from the point-of-view of investor behavior and its elasticity, both in terms of the volume of transactions and revenue, as well as market volatility. The author concluded that the introduction of a FTT in both France and Italy was characterized by small reductions in return on assets, but significant changes in terms of the timing of operations. The results led the author to argue that the introduction of a FTT along the lines of the French and Italian ones might well not improve the use of tax instruments to increase revenue.

Another type of study sought to predict the potential impacts of the introduction of FTTs in countries that have not yet applied them (in terms of the volume, price, and volatility of tax revenues and financial markets). The objective of these studies was to estimate a forecast for a given country/region of the impact of introducing a FTT with certain characteristics. Some of these studies indicate that the creation of a FTT could significantly increase tax revenues and thus enable more spending on finance public expenditure, especially in social areas (Summers & Summers, 1989; Schulmeister et al., 2008; Darvas & Weizsäcker, 2011). However, opponents of FTT tend to emphasize the relationship between transaction costs and the efficiency of financial markets, arguing that increasing transaction costs leads to a reduction in liquidity and prices, as well as returns on investment (Jones & Seguin, 1997; Baltagi et al., 2006).

One of the above-mentioned studies was carried out by the EU Commission itself, which initially estimated the impact on tax revenue of the introduction of hypothetical FTTs for all Member States to be 57 billion €, with this figure being revised to 30 billion for the 11 countries that had declared a desire to participate in the European FTT (EC, 2011). However, the EU Commission's model has some limitations, starting with the fact that it does not consider the effect of the relocation of financial operations. That is to say, as the plan was only to implement the FTT in certain countries of the European Union, there was bound to be some effect from the shifting of financial transactions to other less-taxed markets. Second, the model considers that only one type of financial instrument exists and it fails to assess the consequences and impacts of this instrument on different types of assets. Third, the forecast of the long-term impact assumes GDP growth rates naturally do not take into consideration periods of recession (which are inevitable, yet unpredictable) in terms of their timing, extent, and duration.

The German Institute for Economic Research (DIW) estimated an impact of 10–20 billion € for the implementation of the planned FTT in the 11 European countries. The main source of revenue in this estimate arises from the 0.01% rate levied on derivatives and futures, which is lower than the rate of 0.1% for shares, although the volume of transactions is much higher (the EU Commission estimates that these derivatives and future transactions represent 98% of the total FTT tax base).

A study by Burman et al. (2016) using the European Union proposal as a benchmark, examined the impact of the introduction of a hypothetical FTT in the

United States. The authors concluded that by applying a rate of 0.34% (which is higher than the rate cited in the European proposal), this tax could lead to tax revenues of US\$75 billion (the approximate equivalent 0.4% of US GDP). However, the authors went on to warn about the problems of market distortion, efficiency, and increased levels of volatility.

Other studies sought to estimate the hypothetical impact of FTTs on the different segments of the financial market, rather than on the overall level of tax revenue alone. Some authors identified an increase in volatility in the stock market (Becchetti et al., 2013), while others found no such evidence (Roll, 1989; Phylaktis & Aristidou, 2007). A study by Wyman (2013) estimates on the one hand a decrease of 6–8% in the capitalization of the stock market at the European level and on the other hand an estimated impact on returns in the bond market of a decrease of 7–14% (LSE, 2013), with the so-called ‘repo markets’ decreasing by as much as 66% (Oxera, 2011; Comotto, 2013). The most serious effect was forecast to be in the derivatives market, which could fall by as much as 70% (Schulmeister, 2011), with the largest fall being in Sweden (up to 98%), which respectively was forecast to generate 3% of the expected revenue (Campbell & Froot, 1994).

12.5.2 The Proposal of the European Union

Ever since 2010, the EU Commission has been elaborating a proposal for the implementation of a tax on financial transactions (FTT) for all the EU member states.^{8,9,10,11} The legal basis for this proposal is set out in Article 113 of the TFEU, which expresses the details of a plan to harmonize taxation in order to ensure a better functioning of the common market and to avoid distortions in terms of competition between financial operations (and also in terms of “harmful tax revenue” and double or zero taxation).

First, the Council Directive on a European FTT was adopted by the EU Commission on 28 September 2011 [COM(2011) 594]. This was the EU Commission’s first proposal for a financial transaction tax and it was presented in the Commission’s communication of October 07, 2010, on the taxation of the financial sector.¹²

This Directive was not adopted by the Member States (and consequently did not enter into force) as there were deep divergences between Member States with regard

⁸As Barroso (2016) points out, in accordance with Articles 110 to 115 of the TFEU, the European institutions for tax matters are primarily designed to supervise decisions taken at the national level, thus defending the internal market and free competition.

⁹The European Commission considered that one of the strengths of the proposed ITF is that it is a tax with a broad tax base and with two low rates, which reduces the negative distorting effects.

¹⁰See also European Commission (2010, 2011).

¹¹It should be noted that the FTT proposal should also be seen in the broader framework of a comprehensive European Commission program for the regulation and supervision of financial markets.

¹²<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0549:FIN:PT:PDF>

to the EU Commission proposal that was presented on June 22, 2012, at ECOFIN and on June 27, 2012, to the European Council. Nevertheless, 11 Member States¹³ made a request to the Commission under Article 20 and Article 326 of the TFEU to establish enhanced cooperation regarding the implementation of a common system of a revised version of the European FTT, arguing that a new proposal for a Directive was needed with a view to achieving this objective.¹⁴ Following this request, the Commission submitted a new resolution on October 25, 2012 [COM (2012) 631 final/2]. Subsequently, following the Legislative Resolution of the European Parliament and the Decision of the European Council (2013/52/EU authorizing enhanced cooperation under the FTT), the Commission proposed a new Council Directive [COM(2013) 71 final] to replace the previous 2011 proposal.

The new Council Directive of 2013 is the object of analysis in this chapter, however, it should be noted that the introduction of the proposed European FTT was postponed again in 2015, after the ECOFIN meeting held on May 12.

This second proposal does not differ substantially from the EU Commission's proposal of September 2011 and therefore no specific consultations have been initiated by the Commission. This proposal retains the same solutions in principle for a common FTT system under enhanced cooperation (e.g., regarding the incidence of tax, the establishment of a financial institution involved in a transaction such as the linkage factor, the taxable amount and fees, and the tax debt to the tax authorities).

The aim of the second proposal was for the FTT to enter into force on January 01, 2014. The overlying objective is to implement a common European approach to this issue that is consistent with the internal market and to complement the EU regulatory framework, which aims to make financial services safer. On the other hand, a uniform definition of the essential characteristics of a FTT at the EU level is needed to avoid the possible relocation of financial transactions and market participants and the replacement of financial instruments within the EU. In other words, the aim is to introduce a uniform definition at the EU level in order to ensure the proper functioning of the internal market and avoid distortions of competition within it. The EU Commission's proposal for the allocation of tax revenue resulting from the FTT is as follows: 66% is to be allocated to the EU budget and 33% to the budgets of the Member States. In the absence of more progress, several EU Member States have already taken isolated measures in the field of financial sector taxation.

This second proposal is based on the original version of the Commission's original proposal of 2011, in so far as it complies with all the essential principles set out therein. However, some adjustments were made, namely: (1) taking into account the new context of enhanced cooperation, which in particular meant that the jurisdiction of

¹³ Austria, Belgium, Estonia, France, Germany, Greece, Italy, Portugal, Slovenia, Slovakia, and Spain.

¹⁴ All Member States specified in their requests that the scope and objectives of the Commission's legislative proposal for implementing enhanced cooperation should be based on the initial proposal for an EU FTT. They also specified that evasive action, distortions, and transfers to other jurisdictions should be avoided.

the FTT is limited to the participating Member States and that transactions carried out within a participating Member State that would be taxed under the initial proposal still remain taxable, it is assured that the modification that had been made to the original proposal of Council Directive 2008/7/EC, February 12, 2008, on indirect taxes on the raising of capital meetings remains unchanged; (2) a review of some of the original provisions presented for reasons of clarity; and (3) the introduction of anti-tax evasion measures in the form of a series of rules to ensure that taxation follows the “emission principle” as a last resort, which complements the “place of establishment principle,” which still remains a fundamental principle. This addition reflects, *inter alia*, the requests of the Member States concerned to include adequate measures to avoid evasive action, distortions, and transfers to other jurisdictions. In fact, by supplementing the principle of residence with elements of the issuing principle, the second proposal will make it less advantageous to relocate activities and establishments outside the jurisdictions of the FTT.

In sum, the second proposal aims to: (1) reduce the fragmentation of the internal market for financial services, taking into account the growing number of existing uncoordinated national tax measures; (2) ensure that financial institutions contribute fairly to the costs of the recent financial crisis and to ensure fiscal equity with other sectors; (3) create appropriate measures to discourage transactions that do not increase the efficiency of financial markets and thereby complement existing regulatory measures to prevent future crises.

12.5.3 Tax Structure

We now analyze the structure of the main components of the proposed European FTT, namely: its incidence, taxable persons, taxable amount, fees, and chargeability and payment.

As a preamble, Article 1 presents the subject matter of the Directive, and Article 2 presents the different definitions of the terms used therein.

Incidence: Article 3 presents the scope of the FTT and the exceptions to its application,¹⁵ while Article 4 describes the necessary criteria for its establishment.

The FTT contemplates a wide-ranging tax on products, transactions, certain types of trade, and financial actors, as well as transactions carried out within a financial group based on the principle of residence. Furthermore, the territorial application of the proposed FTT and the tax rights of the Member States are defined on the basis of the principle of residence.¹⁶¹⁷ In order for a financial transaction to be taxable in the

¹⁵The present Directive shall apply to all financial transactions, provided that at least one party to the transaction is established in the territory of a participating Member State and that a financial institution established in the territory of a participating Member State is a party to the transaction, either acting on its own account, or on behalf of another party, or on behalf of another party to the transaction.

¹⁶Taxation in the Member State of the establishment of financial actors, regardless of where the transactions are carried out. The Directive also provides for taxation in the EU if a third country

EU, one of the parties to the transaction must be established in the territory of a Member State. The tax will be levied in the Member State in whose territory the head office of the respective financial institution is located, provided that that institution is a party to the transaction, either on its own account, or on behalf of another entity, or when acting on behalf of a party to the transaction.¹⁸¹⁹²⁰

financial institution is involved in a financial transaction with a part of the EU, and if one of its branches in the EU is involved in a financial transaction. The geographical distribution of tax revenues depends on the technical characteristics of the tax. Under this Directive, geographical distribution depends on the place of establishment of the financial institutions involved in financial transactions and not on the place where financial instruments are traded. This is likely to result in a lower degree of concentration of tax revenues, in particular where financial institutions intervene on a trading platform on behalf of financial institutions established in another Member State.

¹⁷ Or “principle of residence” is also complemented by elements of the “emission principle,” as a last resort in order to improve the resilience of the system against relocation. In fact, by complementing the “principle of residence” with the “emission principle,” it will be less advantageous to relocate activities and establishments outside the jurisdictions of the FTT, as transactions with financial instruments subject to taxation under this latter principle and issued in the jurisdictions will be taxable in any way. This applies where none of the parties to the transaction is “established” in a participating Member State on the basis of the criteria set out in the Commission’s initial proposal, but if those parties are trading in financial instruments issued in that Member State. It essentially includes shares, bonds and equivalent securities, money market instruments, structured products, units and shares in collective investment and derivatives companies traded on organized commercial sites or platforms. In the context of the issuing principle, which is also underlying certain national taxes already in the financial sector, the transaction is linked to the Member State participant in which the transmitter is located. Persons involved in this transaction shall be deemed to have been established in that Member State due to this connection, and the institution in question will have to pay the FTT in that country.

¹⁸ Where those establishments of the different financial institutions which are party to or are acting on behalf of such parties are located in the territory of different Member States, those different Member States shall have jurisdiction to subject the transaction to the tax at the rate they have established in accordance with this proposal. Where the establishments concerned are located in the territory of a State which is not part of the Union, the transaction is not subject to the FTT in the EU, unless one of the parties to the transaction is established in the EU, in which case the financial institution of the third country will also be regarded as an established in the Member State concerned, the transaction being taxable there. Where transactions take place in commercial areas outside the EU, they are subject to tax if at least one of the establishments carrying out the transaction or intervening in it is located in the EU.

¹⁹ For the purposes of this Directive, a financial institution which fulfils one of the following conditions shall be considered to be established in the territory of a Member State: (a) has been authorized by the authorities of that Member State to act as such in respect of transactions covered by such authorization; (b) have its registered head office in that Member State; (c) have its domicile or habitual residence in that Member State; (d) have a branch in that Member State with regard to transactions carried out by that branch; (e) is a party, either on its own account, or on behalf of another person, or is acting on behalf of a party to the transaction, in a financial transaction with another financial institution that is established in that Member State in accordance with Points (a), (b), (d), or with a party established in the territory of that Member State, other than a financial institution.

²⁰ This implies that institutions outside the European Union are affected by this proposal. The FTT will be charged depending on the location of the entity that issued the financial asset concerned, regardless of the location of both parties of the transaction (similar to the model for the French FTT).

Taxable persons: The tax incidence focusses on financial transactions carried out by financial institutions that are party to a financial transaction, either on their own account, or on behalf of another entity, or on behalf of one of the parties to the transaction.²¹

Taxable amount: Article 5 lists the conditions of eligibility and Article 6 establishes how the taxable amount of each transaction subject to this tax is calculated. Article 7 establishes the tax due in the case of financial transactions related to derivative contracts and Article 8 determines the provisions that are common to the taxable amount of the different financial instruments.

Where financial transactions with financial instruments are concerned, the taxable amount shall be the gross amount received or that received from the third party or purchaser by default (or, if higher, its market value) before any clearing is carried out. When transactions of derivative financial instruments are concerned, the taxable amount will coincide with their value of the notation, calculated at the time of the financial transaction (or the higher value, if there are several value values.). Financial transactions between firms of the same group or with special relationships will be taxed on the amount resulting from the application of transfer pricing rules.

Fees: The structure, value, and application of the tax rates are defined in Article 9. Member States will apply the ITF rates in force at the time that the tax is chargeable, these rates being fixed by each Member State as a percentage of the taxable amount. Nevertheless, these rates will not be less than: 0.1% for financial transactions referred to in Article 5 (non-derivative transactions); 0.01% for financial transactions referred to in Article 6 (derivatives). In addition, Member States will apply the same rate to all financial transactions that fall within the same category.

Enforceability and payment: Chap. 4 of the proposal for a Directive stipulates the rules for the payment of the common FTT, as well as the related obligations and the measures for the prevention of fraud, evasion, and abuse. The general anti-abuse rules laid down in Article 13 should be noted. To conclude, Chap. 5 considers the final provisions.

The timing of enforceability is defined as the time at which the financial transaction occurs and a subsequent cancellation cannot be considered a reason for excluding the charging of the tax, except in cases of error.

The payment of the tax will be borne by the financial institution in the Member State where the institution has its head office or permanent establishment, regardless of the place where the transaction was actually carried out. The payment conditions are up to three working days after the taxable transaction is carried out, regardless of receipt of payment, or immediately in the case of transactions carried out

²¹The definition of a financial institution is broad and essentially includes investment firms, organized markets, credit institutions, insurance and reinsurance entities, collective investment entities and their management companies, pension funds and their managers, holding companies, leasing companies, entities of special purpose and, where possible, refers to the definitions enshrined in the relevant EU legislation adopted for regulatory purposes. In addition, other entities carrying out certain financial activities on a significant basis should be considered to be financial institutions.

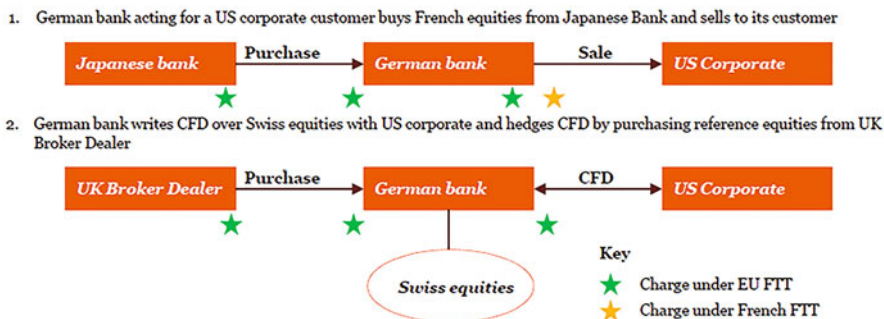


Fig. 12.1 Example of the application of the European tax on financial transactions. Source: PWC (2013b)

electronically. If two or more financial institutions are involved, each acting on behalf of a party to the financial transaction, then the tax will be paid autonomously by each financial institution at the rate applicable in the Member State in question where the institution has its head office or permanent establishment.²²

Figure 12.1 presents how the European FTT would work. In practice, if a buyer and seller are located in one of the 11 Member States, each is taxed in its Member State. However, if a party is outside the 11 Member States (but has a partner located in one of the 11 Member States), then both parties are taxed in the Member State where the transaction took place in accordance with the Directive of the FTT. Accordingly, it should therefore be noted that the proposal for a European FTT creates a ripple effect, which will naturally increase the effective rate of tax.

Nevertheless, the proposal for a European FTT is not without criticism (see the previous section on the advantages and disadvantages of a FTT). In response, the EU Commission (EC, 2014) has identified several challenges to the implementation of a FTT at the European level:

- A need to clearly determine the incidence, location, and payment of the FTT at the level of each Member State.
- How to determine the actual revenue of each Member State?
- Compliance and control.²³
- The need for the tax to be efficient from the point-of-view of its collection.

Should FTT occur at the European level, its implementation will be limited to the 11 countries that have endorsed the proposal, as mentioned above. This raises

²² As a declarative obligation, the financial institutions concerned are required to send a statement to the tax authorities of the Member State in which it has its head office or establishment on a monthly basis, containing all relevant information for the purposes of calculating the tax which became chargeable in that period (in particular, the value of the transactions and their nature).

²³ Although an analysis of PWC (2013—PWC *Fs viewpoint*) considered that the implementation costs and “compliance” would be €2–three million per country, thus assuming relatively low values.

relevant questions from the point-of-view of cooperation between Member States, not only at the level of the 11 Member States that will apply the FTT, but especially with regard to the other states. Article 20 of the Treaty on the Functioning of the European Union provides that the European Council may determine “enhanced cooperation” objectives, provided that at least nine Member States participate and agree to the same objectives. This enhanced cooperation is decided by the Council, on receipt of a proposal from the EU Commission, subject to the consent of the European Parliament. All members of the Council may participate in the deliberations, however, only those who participate in the enhanced cooperation action may vote on the measures. Naturally, according to Articles 326 to 334 of the same Treaty, it is only possible to carry out enhanced cooperation actions for matters which are covered by the European Treaties, but that are not yet established by European legislation. It is also assumed that the aim of this enhanced cooperation is to contribute to the objectives of the European Union and that it does not call into question internal cohesion (political, economic, and social).

As pointed out by Barroso (2016), another important aspect concerns the potential conflict between a FTT and the TFEU, in particular with regard to foreign exchange operations. The author reiterates the statement made by the EU Commission itself that any such conflict would be contrary to the principle of freedom of movement of capital.

Another issue is that a large percentage of revenue would be collected by a small number of states (the large ones) (Vlasenko, 2016), which naturally poses problems of equity between Member States. This also presents efficiency problems for the smaller states (the cost of implementation versus the return on tax revenue). However, in practice this problem could be mitigated by the fact that part of the revenue would be revenues of the Community Budget, which in turn promotes transfers between states and regions, flowing from the richest to the less rich.

The impact assessment of this proposal for a European FTT states that the tax will have a progressive distributive effect (i.e., its impact will increase proportionally to income), based on the supposition that higher-income groups benefit more from the services provided by the financial sector, which is especially true for a FTT that is limited to transactions with financial instruments (e.g., bonds and shares and their derivatives). Households and SMEs (Small and Medium Enterprises) that do not actively invest in financial markets will not be affected. Nevertheless, the EU Commission also states that effects of a FTT on efficiency and financial stability remain uncertain. This uncertainty results, above all, as discussed above, from the disparate results of the economic literature on FTT, but also from the difficulty in distinguishing speculation and the complexity of the concrete design of this tax. The EU Commission does not ignore the hypothesis that a FTT can create market efficiency problems (due to contextual costs, as mentioned above), which consequently could affect the volume of transactions. Indeed, it should be reiterated that the EU FTT would focus on the value of the contract of the transaction, which in the case of derivatives is much higher than the actual value of the financial flows involved (in addition to the cascade effect described above). In sum, all the above-mentioned potential uncertainties have led the EU Commission to recognize the

potential negative effect of the proposed FTT on the economy, which in turn would affect revenue forecasts.

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