Lisbon School of Economics & Management
Universidade de Lisboa

MASTER

MASTER'S IN ACCOUNTING

MASTER´S FINAL WORK

DISSERTATION

TRANSFER PRICING AS A TOOL FOR TAX AVOIDANCE

GONÇALO DA CRUZ GASPAR

MARCH 2023

Lisbon School of Economics & Management
Universidade de Lisboa

MASTER
MASTER'S IN ACCOUNTING

MASTER´S FINAL WORK
DISSERTATION

TRANSFER PRICING AS A TOOL FOR TAX AVOIDANCE

GONÇALO DA CRUZ GASPAR

SUPERVISION:
INÊS MARIA GALVÃO TELES FERREIRA DA FONSECA PINTO
PEDRO MANUEL DE RESENDE PINGUICHA GALEGO

MARCH 2023

Lisbon School of Economics & Management
Universidade de Lisboa

"In this world, nothing can be said to be certain, except death and taxes."

Franklin, B., 1789

GLOSSARY

BEPS – Base Erosion Profit Shifting

CUP – Comparable Uncontrolled Price

EU – European Union

GDP – Gross Domestic Product

IFRS – International Financial Reporting Standards

ISEG – Lisbon School of Economics and Management

MNC – Multinational Company

NACE – Statistical Classification of Economic Activities in the European Community

OECD – Organization of Economic Co-operation and Development

VIF – Variance Inflation Factor

ABSTRACT

This dissertation aims to examine the relationship between transfer pricing and tax avoidance through the analysis of the transactions between subsidiaries of MNCs within the same group.

With this aim in view, we use a sample of EU countries over a period comprised between 2015 and 2020 to investigate the influence of intra-firm group transactions on the extent of tax avoidance activities.

Our results suggest that the higher the number of subsidiaries of a company, the higher the amount of tax avoided by them. However, this study also provides significant insights regarding the impact of some political and country control variables on tax avoidance.

Moreover, this study is also responsible for alerting to the significant consequences of tax avoidance for both the States and the companies.

KEYWORDS: European Union, Multinational Companies, Tax Avoidance, Transfer Pricing.

RESUMO

Esta dissertação tem como objetivo examinar a relação existente entre os preços de transferência e a elisão fiscal através da análise das transações efetuadas entre subsidiárias de empresas multinacionais dentro de um mesmo grupo.

Com este objetivo em vista, utilizamos uma amostra de países da União Europeia durante o período compreendido entre 2015 e 2020 a fim de investigar a influência das transações entre empresas do grupo no que compreende a extensão das suas atividades de elisão fiscal.

Os nossos resultados sugerem que quanto maior for o número de subsidiárias de uma empresa, maior será o valor de imposto por elas evitado. No entanto, este estudo também fornece introspeções significativas relativamente ao impacto de algumas variáveis de controlo político e de país na elisão fiscal.

Além disso, este estudo também é responsável por alertar para as consequências significativas da elisão fiscal tanto para os Estados, quanto para as empresas.

PALAVRAS-CHAVE: União Europeia, Empresas Multinacionais, Elisão Fiscal, Preços de Transferência.

Lisbon School of Economics & Management
Universidade de Lisboa

TABLE OF CONTENTS

Lisbon School of Economics & Management
Universidade de Lisboa

LIST OF TABLES

Lisbon School of Economics & Management
Universidade de Lisboa

ACKNOWLEDGMENTS

Firstly, I would like to heartfelt gratitude to my supervisor, Professor Inês Pinto, for her remarkable guidance and encouragement, and for being my biggest support throughout the process of writing my master's thesis. Her insightful observations, comments, and constant availability have been fundamental to the success of this project. I am truly grateful for her effort because without her none of this was possible.

I would like to extend my appreciation to Professor Pedro Galego who helped me through the process of shaping my ideas and refining my study and research to achieve the results present in my master's thesis. His opinions and technical observations were also fundamental to the success of this project.

I am extremely grateful to the Lisbon School of Economics and Management and to the University of Lisbon for providing me with all the theoretical and technical knowledge and resources indispensable for producing my master's thesis. The assistance of all the library staff was fundamental throughout my research process.

Furthermore, I would like to express my deep appreciation to my friends and colleagues for being always by my side, for believing and me, and for always providing their expertise and emotional support, and encouragement through the ups and downs of my research.

Finally, my biggest acknowledgment goes to my family, especially my mom, for all her support and encouragement not only throughout this project but throughout my life. Her wise words, patience, and love were invaluable during my academic journey. I could not be more grateful for her, and it is because of her that all of this is possible.

Thank you all for being part of this fantastic journey and for making my master's thesis a reality.

TRANSFER PRICING AS A TOOL FOR TAX AVOIDANCE

By Gonçalo Gaspar

This study aimed to examine the impact of transfer pricing on tax avoidance by using a sample that contains countries of the EU over the period comprised between 2015 and 2020.

1. INTRODUCTION

The tax bill has always been a burden that companies constantly fight to reduce since primordial times. While minimizing taxes may be advantageous for these companies, it can be particularly harmful to their respective countries, since the tax revenue is often invested in crucial areas such as education, health, and the environment (Mukhtar, 2021).

Therefore, tax-driven profit shifting remains a critical topic since existing literature provides evidence that multinational companies (MNCs) engage in intra-firm transactions to allocate taxable profits from high to low-tax jurisdictions (Rathke et al., 2020).

Thus, the question of how states can combat the significant amount of tax avoidance has persisted over the ages, particularly since the EU's Single Market[1] has eliminated most of the remaining trade barriers between the member states (Haufler & Wooton, 1999; Smith & Venables, 1988).

As a result, companies may use several methods, especially those with subsidiaries in other countries, to reduce their tax bill. One of the most common and easy ways is by exploiting transfer pricing (Awodiran, 2014). In order to achieve this, one indispensable condition for transferring tax income vis transfer pricing manipulation is the occurrence of international transactions that occur within companies belonging to the same group (Jacob, 1996).

Although it is a valid business practice for associated companies in the pricing of inter-related sales, it is also considered a big international taxation issue that keeps confusing both the taxpayer and the tax specialists (Awodiran, 2014). This fact helps to create the suspicion that the manipulation of prices used for such internal transactions

[1] Launched on the 1st of January of 1993 and established the free movement of people, goods, services, and money between the state members of the EU. The first laws regarding this matter started to appear in 1986 and covered different topics such as tax policy, business regulations, professional qualifications, and other barriers to open frontiers. Although the first steps to implement the single market started in 1986, the process was delayed and therefore, the single market was officially implemented only in 1993 (European Union, n.d.).

provides opportunities for tax avoidance (Mansori & Weichenrieder, 2015; Onyeukwu, 2010).

Throughout history, the world's largest economies have consistently tried to induce different types of regulatory and operational instruments in an attempt to oversee and regulate transfer pricing activities (Rathke et al., 2020). However, since legislators have recently become more and more concerned about the intensification of profit shifting (Liu et al., 2017; Zucman, 2014) it is of extreme importance to establish a consensus among countries regarding the applicability of transfer pricing regulations by creating inflexible international laws to end up with the tax loopholes[2] created by the current guidelines and national regulations.

Therefore, we can say that the term "transfer pricing" carries out a certain ambiguity, since it is frequently used to imply or signify the manipulation of prices, meaning that MNCs usually take advantage of their power to set soften intra-firm prices (Picciotro, 1992).

However, this term is normally used to describe inter-company pricing arrangements concerning the transactions realized among related business companies, i.e., the price charged on each product or service of one division with another division within the same company or between companies that share a special relationship (e.g., the parent company and its subsidiaries) (Lin et al., 2016; Liu et al., 2017; Mukhtar, 2021).

These transactions may include transfers of intellectual property, tangible goods, services, loans, intangible assets, or other financial transactions (Holtzman & Nagel, 2014) and are conveyed by charging a lower price when selling to a related company based in a low-tax country (Lin et al., 2016; Liu et al., 2017).

Within the past two decades, the term "transfer pricing" has become a significant concern to the broader business audience and it has frequently assumed pejorative connotations suggesting that large MNCs have the flexibility to manipulate the prices on intrafirm trade and service flows for their business advantage (Urquidi, 2008).

[2] It is an existing gap in the tax laws that taxpayers can take advantage of to reduce the amount of taxes paid by their companies. Essentially, it is a legal way of avoiding paying taxes, because once it is in the Tax Code, this practice could not be considered evasion and, therefore, neither a crime. Since the Tax Code is complex, tax experts have found ways to reduce taxes for their companies without breaking the law (Gheorghe GUIAȘ & Mihaela HĂINEALĂ, 2021).

Furthermore, transfer pricing is now, more than ever, considered an activity narrowly related to the legitimate minimization of taxes (Mukhtar, 2021).

Typically, when two unrelated companies transact with each other, their commercial and financial relations are influenced by market forces. Conversely, when dealing with related companies in the same situation, their transactions may not be so straightforwardly affected by external market forces (Urquidi, 2008).

As a result of that, the prices that would, for instance, be charged in the transfer of goods between a subsidiary and its parent that is located in a different tax jurisdiction may differ from the prices charged to independent companies for the transfer of equivalent goods (Urquidi, 2008).

This indicates that MNCs with subsidiaries operating in other tax jurisdictions do not set a transfer price just for management accounting purposes. Instead of this, those transfer prices are also defined based on the tax burden of the subsidiaries in different countries, and thus, the overall tax burden of the MNC (Choe & Hyde, 2007).

To prevent those situations, the taxing establishments (e.g., the Organization for Economic Co-operation and Development) created their own rules approaching transfer pricing. Besides being, sometimes, inconsistent, these rules are used as a tool to avoid the loss of tax revenue (Holtzman & Nagel, 2014).

Unlike transfer pricing, there is no widely accepted definition for “tax avoidance”. Nonetheless, it can be defined as the reduction of explicit taxes, reflecting all the transactions affecting the company’s tax liability.

Therefore, we may say that tax avoidance can be considered the phenomenon of legal minimization of the amount of taxes paid whose main target is to maximize the amount of income after tax, using the permitted methods included in the tax codes (Guiaș & Hăineală, 2021).

However, like everything in life that has anything to do with personal taste, the degree of avoidance is given by the observer's perception, making it difficult to determine precisely (Dyreng et al., 2008; Hanlon et al., 2010).

Currently, taxes are usually charged on revenues, wages, and investment income, which fundamentally depend upon the activities realized by the private sector (Sikka, 2010).

It is important to mention that tax avoidance has numerous possible consequences that may have a direct incidence (e.g., the deduction of non-deductible expenses will increase the investor's wealth) or an indirect incidence (e.g., the increased deduction lowers the marginal benefit of the interest tax shield and may change the firm's capital structure decisions) (Graham & Tucker, 2006; Hanlon et al., 2010).

The groups that are most affected by the consequences of this tax avoidance are the managers, the shareholders, the employees, and the government (Hanlon et al., 2010). Shareholders are the ones responsible for delivering the financial capital, employees are the ones responsible for providing the human capital, and the government is the one responsible for providing the social capital such as education, healthcare, transport, security, subsidies, and public goods, for instance (Sikka, 2010).

As expected, these groups believe to receive a return on their investments. Therefore, the shareholders expect to receive dividends, employees expect to receive salaries and wages, and the state expects to collect taxes (Sikka, 2010).

As a consequence of these expectations, managers are often asked to maximize after-tax cash flows by decreasing the amount of tax paid by the company, i.e., by avoiding them. Because of that, and with the help of the right incentives in their favor and of their families, tax avoidance has become a natural part of the process of decision-making and tax management (Hanlon et al., 2010).

Therefore, if managers triumph in the job of avoiding the major amount of taxes possible and the investors and shareholders form unbiased opinions regarding this avoidance, this means that everyone in the company is perfectly conscious of the dangers of tax avoidance and chooses to do so either way due to all the personal incentives and rewards that come from that action (Hanlon et al., 2010).

1.1. Types of Transfer Pricing

According to OECD (2022), two main transfer pricing methods may be used by companies in their transactions with other parties: the traditional transaction methods and the transactional profit methods.

On one hand, the traditional transaction methods, are divided into different methods: the comparable uncontrolled price (CUP) method, the resale price method, and the cost-plus method. On the other hand, the transactional profit methods, are divided into two different methods: the transactional net margin method, and the transactional profit split method.

1.1.1. Traditional Transaction Methods

A. Comparable Uncontrolled Price Method

The OECD (2022) defines the CUP method as the comparison between the price charged for property or services transferred in a controlled transaction[3] to the price charged for property or services transferred in an uncontrolled transaction[4], in analogous circumstances. If there is a difference between those prices, the one that should be applied is the price charged in a controlled transaction. The CUP method is the most preferable one regarding all the existing methods.

For instance, imagine that a taxpayer sells 900 tons of a product for EUR 75 per ton to a company belonging to its MNC group, and at the same time sells 600 tons of the same product for EUR 120 per ton to an independent company. This situation requires an evaluation of whether the different volumes should result in an adjustment of the transfer price or not. Therefore, the relevant market should be explored by analyzing transactions in similar circumstances to determine standard volume discounts.

B. Resale Price Method

For OECD (2022), it begins with the price at which the product that is been purchased from a correlated company is resold to an independent company. Therefore, this resale price will be reduced by a gross margin demonstrating the amount covering the reseller's

[3] Transactions between two companies that are associated companies with respect to each other.
[4] Transactions between two companies that are independent companies with respect to each other.

operating expenses plus an appropriate profit. This method is the most convenient one when we are contemplating marketing operations.

For instance, imagine that two different distributors are selling the same product, with the same characteristics, in the same market under the same brand name. However, Distributor A offers a warranty and Distributor B offers none. Distributor A does not include the warranty as part of its pricing strategy and therefore sells its product at a higher price resulting in a higher gross profit margin than that of Distributor B, which sells at a lower price. Hence, these two margins will not be comparable until a reasonably accurate adjustment is made to account for that difference.

C. Cost-plus Method

According to OECD (2022), the cost-plus method begins with the costs experienced by the supplier of property or services in a controlled transaction for property transferred or services provided to a connected purchaser. Then, a suitable cost-plus markup[5] is added to this cost to create a profit margin.

For instance, imagine that company A is a domestic manufacturer of timing mechanisms for mass-market clocks. A sells its product to its foreign subsidiary B and earns a 5% gross profit markup concerning its manufacturing operation.

On the other hand, X, Y, and Z are independent domestic manufacturers that pursue the same activity as company A but, instead of selling for its subsidiaries, they sell to independent companies and earn a 3-5% range gross profit markup for its manufacturing operation.

Company A accounts for administrative costs as operating expenses, and thus these costs are not reflected in the cost of goods sold. However, the gross profit markup of companies X, Y, and Z reflect the administrative costs as part of the costs of goods sold. Hence, these gross profit markups must be adjusted in order to provide accounting consistency.

[5] It is a markup that is measured by reference to margins computed after the direct and indirect costs incurred by a supplier of property or services in a transaction.

1.1.2. Transactional Profit Methods

A. Transactional Net Margin Method

OECD (2022) describes the transactional net margin method as the consideration of the net profit relative to an appropriate base that a taxpayer realizes from a controlled transaction.

B. Transactional Profit Split Method

According to the OECD (2022), the transactional profit split method establishes the arm's length results for controlled transactions to approximate them with the results that would have been reached between independent companies engaging in a comparable transaction. The *modus operandi* of this method begins with ascertaining the relevant profits that would be divided from the controlled transactions and then splitting them between the companies on an economically valid basis.

Concluding this initial approach to the topic, the remainder of this paper is organized as follows. In section 2 we present some legal framework regarding the theme of transfer pricing. Section 3 is responsible for the literature review and hypothesis development. Afterward, in Section 4 we present the research design where we will classify and explore our variables and methodology, and where we display the econometric model that was used in this study. Section 5 presents the sample and the data collection process. Section 6 is responsible for presenting and discussing our results, and in Section 7 we present and discuss the robustness tests conducted in the study. Finally, in Section 8 we conclude and present the limitations of the study.

2. Legal Context

It is worth noting governments are not concerned with the concept of transfer pricing itself, but rather its manipulation. This manipulation involves the over or under-invoicing of related party transactions to avoid taxes or to exploit cross-border differences in tax rates (Eden, 2009).

Therefore, governments looked for ways from preventing this to happen by implementing some regulations because what one company sees as a legitimate and fair form of pricing setting may not be seen as the same by another company or by the government itself (Eden, 2009).

Because of that, there are numerous legislations and regulations regarding transfer pricing since this topic has skyrocketed around the world in the past few years. Several countries have already defined and implemented their regulations regarding this topic, and other ones simply follow the OECD Guidelines and European Legislation.

This chapter is responsible for giving some legal background regarding the principal regulations existing for transfer pricing. The most common one is the Arm's Length Transaction Principal, but there are other ones, as discussed below.

2.1. Arm's Length Transaction Principle

There is no such thing as the "flawless method" of applying transfer pricing, nevertheless, the underlying principle is based on the Arm's Length Transaction, which can be defined as "a transaction in which the buyers and the seller of a product act independently and have no connection to each other" (Holtzman & Nagel, 2014).

Therefore, by scrutinizing from a tax perspective, the most favorable arm's length transaction price will depend on the relative income tax rates of the divisions concerned. This means that the most favorable price will minimize the companies' overall tax burden depending on the transfer price used on the transaction (Baldenius et al., 2003).

Most of the time, the arm's length price ends up being stated as a range rather than a unique price, giving the company leeway to negotiate the greatest price.

The transfer pricing methods are used as approaches to calculating the profit margin of transactions of a company or the arm's length price/range of the transactions realized

between companies. Independently of the method used, companies may certify that the applicable transfer price is aligned with the arm's length standard.

Some types of Transfer Pricing are more suitable when providing an Arm's Length result for certain transactions than others (Holtzman & Nagel, 2014).

For instance, the CUP method (defined in the previous point) is repeatedly considered way more valuable for determining an arm's length price for manufacturing and services than any other method. On the other hand, when determining an arm's length price for distribution, for instance, a resale price method is deemed to be more convenient than any other method.

2.2. Regulation by the Tax Authorities

The tax authorities are of national personality, consequently, they vary among the EU state members, which means that, by default, governments typically tax the income of the companies independently – i.e., the amount of income tax is computed and paid by the individual companies. Therefore, any company can experience legal personality and hence can characterize a taxation object (Karpowicz, 2020).

With that said, tax-induced profit shifting remains a serious discussion topic among international policymakers since major evidence shows that MNCs perform intra-firm transactions to allocate taxable incomes from high-tax to low-tax locations (Rathke et al., 2020).

By using transfer pricing, companies have total discretion to determine the prices applied on intra-firm transactions (Rathke et al., 2020), so, to prevent perceived abuses of the countries' tax system and increase their domestic tax revenues, global taxing authorities started to implement severe regulations that MNCs must follow to detail the prices charged for related party transactions.

If governments did not regulate, companies were free to shift the major percentage of their profits to low-tax or non-jurisdictions countries, increasing their incomes significantly (Choi et al., 2018).

It is correct to affirm that the major transfer pricing issue arises when a company wants to allocate gross income, deductions, credits, or other allowances between organizations in two or more states. Therefore, to prevent this problem, tax authorities

from all around the world, started to produce and implement regulations regarding transactions between states.

Barker & Brickman (2016) suggested that the regulation concerning transfer pricing created by the government is managed through the concept of Arm's Length Transaction, where the use of market prices is one of the ways used to moderate tax avoidance practices.

2.1.1. European Regulatory Framework

In 1995, the OECD released several guidelines concerning transfer pricing. These guidelines were developed to create a common international framework that helps reduce the occurrences of double taxation among state members while supporting economic growth and financial stability, following the OECD's mission and the Arm's Length Transaction Principle.

Nevertheless, it is important to mention that the OECD guidelines are not laws, therefore, they cannot regulate to the detriment of domestic laws enacted by its state members. However, countries made a collective effort to legislate according to the principles of OECD guidelines.

Two considerations must be taken into account when determining if an intercompany transfer pricing agreement satisfies the arm's length standard under the OECD guidelines. On one hand, we must determine whether the activity "provides a respective group member with economic or commercial value to enhance its commercial position"(OECD, 1995). On the other hand, we must derive the most suitable arm's length intrafirm charge (Urquidi, 2008).

Both OECD guidelines and the Internal Revenue Code (the tax authority of the United States of America) enumerate several economic methods, consistent with each other, to suit this purpose.

2.3. Base Erosion and Profit Shifting (BEPS)

The OECD and G20[6] groups developed 15 different arrangements to assist the governments with domestic and international rules and instruments to report tax

[6] According to the OECD, the G20 started in 1999 as a simple meeting of finance ministers and central bank governors and nowadays is considered an international forum composed of 19 independent countries

avoidance. The main purpose of these actions is to certify that profits are taxed where they should be, i.e., where the economic activities responsible for those revenues are achieved and where the value is created.

BEPS Actions 8-10 are the ones that address the topic of transfer pricing and are also responsible to guarantee that their results are aligned with the value creation of the MNCs group.

The need to produce these actions remains on the fact that global intra-group transactions have grown exponentially over the last few years and, as a consequence of that, transfer pricing rules have found a challenging time determining the price for the transactions occurring within the MNC group which results in the allocation of profits to different countries. In this respect, based on the arm's length principle, the intra-group transactions must be priced as if the companies were independent of each other.

The changes implemented by the BEPS Actions 8-10 help reduce the incentives for MNCs to shift their income to shell companies with few if any employees and little or no economic activity, created to take advantage of low-tax jurisdictions.

2.3.1. Action 8 – Intangibles

This action is accountable for reporting the transfer pricing matters regarding controlled transactions involving intangibles since they are continuously considered portable and recurrently hard to value.

The misallocation of profits created by valuable intangibles was the major motive that seriously contributed to the creation of this BEPS Action.

2.3.2. Action 9 – Risks and Capital

This action is accountable for addressing the contractual allocation of risks, and the subsequent allocation of profits to these risks, which do not frequently correspond to the earnings of the activities performed.

and the EU (as a single organization, representing 27 more countries) which represents the world's major developed and emerging economies. Together, its members represent 85% of the world's GDP and because of its size and strategic impact, the G20 has a crucial role in defining the path for the future of global economic growth.

Additionally, Action 9 is responsible for addressing situations where the level of returns on funding supplied by a capital-rich MNC group member does not match the level of activity carried out by the funding business.

2.3.3. Action 10 – High-risk Transactions

This action is responsible for the high-risk areas, including the profit allocations that result from controlled transactions that are not commercially rational, the opportunity for targeting the use of transfer pricing methods, and the use of certain sorts of payments between members of the MNC group to erode the tax base in the absenteeism of alignment with the value-creation.

3. Literature Review and Hypotheses Development

Most of the literature regarding transfer pricing acknowledges the strong probability of its usage for tax avoidance purposes on related party transactions, and since the corporate tax is an important item of cash outflow for companies (Park, 2018), it is also essential for its managers to persistently seek for new techniques to reduce the tax burden by exploiting legal loopholes, as transfer pricing, for instance.

The truth is that tax groups commonly face fewer compliance burdens than individual parties. Accordingly, tax groups are not required to prepare or present any statutory transfer pricing documentation, and their entities are ordinarily exempted from submitting a tax return compared with the single taxpayers that are obliged to do so (Jung et al., 2009).

However, on the other hand, there are countries where the tax grouping regulations are extremely compound, which provokes constraints by increasing the compliance burden which can be harmful to the companies (Jung et al., 2009; Ting, 2010). This fact leads companies to constitute groups in other countries where the fiscal regime is less harmful and more appropriate for their intentions.

Further benefits consist of immediate profit transfer to the parent company, tax savings regarding no withholding tax on interest recognized by the parent company, transfer of savings or comprehensive deductibility of participation expenses, and so on (Jung et al., 2009; Oestreicher & Koch, 2010; Prinz & Witt - Otto Schmidt, 2003).

Existing literature (Harris, 1993; Jacob, 1996; Wang et al., 2008; Aharony et al., 2010; Jian & Wong, 2010; Lo et al., 2010a, 2010b) provide evidence that related party transactions are commonly used to shift income and manage profits for tax purposes.

Jung et al. (2009) concluded that tax rate reduction means less income shifting, i.e., the transfer of profits among related companies is major tax motivated rather than management motivated. Therefore, tax grouping may be a valuation in high-tax jurisdictions, where the possibility of consolidating profits and losses could meaningfully rise the amount of net return based on the equity previously invested by shareholders (Jung et al., 2009; Karpowicz, 2020).

Dyreng et al. (2008) suggest that MNCs are more concerned about moving their business away from the headquarters location than from high-tax subsidiaries.

Egger et al. (2014) found that in European high-tax countries, the corporate tax liability of MNCs is around 30% lower than the liability of national companies.

Cristea & Nguyen (2016), studied the transfer pricing of Danish companies before and after they set up their first foreign subsidiary. The result was that after owning a subsidiary in a low-tax rate country, the MNCs reduce their export prices by 5.7%.

Herianti & Chairina, (2019) have explored and concluded that transfer pricing appears to positively influence the amount of tax avoided by MNCs.

Merle et al. (2019) discovered that transfer pricing has been negatively affected by tax rates of different countries, where its activity will increase in areas of low tax rates and decrease in areas of high tax rates.

According to Karpowicz, (2020) companies using tax grouping are more likely to pay fewer taxes than those operating individually. The amount of tax saved by the shareholders and managers equals the amount of revenue surrendered by a state budget.

Because of that, comparing tax systems is very important for managers of MNCs since taxes directly affect their decisions. MNCs need to evaluate all the tax consequences that arise from their choices regarding the location of their businesses (Nicodème, 2001).

Moreover, tax avoidance has recently become a worldwide problem, and with the addition of cross-border data, it is now possible to compute the total tax that has been avoided and the influence of each country (in number and impact) on that amount. In 2020, it was estimated that countries are losing approximately 427 billion dollars on taxes yearly (Mukhtar, 2021). This behavior that leads to this amount of tax avoidance reflects the pursuit and the pressure to achieve bigger after-tax profits and tax minimization (Hines & Rice, 1994).

Due to globalization, economic activity is now focused only on a small number of MNCs, making it more difficult for governments to increase the amount of revenue from the corporate income tax, as these companies are shifting their profits across borders to decrease their tax bills (Liu et al., 2017).

Hence, this is important to be analyzed, and nation-states have become concerned regarding the manipulability of transfer prices and their role in avoiding taxes since it constitutes a loss for the State, which in a long-term perspective, can cause some negative effects on public legitimacy and changes in the life of citizens (Sikka & Willmott, 2010).

With all the diverse taxation regimes and regulatory capacities, companies are required to develop processes for allocating expenses and overheads efficiently and effectively (Sikka & Willmott, 2010).

To do so, one way that the company's management uses to maximize their accounting profits is to take advantage of tax laws and regulations to minimize their tax burden, and their motivation to carry out this strategy is to get incentives in the form of bonuses and rewards because they assisted the companies to accomplish their financial performance target. Most times, this occurs due to the inconsistencies of interests between a company's management and its shareholders (Herianti & Chairina, 2019).

Some specialists acknowledge that transfer pricing can enable companies to avoid double taxation, but it is also vulnerable to abuse since it can be used to shift earnings artificially from a higher to a lower-tax jurisdiction, by maximizing expenses in the former and income in the latter.

Understanding transfer pricing as a tax minimization tool is not that simple and is regularly considered imperceptible to the public eye and expensive for supervisory authorities to perceive. Some authors compare this to a complex game between companies, accountants, lawyers, consultants, governments, taxpayers, and so on (Sikka & Willmott, 2010).

In addition to tax avoidance, employing transfer prices also helps MNCs to avoid the threat of politics and exchange rates, avoid the regulation on foreign exchange, reduce their costs, and allocate assets. Besides that, transfer pricing is also a major contribution to the management of subsidiaries and profit maximization (Lin et al., 2016).

Moreover, traditional theories suggest that tax avoidance is used to increase company value by transferring wealth that was supposed to be for the government back to the companies (R. Chen et al., 2022). Hence, from a shareholder perspective, companies should drain all authorized tax avoidance activities for which the reimbursements exceed

the costs (K.-P. Chen & Cyrus Chu, 2005; R. Chen et al., 2022; Hanlon et al., 2010; Phillips, 2003).

Hence, the main objective of this study is to analyze if transfer pricing has some influence on the amount of tax avoided by MNCs or not.

Therefore, the hypothesis of our study was developed to be aligned with the studies conducted by Cristea & Nguyen (2016), Holzmann (2017), and Mukhtar (2021).

Thus, in order to test if our assumption is valid, we developed the following hypothesis for our study:

Hypothesis 1: *Transfer pricing positively impacts the amount of tax avoidance.*

4. RESEARCH DESIGN

4.1. Methodology

In order to test if transfer pricing impacts the amount of tax avoidance, we estimate the following model (Rego & Wilson, 2012; Wahyuni et al., 2017; Park, 2018; Mukhtar, 2021; R. Chen et al., 2022):

(1) $TaxAvoid = \beta_0 + \beta_1 NrSubs_i + \beta_2 GDP_i + \beta_3 UnemplRate_i + \beta_4 ContCorrup_i + \beta_5 INFL_i + \beta_6 SIZE_i + \beta_7 ROA_i + \beta_8 LEV_i + \varepsilon_i$

4.2. Variables

Appendix A displays all the variables that will be considered in this study. It divides them into dependent, independent, and control variables, and shortly summarizes them.

Tax Avoidance (TaxAvoid) is computed as a difference between the marginal tax rate (World Development Indicators database) and the current tax rate (Income Tax/Profit and Loss Before Taxes). The higher this value, the greater the tendency for companies to try to minimize the effective tax rate, implying greater tax avoidance practices.

The *Number of Subsidiaries* (NrSubs) is used as a proxy for transfer pricing. If a company has a higher number of subsidiaries, there is a greater likelihood of transactions between group companies in order to minimize the payment of tax. The companies incorporated in the same group happen to share a special relationship between them, thus, the number of subsidiaries of a group can be crucial in what concerns avoiding taxes by executing transactions with companies located in different countries within the group. Therefore, we expect a positive coefficient for the variable NrSubs.

GDP growth represents the country's annual percentage of GDP growth which, according to the OECD, is the "standard measure of the value added created through the production of goods and services in a country during a certain period".

The *Unemployment Rate* represents the percentage of the total labor force that happens to be unemployed during a certain year in each country.

Control of Corruption represents the estimated control of corruption in each country during a certain year. This control of corruption was designed to capture the perceptions of where and when the government power is exercised for private gains and varies

between -2.5, which means poor or weak control of corruption, and 2.5, which means a strong control of corruption.

Inflation represents the country's annual percentage of the GDP deflator, which is the measure of the monetary price of all the new final goods and services domestically produced in a year in comparison with their actual value, i.e., the measure of the value of money.

Firm Size will be computed by using the natural logarithmic of total assets and intents to determine how big the companies are in terms of volume of assets.

Return on Assets will be computed by dividing the profit and loss before tax by the total assets. The return on assets is the most used financial ratio when examining how profitable a company is in comparison to its assets, i.e., the return on assets is often used to determine if a company is able to use its assets to generate a profit or not.

Firm Leverage is the use of debt to finance operations and investments of a certain company. Funding through debt of leverage will result in additional expenses for the company that will reduce the tax burden, which consequently, will increase the amount of debt and reduce the tax profit (Wahyuni et al., 2017). In this case, the firm leverage will be computed by dividing the long-term debt by the number of total assets.

5. Sample Selection and Data Collection

5.1. Sample Selection

Although some studies already exist regarding transfer pricing and tax avoidance, most of them are conducted only in specific countries such as France, Germany, the United Kingdom, India, Indonesia, Australia, Nigeria, the United States of America, China, Korea, and so on, keeping just a national approach.

Therefore, we aim with this study to give an international approach in order to compare the similarities and differences between the different countries.

Currently, the EU is composed of 27 countries, however, since this study is comprised between 2015 and 2020, it makes sense to add the United Kingdom to the sample given that the country just officially left the EU on January 31st, 2020. Hence, the list of the 28 eligible countries for this study is presented in Table I, below:

Table I - Eligible Countries for the Study

Country Name			
Austria	Estonia	Italy	Portugal
Belgium	Finland	Latvia	Romania
Bulgaria	France	Lithuania	Slovakia
Croatia	Germany	Luxembourg	Slovenia
Cyprus	Greece	Malta	Spain
Czechia	Hungary	Netherlands	Sweden
Denmark	Ireland	Poland	United Kingdom

5.2. Data Collection

As previously mentioned, the sample used in this research is based on the countries from the EU during a six-year period from 2015 to 2020. The information that will be used in this study will be retrieved using the Orbis Europe database that is provided to ISEG's students on the university's platform, and the World's Development Indicators database, available on The World Bank Organization website.

However, despite 28 countries being eligible for this study, we will only be considering the ones that fulfill the following criteria:

1. The companies must be part of NACE C (Manufacturing), NACE F (Construction), NACE J (Information and Communication), or NACE M (Professional, Scientific, and Technical Activities) since these are the four main pillars of the circular economy.
2. The companies must use the IFRS as their accounting policy since this is an international accounting policy, and therefore helps to establish a comparison indicator among countries.
3. The companies must be large[7] or very large[8] in terms of firm size since we are looking to study only MNCs that execute transactions with other countries.

Thus, by excluding the countries that do not fulfill the criterion and the ones whose number of yearly observations is below 20, the final sample of this study is composed of nine countries. Table II presents the number and frequency of observations for the countries used in this study.

TABLE II - OBSERVATIONS PER COUNTRY

	Country	Observations	Percentage
DE	**Germany**	24	0,40%
FI	**Finland**	870	14,66%
GB	**United Kingdom**	1026	17,29%
GR	**Greece**	162	2,73%
IE	**Ireland**	48	0,81%
IT	**Italy**	450	7,58%
PL	**Poland**	168	2,83%
PT	**Portugal**	2154	36,30%
SE	**Sweden**	1032	17,39%
	Total	**5934**	**100,00%**

[7] According to Orbis Europe, companies are considered to be large when they have an operating revenue equal to or greater than 10 million EUR, total assets equal to or greater than 20 million EUR, and a number of employees equal to or greater than 150.

[8] According to Orbis Europe, companies are considered to be very large when they have an operating revenue equal or greater than 100 million EUR, total assets equal or greater than 200 million EUR, number of employees equal or greater than 1000, and are listed companies.

As we may observe, more than 70% of the total observations were perceived by just three countries: Portugal (36.30%), Sweden (17.39%), and the United Kingdom (17.29%). On the other hand, countries like Poland (2.83%), Greece (2.73%), Ireland (0.81%), and Germany (0.40%), even combined, were not able to reach 10% of the total sample. Table III presents the descriptive statistics of our sample.

TABLE III - DESCRIPTIVE STATISTIC ANALYSIS

Variable	Observations	Mean	Std. Deviation	Minimum	Maximum
TaxAvoid	4,552	21.530	13.709	-44.840	62.977
NrSubs	5,934	3.760	8.289	0	85
GDP	5,934	0.838	3.846	-11.031	24.370
UnemplRate	5,763	8.058	3.189	3.140	24.980
ContCorrup	5,934	1.373	0.718	-0.108	2.257
INFL	5,934	1.769	0.987	-1.565	8.386
SIZE	5,934	11.136	1.441	5.854	16.844
ROA	5,934	0.128	0.129	-0.618	1.820
LEV	5,561	0.059	0.103	0	0.787

All variables are explained in Appendix A.

The dependent variable TaxAvoid has its minimum observation around -44.84 and its maximum observation around 62.98. The average amount of tax avoided is 21.53.

The independent variable NrSubs has a minimum number of subsidiaries of 0 and a maximum number of subsidiaries of 85. The average number of subsidiaries that each company has is around 4.

As for the control variables, we can observe that the average GDP is 0.838 percent, the average UnemplRate is around 8 percent, the average degrees of control of corruption stand around 1.37, the average percentage of INFL is close to 2 percent, the average size of a company is around 11.14, and the average ROA is standing up to 0.128. Finally, as for the LEV, its average is around 6%.

6. Results and Discussion

6.1. Pearson's Correlation Coefficient Analysis

Table IV presents the matrix for Pearson's Correlation Coefficient Analysis by testing the relationship between all the variables used in this study.

Table IV – Pearson's Correlation Coefficient Analysis Matrix

	Variables	1	2	3	4	
1	**TaxAvoid**	1.0000				
2	**NrSubs**	0.0482***	1.0000			
3	**GDP**	-0.0825***	-0.0368***	1.0000		
4	**UnemplRate**	0.0637***	-0.0045	-0.0580***	1.0000	
5	**ContCorrup**	0.1485***	-0.0411***	0.1217***	-0.4987***	
6	**INFL**	0.0270*	-0.0199	-0.3671***	-0.4299***	
7	**SIZE**	0.0665***	0.3835***	-0.0692***	-0.1281***	
8	**ROA**	0.0839***	-0.1023***	0.0541***	-0.0854***	
9	**LEV**	-0.0520***	0.0215*	-0.0806***	0.1990***	

	Variables	5	6	7	8	9
5	**ContCorrup**	1.0000				
6	**INFL**	0.1989***	1.0000			
7	**SIZE**	0.1687***	0.0339***	1.0000		
8	**ROA**	0.1993***	0.0113	-0.0961***	1.0000	
9	**LEV**	-0.3511***	-0.0416***	-0.0710***	-0.2035***	1.0000

Notes: *** p<0.01, ** p<0.05, * p<0.1. All the variables are explained in Appendix A.

By analyzing the outputs of the analysis, it is possible to affirm that the most related variables are the UnemplRate and the ContCorrup whose relation is 49,87%, followed by the relation between the UnemplRate and the INFL which is almost 43%. Contrarywise, the least related variables are the UnemplRate and the NrSubs whose relation is just 0,45%.

We may also conclude that, in fact, the NrSubs and, therefore, the transactions occurring between them, have a positive impact on tax avoidance, which means that the

bigger the number of subsidiaries the bigger the amount of tax avoided by those companies/groups.

It is possible to observe that the majority of the correlations between variables are significant at a 1% significance level with the exception of the correlation between TaxAvoid and INFL which is significant at a 10% significance level. Moreover, the relationships between the NrSubs and the UnemplRate, the NrSubs and INFL, and the INFL and the ROA are not considered to be significant (at least at a 10% significance level) for this study.

With that said, we may confirm that our model does not present any constraints regarding multicollinearity[9] as we may verify in Table V, presented below, which is responsible for showing the results of the Variance Inflation Factor (VIF) test conducted on the econometric model.

TABLE V - VARIANCE INFLATION FACTOR TEST

Variable	VIF	1/VIF
UnemplRate	1.83	0.546119
ContCorrup	1.64	0.609767
INFL	1.30	0.767392
SIZE	1.26	0.791711
NrSubs	1.19	0.841456
GDP	1.17	0.856610
LEV	1.15	0.870319
ROA	1.08	0.929380
Mean VIF	1.33	

By analyzing the results of the VIF Test it is possible to conclude that are no problems regarding multicollinearity since our VIF is below two. Our bigger VIF result is presented by the UnemplRate variable which is aligned with what we previously saw in Pearson's Correlation Coefficient Analysis results.

[9] Occurs when two or more explanatory variables are highly correlated to each other in a regression analysis. This can lead to a lack of accuracy in the result as these variables will not provide unique results.

6.2. Regression Analysis

Table VI displays the results of the analysis of the impact of Transfer Pricing on Tax Avoidance.

TABLE VI – IMPACT OF TRANSFER PRICING ON TAX AVOIDANCE

Variables	β	P-value	Model 1 (NrSubs)
NrSubs	β_1	0.007	0.079***
GDP	β_2	0.015	-0.598**
UnemplRate	β_3	0.000	0.913***
ContCorrup	β_4	0.000	4.388***
INFL	β_5	0.000	1.668***
SIZE	β_6	0.011	0.463**
ROA	β_7	0.000	7.422***
LEV	β_8	0.878	-0.357
Constant	-	0.854	0.542
Observations	-	-	4,246
R-squared	-	-	0.068

Notes: *** p<0.01, ** p<0.05, * p<0.1

All variables are explained in Appendix A.

By analyzing the results given in Table VI, it is possible to confirm that all the variables, with exception of Leverage, have a strong relationship, and thus impact significantly the practice of tax avoidance.

Findings show that our hypothesis is confirmed as our analysis revealed that companies with a greater number of subsidiaries exhibit elevated levels of tax avoidance. The coefficient of NrSubs is positively and statistically significant at a 1% significance level. These findings suggest that larger business groups, which facilitate increased transactional activity between entities, are more prone to engaging in such practices.

With regards to the *Unemployment Rate* and *Inflation*, both coefficients are positively and statistically significant at a 1% significance level. An increase in the Unemployment Rate and Inflation can lead to a decrease in purchasing power. This, in turn, creates an incentive for companies to engage in tax avoidance practices by conducting transactions

within the same group, but with subsidiaries located in countries where the inflation rate is not as high as the one in their home countries.

As for the ContCorrup, an increase in this variable will also increase the level of tax avoidance. This can be explained since a bigger level of corruption will attract companies to engage in tax avoidance practices.

An increase in the variable ROA will also result in an increase in tax avoidance practices because the profitability of the company may imply more transactions by using transfer pricing methods which, consequently, can lead to more tax avoidance.

Regarding SIZE, similar to the ROA, the bigger the company, the bigger the number of transactions conducted between companies by using transfer pricing and, therefore, the bigger the probability of companies engaging in tax avoidance practices.

The coefficient on GDP is negative and statistically significant at a 5% significance level, indicating that an increase in economic growth will be an incentive for reducing tax avoidance practices.

Finally, concerning LEV, results provide evidence that this variable does not constitute an incentive to tax avoidance practices.

7. ROBUSTNESS TESTS

Although the regression analysis shown in the previous section gave us significant results regarding the topic that we are studying, we decide to conduct two additional robustness tests in order to examine if the results would differ from the previous ones or not.

Therefore, we create two new variables: one is a proxy of our independent variable, and the other one is a new control variable. Hence, the classification and definition of these new variables are shown in Table VII, below:

TABLE VII - CLASSIFICATION OF THE ROBUSTNESS VARIABLES

Classification	Variable Name	Abbreviation	Definition
Independent Dummy Variable	Mean of Subsidiaries	DMenSubs	0: number of subsidiaries is below the mean 1: otherwise
Control Variable	Subsidiaries Control of Corruption	SubsCorr	Number of subsidiaries x Control of Corruption

DMeanSubs is an independent dummy variable that takes the value of 1 if the number of subsidiaries of the firm is higher than the sample mean of the number of subsidiaries, and 0 otherwise.

SubsCorr is a control variable that is the product of two different variables. One is our principal independent variable NrSubs and the other is the control variable ContCorr. The main objective of multiplying these two variables is to analyze if the control of corruption has a moderator effect between the number of subsidiaries and the number of tax avoidance practices or not.

Regarding DMeanSubs, we may say that around 26% of the companies have more subsidiaries than the average number of subsidiaries of the companies used in our sample.

As for the SubsCorr, the minimum value of this variable is around -1.186 and the maximum value is 176.007. The average is 4.918, which indicates that, in our sample, there are more companies whose number of subsidiaries is fewer than the average number of subsidiaries than otherwise.

Table VIII is responsible for showing the results of the robustness regression analysis conducted on our model with the addition of the dummy variable DMeanSubs.

Since this new variable is a proxy of our independent variable, it is expected that the results remain practically the same in comparison with the ones obtained in the previous regression analysis.

Therefore, as it happens with our independent variable NrSubs, it is expected that our new variable DMeanSubs has also a very significant impact on the amount of tax avoided by the companies that execute transactions with their subsidiaries.

TABLE VIII - ROBUSTNESS REGRESSION ANALYSIS (DMEANSUBS)

Variables	P-value Model 2	Model 2 (proxy: DMeanSubs)	P-value Model 1	Model 1 (NrSubs)
NrSubs			0.007	0.079***
GDP	0.015	-0.589**	0.015	-0.598**
UnemplRate	0.000	0.907***	0.000	0.913***
ContCorrup	0.000	4.409***	0.000	4.388***
INFL	0.000	1.607***	0.000	1.668***
SIZE	0.054	0.357*	0.011	0.463**
ROA	0.000	7.373***	0.000	7.422***
LEV	0.668	-1.004	0.878	-0.357
DMeanSubs	0.000	2.232***		
Constant	0.597	1.567	0.854	0.542
Observations		4,246		4,246
R-squared		0.070		0.068

Notes: *** p<0.01, ** p<0.05, * p<0.1
All variables are explained in Appendix A.

By analyzing the results presented in Table VIII, it is possible to confirm that our results did not change much. The bigger changes occurred in the variables SIZE, which was significant at a 5% significance level, and now is only significant at a 10% significance level, and LEV which represents the bigger change in terms of result variation but still not enough significant for this study.

Therefore, similarly to our previous regression analysis, all the variables, with exception of Leverage, have a strong relationship with our dependent variable and thus impact significantly the amount of tax avoided.

It is proven that our independent variable, which is now a proxy of the average number of subsidiaries, has a major impact on the amount of tax avoided by the companies since these two variables are related at a 1% significance level. Moreover, since the results remain the same, we achieve the same conclusions as well and are now capable of proving the strength of our study.

Additionally, we conducted another robustness test where we added the control variable SubsCorr, as previously discussed. Hence, the results of the regression analysis of our model when adding this new variable are presented in Table IX.

TABLE IX - ROBUSTNESS REGRESSION ANALYSIS (SUBSCORR)

Variables	P-value Model 3	Model 3 (SubsCorr)	P-value Model 1	Model 1 (NrSubs)
NrSubs	0.000	0.337***	0.007	0.079***
SubsCorr	0.000	-0.184***		
GDP	0.035	-0.530**	0.015	-0.598**
UnemplRate	0.000	0.935***	0.000	0.913***
ContCorrup	0.000	5.301***	0.000	4.388***
INFL	0.000	1.660***	0.000	1.668***
SIZE	0.026	0.403**	0.011	0.463**
ROA	0.000	7.410***	0.000	7.422***
LEV	0.985	-0.043	0.878	-0.357
Constant	0.876	-0.468	0.854	0.542
Observations		4,246		4,246
R-squared		0.076		0.068

Notes: *** p<0.01, ** p<0.05, * p<0.1
All variables are explained in Appendix A.

The main objective of this regression analysis is to examine the impact of corruption on the number of subsidiaries, as mentioned above. Hence, by analyzing the results we can conclude that since countries, where the level of tax avoidance is bigger are more

supervised regarding the disclosure and closing of the accounts, the incentive of engaging in tax avoidance practices will decrease since there is a bigger control over companies.

This may happen because since we are referring to large groups with many renowned companies and countries when the degree of control of corruption is bigger, the tendency of auditing those accounts will be bigger, therefore, it will be fewer tax avoidance practices.

It is well known that countries with a bigger degree of control over corruption have more invasive auditing than the remaining countries.

By conducting those two robustness tests we can now guarantee the strength of our econometric model since there were no changes in the results.

8. Conclusions, Limitations, and Further Research

This study aimed to analyze the impact of transfer pricing on tax avoidance and how MNCs use it to engage in tax avoidance practices. The major contribution of this study was to help tax auditors and tax regulators to get an idea of the impact of transfer pricing on tax avoidance since most of the MNCs use transfer prices in order to minimize their tax burden by recurring to the loopholes existing in the tax codes.

Due to the lack of disclosure of tax information, this study, which was supposed to analyze a sample of 28 European countries, ended up with nine out of 28 countries initially proposed. Basically, due to this major limitation, we ended up with just one-third of the sample initially defined.

Therefore, we cannot say that this pattern is applicable in all the countries of the EU as was planned, since we were not able to study most of them.

The major negative impact on the number of observations came from the fact that most of the companies with data disclosed on the Orbis Europe database did not disclose any information regarding the amount of taxes paid which was an important variable for this study in order to compare it with the effective tax rate of the countries and develop our dependent variable TaxAvoid.

However, despite these limitations, we can say that our results show that companies that conduct transactions with their subsidiaries by recurring to transfer pricing engage in more tax avoidance practices compared to the other ones whose number of subsidiaries, and consequently, the number of transactions within the group, are fewer.

With that being proven, we can affirm that our hypothesis was confirmed, and, in fact, transfer pricing has a significant impact on tax avoidance.

Although the main objective was to prove that transfer pricing practices happening within the same group have an impact on tax avoidance, we could also find other interesting correlations between tax avoidance and other variables.

We may affirm that the control variables GDP, Unemployment Rate, Control of Corruption, Inflation, Size, ROA, and Leverage have a significant impact on tax avoidance practices by MNCs.

As previously mentioned, the main limitation of this study was the lack of observations, but unfortunately, there are other limitations that could potentially influence the results and that future research must pay attention to and try to overcome in order to test if the conclusions remain the same or if it can achieve other conclusions.

The distribution of observations within countries is a limitation of this study. Even though our purpose was to analyze the effect of transfer pricing on tax avoidance considering the actual and former (United Kingdom) EU countries, around 71% of the total observations were observed only in Portugal (36.30%), Sweden (17.39%) and the United Kingdom (17.29%) whilst other countries like Poland (2.83%), Greece (2.73%), Ireland (0.81%), and Germany (0.40%) were not able to reach 10% of the total sample, even when combined.

This difference in the distribution of observations could impact the accuracy and reliability of our results since the reality of the countries with a bigger number of observations may obfuscate the reality of the countries with a lower level of representation.

Another limitation is the difference in regulations among the countries. For instance, in Portugal, companies pay taxes according to their size, their number of employees, their location, their operating revenue, and so on, and sometimes there are some tax benefits for a specific kind of company or applicable on a specific period of time (e.g., some tax benefits during the COVID-19 pandemic only applicable during 2020 and 2021).

Therefore, this study is not able to analyze either the tax benefits of each country or the updates that occurred between 2015 and 2020 on the individual legislation of each country. Hence, by using the effective tax contribution rate (based on the percentage of profit), we may not guarantee that every company included in this sample pays the same amount of tax based on the country in which it is located.

This limitation, in specific, is very difficult of overcoming since studying the actual effect of the effective tax contribution rate implies looking for the effective tax rate paid by each company in their financial statements for every year of the sample, which is impractical considering the number of observations. So, we should always have in mind that this variable could impact the reliability of our results.

Another limitation is related to the disclosure rules. Many companies, located in many countries of the EU are not obliged to give public disclosure regarding taxation fields which makes our analysis even harder, and future researchers should understand that is extremely difficult to get a considerable amount of information regarding any taxation topic.

Additionally, it was possible to notice that, when retrieving the data, as we add previous years to our sample (e.g., 2014, 2013, etc.) our number of observations was decreasing due to the fact that in prior years the disclosure of information was even worse than it is nowadays.

Finally, it is important to mention that as our study have many macroeconomic variables it was not necessary to include dummy variables by country and year because it would not significantly impact the study since the control variables already included in the econometric model are enough to control the effect country and year in our results.

However, despite all these limitations, our study is strong enough to prove that, in fact, the number of subsidiaries and the transactions occurring within the group by using transfer pricing, have a significant impact on tax avoidance.

When analyzing the results from the company's perspective, we can conclude that the impact observed between transfer pricing and tax avoidance is considered to be positive since they can decrease their tax burden by using transfer pricing. However, when analyzing the results from the country's perspective, we can conclude that the same impact is considered to be negative since the states usually use the money that comes from the payable taxes for the development of the country.

Furthermore, despite studying the impact of transfer pricing on tax avoidance can contribute to valuable results and conclusions, it is important to consider all the limitations referred to above when interpreting the results and conclusions of the actual impact of the variables on one another. Thus, it would be interesting to run this study again when we are able to overcome some of the limitations in order to observe the differences and similarities in the results.

REFERENCES

Aharony, J., Wang, J., & Yuan, H. (2010). Tunneling as an incentive for earnings management during the IPO process in China. *Journal of Accounting and Public Policy*, *29*(1), 1–26. https://doi.org/10.1016/j.jaccpubpol.2009.10.003

Awodiran, M. A. (2014). Transfer Pricing: A Tax Avoidance Tool of Multinational Corporations. http://ssrn.com/abstract=2463201https://ssrn.com/abstract=2463201

Baldenius, T., Melumad, N. D., & Reichelstein, S. (2004). Integrating Managerial and Tax Objectives in Transfer Pricing. *The Accounting Review*, *79*(3), 591–615. http://www.jstor.org/stable/3203271

Barker, J., Asare, K., & Brickman, S. (2016). Transfer Pricing As A Vehicle In Corporate Tax Avoidance. *Journal of Applied Business Research (JABR)*, *33*(1), 9–16. https://doi.org/10.19030/jabr.v33i1.9863

Chen, K.-P., & C. Y. Cyrus Chu. (2005). Internal Control versus External Manipulation: A Model of Corporate Income Tax Evasion. *The RAND Journal of Economics*, *36*(1), 151–164. http://www.jstor.org/stable/1593759

Chen, R., Ghoul, S. el, Guedhami, O., Wang, H., & Yang, Y. (2022). Corporate Governance and Tax Avoidance: Evidence from U.S. Cross-Listing. *Accounting Review*, *97*(7), 49–78. https://doi.org/10.2308/TAR-2019-0296

Choe, C., & Hyde, C. E. (2007). Multinational transfer pricing, tax arbitrage and the arm's length principle. *Economic Record*, *83*(263), 398–404. https://doi.org/10.1111/j.1475-4932.2007.00429.x

Choi, J. P., Furusawa, T., & Ishikawa, J. (2018). Transfer Pricing and the Arm's Length Principle under Imper-fect Competition. In *www.RePEc.org*

Cristea, A. D., & Nguyen, D. X. (2016). Transfer pricing by multinational firms: New evidence from foreign firm ownerships. *American Economic Journal: Economic Policy*, *8*(3), 170–202. https://doi.org/10.1257/pol.20130407

Dyreng, Scott and Hanlon, Michelle and Maydew, Edward L., Long-Run Corporate Tax Avoidance. *Accounting Review, Vol. 83, No. 1, 2007*, Available at SSRN: https://ssrn.com/abstract=1017610

Eden, L. (2009). Taxes, Transfer Pricing, and The Multinational Enterprise. In *The Oxford Handbook of International Business (2 ed.)*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199234257.003.0021

Egger, P. H., Merlo, V., & Wamser, G. (2014). Unobserved tax avoidance and the tax elasticity of FDI. *Journal of Economic Behavior and Organization*, *108*, 1–18. https://doi.org/10.1016/j.jebo.2014.09.014

European Union. (n.d.). History of the European Union 1990-99.

Guiaș, E. G., & Hăinealã, C., M. (2021), Tax Avoidance And Tax Evasion In Eu: Trends And Effects, *Annals of Faculty of Economics, 30, issue 2, p. 229-238*, https://EconPapers.repec.org/RePEc:ora:journl:v:30:y:2021:i:2:p:229-238.

Graham, J. R., & Tucker, A. L. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics*, *81*(3), 563–594. https://doi.org/10.1016/j.jfineco.2005.09.002

Hanlon, M., & Heitzman, S. (2010). A Review of Tax Research. *Journal of Accounting and Economics, 50,* 127-178.

Harris, D. (1993). The Impact of U.S. Tax Law Revision on Multinational Corporations' Capital Location and Income-Shifting Decisions. *Journal of Accounting Research*, *31*, 111–140.

Haufler, A., & Wooton, I. (1999). Country size and tax competition for foreign direct investment. *Journal of Public Economics, 71*, 121-139.

Herianti, E., & Chairina, S. W. (2019). Does Transfer Pricing Improve the Tax Avoidance through Financial Reporting Aggressiveness? *KnE Social Sciences*, 357-376. https://doi.org/10.18502/kss.v3i26.5387

Hines, J. R., & Rice, E. M. (1994). Fiscal Paradise: Foreign Tax Havens and American Business. *The Quarterly Journal of Economics*, *109*(1), 149–182. https://doi.org/10.2307/2118431

Holtzman, Y., & Nagel, P. (2014). An introduction to transfer pricing. *Journal of Management Development*, *33*(1), 57–61. https://doi.org/10.1108/JMD-11-2013-0139

Holzmann, C. (2017). Transfer pricing as tax avoidance under different legislative schemes. https://ssrn.com/abstract=3164103https://ssrn.com/abstract=3164103Electroniccopyavailableat:https://ssrn.com/abstract=3164103

Jacob, J. (1996). Taxes and Transfer Pricing: Income Shifting and the Volume of Intrafirm Transfers. *Journal of Accounting Research*, *34*(2), 301–312. https://doi.org/10.2307/2491504

Jian, M., & Wong, T. J. (2010). Propping through related party transactions. *Review of Accounting Studies*, *15*(1), 70–105. https://doi.org/10.1007/s11142-008-9081-4

Jung, K., Kim, B., & Kim, B. (2009). Tax motivated income shifting and Korean business groups (chaebol). *Journal of Business Finance and Accounting*, *36*(5–6), 552–586. https://doi.org/10.1111/j.1468-5957.2009.02141.x

Karpowicz, A. (2020). Income tax grouping as tax management tool: Lessons from EU with focus on Poland. *Business: Theory and Practice*, *21*(2), 675–685. https://doi.org/10.3846/btp.2020.11909

Lin, X., Zheng, H., Tang, X., & Lu, L. (2016). The Research on Transfer Pricing: A Method of Tax Avoidance and Profit Maximization for Multinationals— Taking WR Corporation for Instance. *Business and Management Research*, *5*(3). https://doi.org/10.5430/bmr.v5n3p36

Liu, L., Schmidt-Eisenlohr, T., & Guo, D. (2017). International Transfer Pricing and Tax Avoidance: Evidence from Linked Trade-Tax Statistics in the UK. *International Finance Discussion Paper*, *2017*(1214), 1–39. https://doi.org/10.17016/IFDP.2017.1214

Lo, A. W. Y., Wong, R. M. K., & Firth, M. (2010a). Can corporate governance deter management from manipulating earnings? Evidence from related-party sales transactions in China. *Journal of Corporate Finance*, *16*(2), 225–235. https://doi.org/10.1016/j.jcorpfin.2009.11.002

Lo, A. W. Y., Wong, R. M. K., & Firth, M. (2010b). Tax, financial reporting, and tunneling incentives for income shifting: An empirical analysis of the transfer

pricing behavior of Chinese-listed companies. *Journal of the American Taxation Association*, *32*(2), 1–26. https://doi.org/10.2308/jata.2010.32.2.1

Mansori, K. S., & Weichenrieder, A. J. (2015). Tax Competition and Transfer Pricing Disputes. *FinanzArchiv*, *58*(1), 1–11.

Merle, R., Al-Gamrh, B., & Ahsan, T. (2019). Tax havens and transfer pricing intensity: Evidence from the French CAC-40 listed firms. *Cogent Business and Management*, *6*(1). https://doi.org/10.1080/23311975.2019.1647918

Mukhtar. (2021). The Effect of Transfer Pricing, Leverage, and Sales Growth on Tax Avoidance. https://ssrn.com/abstract=3867195

Nicodeme, G. (2001) Computing Effective Corporate Tax Rates: Comparison and Results. *Economics Paper No. 153.* http://eu.int/economy_finance

OECD (1995). Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations. *OECD Publishing, Paris*. https://doi.org/10.1787/g2g7fa2a-en

OECD (2022), OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2022, *OECD Publishing, Paris.* https://doi.org/10.1787/0e655865-en.

Oestreicher, A., & Koch, R. (2010). The determinants of opting for the German group taxation regime with regard to taxes on corporate profits. *Review of Managerial Science*, *4*(2), 119–147. https://doi.org/10.1007/s11846-009-0036-3

Onyeukwu, H. (2010). Transfer Pricing in the Nigerian Context.

Park, S. (2018). Related party transactions and Tax avoidance of business groups. *Sustainability (Switzerland)*, *10*(10). https://doi.org/10.3390/su10103571

Phillips, J. D. (2003). Corporate Tax-Planning Effectiveness: The Role of Compensation-Based Incentives. In *The Accounting Review 1 July 2003*, *78*(3), 847-874. https://doi.org/10.2308/accr.2003.78.3.847

Picciotro, S. (1992). International Taxation and Intrafirm Pricing in Transnational Corporate Groups, *Accounting, Organizations and Society, 17*(8), 759-792.

Prinz, U., & Witt - Otto Schmidt, S.-C. (2003). Steuerliche Organschaft - ReadingSample.

Rathke, A. A. T., Rezende, A. J., & Watrin, C. (2020). Classification of transfer pricing systems across countries. *International Economics*, *164*, 151–167. https://doi.org/10.1016/j.inteco.2020.08.002

Rego, S. O., & Wilson, R. (2012). Equity Risk Incentives and Corporate Tax Aggressiveness. *Journal of Accounting Research*, *50*(3), 775–810. https://doi.org/10.1111/j.1475-679X.2012.00438.x

Sikka, P. (2010). Smoke and mirrors: Corporate social responsibility and tax avoidance. *Accounting Forum*, *34*(3–4), 153–168. https://doi.org/10.1016/j.accfor.2010.05.002

Sikka, P., & Willmott, H. (2010). The dark side of transfer pricing: Its role in tax avoidance and wealth retentiveness. *Critical Perspectives on Accounting*, *21*(4), 342–356. https://doi.org/10.1016/j.cpa.2010.02.004

Smith, A. and Venables, A.J. (1988) Completing the Internal Market in the European Community, Some Industry Simulations. *European Economic Review, 32,* 1501-1525. http://dx.doi.org/10.1016/0014-2921(88)90113-4

Ting, A. (2010). Australia's Consolidation Regime: A Road of No Return?. *British Tax Review, 2*. http://ssrn.com/abstract=1629103

Urquidi, A. J. (2008). An Introduction to Transfer Pricing. *The New School Economic Review*, *3*(1), 27–45. Retrieved from https://nsereview.org/index.php/NSER/article/view/22

Wahyuni, L., Fahada, R., & Trisakti, U. (2017). The Effect of Business Strategy, Leverage, Profitability and Sales Growth on Tax Avoidance. In *IMAR Indonesian Management and Accounting Research*, *16*(2), 66. http://www.trijurnal.lemlit.trisakti.ac.id/index.php/imar

Wang, Q., Wong, T. J., & Xia, L. (2008). State ownership, the institutional environment, and auditor choice: Evidence from China. *Journal of Accounting and Economics*, *46*(1), 112–134. https://doi.org/10.1016/j.jacceco.2008.04.001

Zucman, G. (2014). Taxing across Borders: Tracking Personal Wealth and Corporate Profits. *Journal of Economic Perspectives*, *28*(4), 121–148. https://doi.org/10.1257/jep.28.4.121

APPENDICES

Appendix A – Classification of the variables

Classification	Variable Name	Abbreviation	Definition
Dependent Variable	Tax Avoidance	TaxAvoid	Tax Contribution Rate - Tax Minimum
Independent Variable	Number of Subsidiaries	NrSubs	Number of subsidiaries of a certain company according to Orbis Europe
Control Variables	GDP growth	GDP	Annual percentage of GDP growth by country
	Unemployment Rate	UnemplRate	Annual percentage of the total labor force that is unemployed by country
	Control of Corruption	ContCorr	Annual estimate control of corruption by country
	Inflation	INFL	Annual percentage of GDP deflator by country
	Firm Size	SIZE	Ln of Total Assets
	Return on Assets	ROA	EBT / Total Assets
	Firm Leverage	LEV	Long-term debt / Total Assets