CORPORATE TAX AVOIDANCE – DOES THE LEVEL OF TAX AGGRESSIVENESS DEPEND ON ECONOMIC FACTORS?
The purpose of this thesis is to find evidence about national-scale economic instability (especially reflected in the impacts of the financial crisis) being present also on a business level, namely in the form of corporate tax avoidance. A broad strand of literature copes with the topic of corporate tax avoidance. The research stems mostly from companies located in the United States. This thesis combines the approaches taken from US prior research with several cross-country comparisons in Europe in order to examine the influence of economic factors that are specific for each country on the level of corporate tax aggressiveness. The distinction between northern and southern European countries is of special importance in the empirical research of this thesis. This kind of cross-country comparison relating corporate tax avoidance with country-specific economic factors has not yet taken place.

The two strands of literature are examined thoroughly and separately from each other, before they are logically combined in the model development: With a linear regression adopted partially from tax avoidance literature and partially from cross-country comparisons studies, the impact of economic factors like rule of law, the financial system, GDP growth rate, control for corruption and the location of the company regarding the cardinal direction on a tax avoidance proxy measuring tax avoidance aggressiveness is tested and explained. The data are distinguished according to prior and post financial crisis.

The data are financial statement data taken from the World Bank Database, governance indicators taken from the World Bank Worldwide Governance Indicators research project, and further economic influence indicators taken from Eurostat statistics and KPMG. Company observations from eight countries, namely Finland, Sweden, Germany and the Netherlands representing the northern European countries, and Spain, Greece, Italy and Portugal representing the southern European countries, are taken from the years 2005 through 2012. 2005 as the starting point is due to the mandatory IFRS adoption for listed firms in that year. The sample size used in the analyses totals 20,017 company observations from public firms.

The main contribution to literature is that this is the first cross-country comparison across European countries relating to corporate tax avoidance. The evidence is weak but shows that companies in northern European countries tend to be more tax aggressive than in southern European countries, that companies in a market-based country tend to be more tax aggressive than in a bank-based country and that companies changed their behavior after the financial crisis, namely to less tax aggressiveness. The assumption that with an increasing rule of law in a country the companies are more tax aggressive is rejected, which might however be due to interdependencies between variables that the model does not account for. All in all it seems like a stable economy is positively correlated with tax avoidance aggressiveness, at least in post-financial crisis observations.

**Keywords**

Tax avoidance, tax aggressiveness, cross-country comparison, cash effective tax rate, governance indicators, financial system, rule of law, financial crisis, Europe, IFRS
FIGURES

Figure 1. Tax avoidance continuum on the basis of Hanlon and Heitzman (2010).

TABLES

Table 1. Descriptive statistics for TaxAggr total, grouped by Location.
Table 2. Independent samples test.
Table 3. Descriptive statistics for TaxAggr total, grouped by Location, before/after financial crisis.
Table 4. Descriptive statistics, multivariate analysis.
Table 5. Pearson correlation matrix, model 1.
Table 6. Coefficients for model 1.
Table 7. Coefficients for stepwise regression 1, variables entered manually.
Table 8. Coefficients for stepwise regression 2, variables entered manually.
Table 9. Comparison descriptive statistics, all data versus country-means.
Table 10. Pearson correlation matrix for 64 observations (country-means).
INTRODUCTION

1.1 Background

Since the financial crisis in 2007/2008, the centralization of the European Union (EU) seems to increasingly support a two-class system throughout Europe. The northern countries have a stable and steadily growing economy, while the southern countries are struggling to not get worse. Numerous factors play a role in this unbalanced system, but it might be interesting to abstract from the economic level and have a closer look at the business level of the concerned countries. Could it be possible that the unstableness and weak situation of the economy in the countries in the south is also reflected on a business level, namely in weaker corporate governance, more abuse of trust, embezzlement (and vice versa)? After all, an economy works well when each part of the whole picture fulfills their obligations towards the society.

Taxes, especially corporate taxes, are a huge source of national income. It might be logical to assume that a reduction in those, in form of lower tax income than expected and sought, caused by tax avoidance strategies, leads to a deficiency in the national income. A huge strain of literature deals with the impacts, determinants and outcomes of corporate tax avoidance, mainly in the United States (US). The question of what influences tax avoidance behavior and the degree of tax avoidance aggressiveness is of especially great interest to researchers and policy makers. Given the unity in the US, respectively the differences within the EU, so far a cross-country comparison concerning tax avoidance in Europe has not been conducted yet.

It might be interesting to find out whether or not the location of the company, in regard to the cultural background of the country and the overall economy the company is located in, has an influence on tax avoidance behavior. In order to achieve that, companies throughout Europe have to be compared with each other in regard to their tax avoidance aggressiveness. Certain economic factors determining a strong versus a weak economy, the location, and regulatory factors will be taken into consideration in this comparison. This analysis takes advantage of a common financial accounting system due to the fact that since 2005, all listed companies in
the EU have to apply the International Financial Reporting Standards (IFRS). Factors that differentiate the countries are, for instance, the implementation of these standards, other regulatory principles, taxation systems, and the location. As mentioned before, the countries in the south seem to be struggling after the financial crisis way more than the northern countries. Previous tax avoidance research has so far examined certain characteristics in management and individuals, or concerning the company’s characteristics. Putting the question of tax avoidance aggressiveness into a country-wide context does not exclude those, however – it could as well be possible that certain characteristics that are to be found in individual managers are the drivers for a trend in behavior country-wide.

In the next section this will be explained more in detail, as the prior research that is discussed later in this thesis will be summed up. After defining the research question in section 1.3, an extensive discussion of prior research takes place in sections 2 and 3, where also the hypotheses will be formulated, followed by the data and methodology description in section 4, and the empirical analysis in 5. Section 6 concludes with the findings and results and points out the limitations of this thesis, as well as suggestions for further research in this topic.

1.2 Previous Research

As mentioned before, previous literature has not intensely determined tax avoidance in a country-specific context. Therefore, the previous research in this paper is divided into two strains. The first one deals with the matter of tax avoidance solely, mainly drawn from research in the US. The second strain identifies factors that are specific for each country and could therefore have an individual influence on tax avoidance behavior. Hanlon and Heitzman (2010) state that, although the trend goes to internationally operating companies, certain factors are still decided on a national basis. Tax rules and regulations belong to these factors. Although Hanlon and Heitzman refer to the US and to an eventual implementation of IFRS, replacing US Generally Accepted Accounting Principles (GAAP), it can already be told that even with a common accounting regulation body, at least tax rules are still determined by each country, given the situation in the EU.
Prior research (e.g. Desai & Dharmapala 2006, Dyreng, Hanlon & Maydew 2010) has found out that among the factors influencing tax avoidance are the corporate culture and the management of a company. Still, Armstrong et al. (2013) claim that there is little evidence about the reasoning for different levels of tax avoidance. Before Desai and Dharmapala (2006), literature has even focused mainly on the behavior of individuals rather than the whole corporation. From individuals over corporation, the behavior in a country-wide context would go even a step further, claiming that not only corporate culture, but culture of the country might influence the decisions that management takes.

In the first part of the literature review, measures for tax avoidance are established and reasons for the level of aggressiveness are determined. Chen, Chen, Cheng and Shevlin (2010) examine whether family firms are more tax aggressive than non-family firms – the focus is on the specific characteristics that define a family firm as such, meaning the features management has. According to them, tax avoidance depends on the characteristics of management. They compare family firms (those which are owned by family members of the founder) with non-family firms.

Even more specific is the focus of Dyreng et al. (2010) who track individual top executives on their way through several companies in regard to their influence on these companies’ tax avoidance behaviors. They measure the change in tax avoidance behavior with the entrance and again with the exit of a certain executive, tracing this executive through several firms. However, they admit that there do not seem to be common features that are recurring in different executives’ personal characteristics, and the effects of those managers on tax avoidance seem to be rather arbitrary. This provides room for speculation that maybe not only the one top executive, but more the general attitude of a company, eventually due to specific cultural characteristics, is influencing tax avoidance (or then at least they have an impact on the willingness of the company to accept a change in tax planning strategies or not). Nevertheless Dyreng et al. have no doubt due to their results that the top executive as an individual does matter, contrary to prior studies (for example Philips 2003). They study especially what it is that drives tax avoidance, which can be useful for the model adaption later on.
However, Armstrong, Blouin, and Larcker (2012) claim that these findings leave open whether or not the management takes decisions to intentionally avoid taxes or just regarding more general strategic decisions that (might or might not) include tax avoidance. They themselves are the first ones to have a closer look at the direct relation between tax directors’ compensation and tax avoidance activities. They examine the incentives in relation to the measures of tax aggressiveness\(^1\). Their findings imply that, in case there are tax directors hired in a company, their compensation depends on the reduction of tax expenses reported. Also the aforementioned study by Desai and Dharmapala (2006) examines managers’ influence on tax avoidance activities, driven by their compensation. Counterintuitively, they find that increased incentive-based compensation results in less engagement in tax avoidance, due to an interdependence with corporate governance systems. The weaker the corporate governance structure of a firm, the less high-powered incentives lead to tax avoidance, simply because shareholders do not trust managers to \textit{not} act out of opportunistic behavior solely.

In the findings Hanlon and Heitzman (2010) sum up in their review on previous tax research, tax avoidance is said to arise through non-conforming book and tax income. For this reason, recent discussions have started about whether or not one common measure should be established (in the US), for example, taxing the accounting earnings. Also in the EU this has started to be a topic of interest (Barker & Fontanella-Khan 2013), although here of course the tax income is not only different from accounting income, but also differs country-wise due to different taxation systems. According to Hanlon and Heitzman (2010), opponents warn that this might decrease accounting earnings – Hanlon and Shevlin (2005) for example find that establishing a conformity will most likely not reduce tax sheltering and in contrast result in less information about earnings for the capital markets.

Seidman (2010) finds that more than 50% of the book-tax differences can be explained by changes in accounting principles and that they are therefore neither related to tax avoidance activities nor to earnings management. According to her

\(^1\) The measurements are the book tax gap and effective tax rates (both cash effective tax rate and GAAP effective tax rate) in particular, and will be explained further in section 2.4.
findings, controlling for either one of the changes in accounting principles, in earnings management or in business environment, improves the explanatory power of the book-tax gap as a tax avoidance proxy. She uses the same model as Manzon and Plesko (2002), but instead of investigating influences on the book-tax gap steered by tax avoidance activities, she rather determines the characteristics of this gap (and its explanatory power) per se.

When it comes to the measurement of tax avoidance, literature distinguishes between book-tax gap being either a result of earnings management or of tax aggressiveness. Hanlon and Krishnan (2006) find that larger book-tax gaps are consistent with higher audit fees (implying a higher audit risk and therefore a higher risk of earnings management) and therefore support the first assumption. Wilson (2009) develops a model to examine specific firm characteristics to detect companies that have most likely participated in tax shelters, as he finds it very difficult, consistent with prior studies, to actually detect a tax shelter participant (companies usually do not disclose this information). Financial statement analysis alone is, according to him, not likely to uncover evidence of tax sheltering, but with the book-tax gap it can be assumed that tax avoidance activity, such as tax sheltering, has been taking place prior to this gap. Furthermore, the study offers a determination of firm characteristics that make a firm more likely to engage in aggressive financial reporting activities. These findings are coherent with Frank, Lynch and Rego (2009) who find a strong, positive relation between aggressive financial reporting and aggressive tax reporting.

Based on the Wilson (2009) and Frank et al. (2009) models, Lisowsky (2010) establishes a model to identify firms engaging in tax sheltering (as one form of tax aggressive behavior). He tests a number of proxies that can be useful for determining tax aggressiveness in relation to tax shelter participation. A more detailed description of those can be found in section 2.4. His main purpose is to enable financial statement users to detect tax shelter use with the given information, in order to improve the knowledge about risk-reward trade-offs for investors and analysts. While he manages to develop a proxy for the likelihood of firms engaging in tax shelters, the actual benefit (quantity) of this engagement cannot be measured, however.
Dyreng, Hanlon and Maydew (2008) introduce a new measure of tax avoidance, namely for the long-run tax avoidance. They claim to be the first ones determining tax avoidance in the long run and investigate mainly two theories: the ability of one-year tax rates to predict long-run tax avoidance, and in how far firms are even able to avoid taxes constantly over a long-run period (being ten years here). Coherent with their assumptions, they find that particularly those companies with low effective tax rates are able to sustain those rates over a long time, which adds importance to a long-run measure. Additionally, they find that annual cash effective tax rates are not appropriate proxies for tax avoidance prediction, which also adds to the importance of a long-run tax avoidance measure.

To sum up, the main proxies used to measure tax avoidance are book-tax differences and effective tax rates. However, the components for computing those vary between studies. For book-tax gaps, the differences are between temporary gaps and permanent gaps (Phillips 2003, Hanlon 2005, McGill & Outslay 2004, Hanlon & Krishnan 2006), either between tax (both total or only current) and pre-tax book income, like Mills and Newberry’s (2001) or Armstrong et al.’s (2012) measure, or total differences between after-tax income measure, like Lev and Nissim (2004) – they use both permanent and temporary differences for their research. Hanlon and Heitzman (2010) warn that, although different measures should be applied considering different research questions, those total measures include items that are not book-tax differences and unrelated permanent differences. This refers for instance to municipal bond interest, which is not related to accounting accruals, as those derive from different requirements for accounting versus taxable income. However, as Manzon and Plesko (2002) conclude in their determination of book-tax-gap measures where they explain this gap with various variables, it is only a small amount of determinants that has a great influence on the extent of book-tax gaps.

As mentioned before, previous literature does not really link corporate tax avoidance to country specific issues. The division of the literature review into two sections also cuts a break into this summary. The country specific factors that are by definition

\[\text{Total differences use both current and deferred tax expenses for the measure.}\]
\[\text{This is explained in more detail in section 2.4.}\]
different for each country and might therefore have an influence on the companies located in these countries as well are discussed in part 3 of this thesis. Previous literature deals with economic influences and governance indicators that define economies and distinguish strong and weak economies from each other. Cross-country comparisons are the most important part in the empirical analyses and informative for the later model-adoption.

Before going into detail with definitions for several governance indicators, the distinction between a good, stable and a bad, weak economy has to be made. La Porta, Lopez-de-Silanes, Shleifer and Vishny (1999b) determine good versus bad governance in their study and also examine the origin of countries’ legal systems not only regarding the origin of the laws they apply, but also concerning the cultural and other historical background. Prior literature agrees altogether that it is not one determinant that has an influence on the overall economy, but several, and that in order to sustain a stable economy, a good government is needed, just like in a corporation a good governance supports growth and value-creation. When it comes to defining good government, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) warn that a simple distinction into bank-based and market-based countries is neither efficient, nor straightforward, and recommend looking at the investor protection rights instead. This is a topic that can be found in several prior studies. In a different paper, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) examine the origin and implementation of legal rules in a cross-country comparison, especially in regard to the protection of shareholders. Their findings show that Common Law countries have the best protection and from the Code Law countries those with French Civil Law have the worst.

This is an interesting approach to take into the field of corporate tax avoidance, as it shows that shareholders would benefit most from it in Common Law countries (while in Code Law countries they probably would not be part of the beneficiaries). In a later paper, as mentioned before, La Porta et al. (1999b) define a good government in relation to those indicators, and in a second one from that year (La Porta, Lopez-de-Silanes & Shleifer 1999a), they deal with investor protection in relation to shareholder concentration. Investors’ rights seem to be the key issue in determining a good governance and government system. Also Leuz, Nanda and
Wysocki (2003) investigate these issues in a cross-country comparison, using earnings management as the dependent variable. They examine the influence of investor protection on this, also in regard to ownership concentration, legal enforcement and developed versus less developed stock markets. Interesting especially for the purpose of this thesis is that their findings show that low investor protection leads to increased earnings management. That does not per se say something about the level of tax avoidance aggressiveness, but leads to the assumption that the higher the aggressiveness, the more likely it will be used for rent diversion and opportunistic behavior in countries with a weak protection of outsiders.

Concerning a definition of weak versus strong economies, Demirgüç-Kunt and Levine (1999) examine the financial structure in a cross-country comparison with 150 countries to determine the extent to which financial structure and economic development are related with each other, and how legal, regulatory and policy implications depend on financial structure (or the other way round). They also examine the relation of countries’ financial structures with their “legal, regulatory, tax and macroeconomic determinants” (24). Coherent with other findings (La Porta et al. 1998, 2008), they distinguish law into (English) Common Law and Civil Law (French, German and Scandinavian) and find implications regarding the financial structure influenced by these law systems. Also Ball, Kothari, Robin, Biddle, Carsberg, Collins, Easton, Holthausen, Leuz, Mueller et al. (2000) distinguish between Common Law and Code Law countries, determining the quality of accounting income due to institutional factors that differ among countries. Putting it in an international context, they also define the different approaches concerning the implementation of accounting principles in those countries. Investor protection, corporate governance and the principal-agent problem are subject to these indicators. Kaufmann and Kraay (2008) go more into detail and distinguish between rules-based and outcome-based indicators, claiming that both the legal environment, and the implementation of the given rules and regulations are important. It becomes clear that only an interaction between input and output can determine a good governance system, and only with a good governance system a stable economy is guaranteed.

Berkmen, Gelos, Rennhack and Walsh (2012) conduct a cross-country comparison in regard to the financial crisis, examining the different impact it had on several
countries. Especially the distinction between developing countries and emerging markets is of interest to them, but it can be derived from their findings that different country backgrounds are responsible for the different outcomes of the crisis. They determine a small set of variables that distinguish the different kinds of outcome. Also Karanikolos, Mladovsky, Cylus, Thomson, Basu, Stuckler, Mackenbach and McKee (2013) confirm that the diverse background of the countries in Europe is responsible for the diverse outcome of the crisis, examining specific problems that were already present before in the countries. They also apply a cross-country comparison. Onaran’s (2010) research focuses on the causes of the financial crisis, in particular which countries are to be held responsible for it (and should therefore cover the costs). Interesting is that not the weak economies seem to be blamed here, but the strong ones for being too strong – all in all, the present imbalances are a cause of the different outcome, worsening it where it has been bad before and smoothening it where the prior situation was better before.

Another distinction that has an influence on countries’ economies, and most probably on tax avoidance aggressiveness, is the one (although, as mentioned, criticized by several authors, e.g. La Porta et al. [1999a, 2000], when taken as the only determinant) between market-based and bank-based financial systems. The question is, simplified, whether companies are financed through a distinct stock market, like in the US, or through financial intermediaries (banks etc.), like in Germany, for instance. Xiao (2011) finds that also the rule of law and the financial system are related with each other, and in Common Law countries for instance the system seems to be market-based rather than bank-based. It makes sense as in Common Law countries rules are made by the need, and in market-based countries the market regulates rather than pre-defined rules and regulations. The approaches seem to be going into the same direction. Notably, literature does not see either of the systems as advantageous over the other. Literature also does depart from a clear distinction in most of the cases, for example Allen and Gale (2001) sort countries in their comparison along a continuum rather than into two clusters, and also Demirgüç-Kunt and Levine (1999) use rankings rather than clear classifications.

The two literature strains can be combined in the empirical part by applying and combining both models from tax avoidance literature and from cross-country
comparisons. Prior literature offers a vast amount of examinations, where for this study simply either the left or the right side of the model has to be replaced with what is needed. Even though the literature is divided into two parts and not yet directly linked to each other, a lot of connections can be drawn, as discussed in this chapter. Governance and government indicators shape the economy, and their influences have direct and indirect impacts on the business level.

In the next part the purpose of the thesis will be explained and the research question will be defined.

1.3 Purpose of the Thesis

As seen above, although a direct linkage between tax avoidance aggressiveness and economic factors has not yet been made, prior literature offers many possibilities to do so. One paper has even discussed the economic influences on earnings management; from there it is not a big step towards tax avoidance behavior (see Leuz et al. 2003). Determining whether the cultural environment and the economic circumstances of the country a company is located in has an influence on its tax behavior could be done by answering a couple of questions. The economic stability is the main factor to be examined for its influence on tax avoidance in this thesis, but as it can be drawn from prior literature, this stability itself depends on several different factors, like the GDP\(^4\)-to-debt rate of a country, the unemployment rate, or the country’s account balance.

On a business level, certain indicators like average management compensation (not only the magnitude but also the method of compensating management), or average credit rating agencies’ evaluation of companies can give insight to the overall situation of a country. The rule of law and the financial system seem to have an influence on investors’ rights and protection, and therefore probably also on tax avoidance aggressiveness. Contrary to initial assumptions (when starting with this thesis), the findings that the better the legal enforcement, the better investors are

\(^4\) Gross domestic product.
protected hint at results that might show that companies in a country with weaker legal enforcement might be less tax aggressive. With a good investor protection and a low likelihood of managerial opportunism, shareholders might wish for a more aggressive tax avoidance behavior as they would benefit from it as well. By contrast, if they are not protected very well, the risk of rent diversion is too high for shareholders to demand aggressive tax avoidance. Another distinction to think about could be bank-based versus market-based countries – not only because of the better shareholder protection in those countries, but also because in market-based countries, shareholders would have a bigger advantage from the company saving taxes than in bank-based countries, as they are the ones receiving the bottom-line earnings. The probability that countries which are market-based might have more tax aggressive firms is high. It is coherent with the findings from previous literature (e.g. Mills & Newberry 2001) that public firms are more tax aggressive than private firms per se.

However, as especially the financial crisis is used in this thesis as a measure to distinguish between stable and unstable economies, it might also be interesting to determine whether or not tax aggressiveness changed before and after 2007. When developing the model in section 4, this will be taken into consideration when developing the predictors. It might give insight on the question whether or not tax avoidance activities might have had an influence on the impacts and outcomes of the financial crisis, even though evidence would probably be weak given the other influences that play along in impacting the financial crisis.

All in all, it can be summed up that the purpose of the thesis is to determine and examine the economic factors which differ across countries that might have an influence on the level of tax avoidance aggressiveness. Stable versus weak economies, in consideration of the impacts of the financial crisis, can be distinguished between northern and southern countries. Furthermore, the legal enforcement and corruption control are stronger in the northern than in the southern countries. Aside from this question that needs to be answered, market-based versus bank-based countries will be examined, but this is not directly related to the location and to the economic stability – it is just a different economic factor that might have an influence on tax avoidance aggressiveness. Distinguishing between pre-financial crisis and post-financial crisis data might not directly relate to the other economic
factors per se (unless the data is grouped into prior crisis versus after crisis, and south versus north), but might be interesting in so far as it could be that tax avoidance aggressiveness is one of the many factors playing a role in weakening economies and therefore making them vulnerable to the effects of the financial crisis. If the tax avoidance behavior has changed afterwards drastically, it might suggest important implications for further research in this field.

The next section will go into further detail of tax avoidance as a concept and like that guide towards a model development in order to answer these questions. The third section will deal with the economic factors in more detail, and the hypotheses development in section 3.3 will give further insight into the assumed direction of the answers to these questions.
2 TAX AVOIDANCE

2.1 Incentives

The concept of tax avoidance can be divided into several different aspects. Previous literature has dealt with incentives for tax avoidance as well as consequences. Benefits and costs have to be traded off against each other when deciding on the level of aggressiveness in tax avoidance activities. In order to fully understand the concepts of tax avoidance, some questions urge to be answered at first: Which motivations do companies have to engage in tax avoidance activities? What are the incentives for management, shareholders, and concerning the overall firm value?

In a well-working economy, every individual, whether as a person or a corporate body, has to fulfill their duty to society by giving a share of their profit to the government in the form of taxes. As the benefits the tax payer gets in return are rather indirect than direct, and mostly time-distorted, naturally everyone might be seeking ways to minimize this share they have to give away from their own profit as aggressively as possible. Income taxes are computed as a certain percentage of the taxable income, which is not the same as the profit before interest and taxes. Certain spending can adjust the taxable income by being deducted from the earnings and therefore lower the basis that has to be multiplied with the tax rate, which naturally lowers the tax expense in the end. For natural persons that might include, depending on the taxing system, costs that incurred for travelling to work, for instance. For corporate bodies, a general example might be interest on financial obligations that has to be paid. The fact that there are ways to lower the taxable income leads to the assumption that these might be used in more or less aggressive manners.

It seems to be quite obvious why an individual person has an incentive to lower their taxable income and therefore save tax expenses. A corporate entity, however, might at first sight not benefit that much from looking less profitable, even if it is only to reduce tax expenses. If there are ways to look less profitable for tax purposes but more profitable for shareholders, saving tax expenses can even contribute to the net earnings below the line. Chen et al. remind that “Taxes represent a significant cost to the company and a reduction in cash flows available to the firm and shareholders,
leading to firms’ and shareholders’ incentives to reduce taxes through tax aggressive activities.” (43). Taxes are not at all considered as the fair part that one has to pay for a well working economy, but simply as costs that need to be reduced. In the US\(^5\), there has been a strong decrease in corporate tax payments in the past years, according to Graham and Tucker (2006). They assume it is due to an increasing use of tax shelters. Crocker and Slemrod (2005) refer to an estimation by the Internal Revenue Service (IRS) in the US that claims in the year 1998 corporate underreporting for the purpose of tax savings was about nearly 40 billion US dollars. The mere fact that it is possible to avoid taxes in the first place by making use of tax shields is, according to Desai and Dharmapala (2009), already an incentive to do so. They go further and claim that companies performing worse than others are more likely to employ tax avoidance activities simply to look more profitable without having to create value with their core business.

Also McGill and Outslay (2004) find that permanent differences\(^6\) created by tax avoidance strategies have an effect on book income and thus, through earnings per share, on shareholder value. They point out the increasing trend towards treating tax departments as profit centers rather than cost centers. Tax payments seem to be considered no longer as a necessary expense in compliance with regulations, but as, by minimizing them, one income source to boost shareholder value.

However, when the book income and tax income are not in agreement, this might imply additional costs, so warn Mills and Newberry (2001). Although they agree that the incentive to report low taxable income is obvious, they claim that managers also have an incentive to report the book income conform to it and that for instance lower audit costs can also be seen as a tax expense reduction\(^7\). When examining whether or not the level of tax avoidance initiated by executives is associated with general cost cutting strategies Dyreng et al. (2010) find that tax aggressiveness could be a side

---

\(^5\) As mentioned before, most of the tax avoidance research deals with US companies, probably due to the comparability of the data on such a broad sample as the US and the fact that the economy in the US is a market-based one.

\(^6\) More on permanent and temporary differences between book income and tax income will be discussed in section 2.4.

\(^7\) Mills and Newberry (2001) distinguish between income and loss firms and find that this applies for income firms mainly.
effect only, as well. There might be the chance that tax avoidance is not related to any other strategies and therefore not influenced by an overall strategy of saving costs, but by something else, for example a general level of aggressiveness (in accounting measures, for instance) or a general attitude towards obeying rules and principles. Dyreng et al. speculate that it might be possible that some executives want to trade off bad operating skills with lower taxes paid in order to increase income nevertheless⁸.

If managers have the possibility of rent extraction, they can also utilize the information asymmetry between them and shareholders, so the question that remains to be answered is where these tax savings end up after all. They can benefit the entire company including the shareholders by decreasing the cash outflow to the government and increasing it to the shareholders, or only managers could benefit from it by acting out of opportunistic reasons and seeking for rent diversion. This term refers to benefit for the managers alone according to Chen et al. (2010), who also state that tax savings can benefit shareholders and managers at the same time, if those are compensated for the tax management accordingly.

Also Desai and Dharmapala (2009) claim that regarding corporate tax avoidance as simply shifting the cash outflow from the state to the shareholders is incomplete due to agency theory. The relation between managers and shareholders—implying the typical agency problem by the given spread between ownership and control—bears the risk of managers acting opportunistically by abusing the information asymmetry (additionally to utilizing the asymmetry between them and tax authorities) for their benefit and simply distributing tax savings among them. Desai and Dharmapala mention a shield that might arise by tax avoidance activities, protecting this opportunistic behavior. Empirical evidence shows that shareholders are aware of the agency problem and thus welcome regulatory actions that do not only prevent managers from extracting rents, but even the occurrence of tax aggressiveness in the first place (see Chen et al. 2010). Hanlon’s (2005) findings show a negative relation

---

⁸ All in all, they cannot find much evidence for a relation of executives’ influence between tax avoidance and other variables (and this seems to be consistent with their prior research).
between book-tax gaps and future returns, which is assumed to be due to earnings management, however.

Assuming tax management behavior nevertheless, one solution to the agency problem could be, according to Armstrong et al. (2012), to give tax managers incentives for lowering the tax expense and therefore exclude a need for rent diversion right from the start. They find that when the compensation of the tax directors is negatively correlated with the effective tax rate\(^9\), tax directors might not have an incentive to seek rent diversion. However, as the position of a tax director does not exist in every company, they suggest that this responsibility may be shifted to the CEO or CFO, which then makes the ground for the incentive harder to measure given the other tasks those positions imply.

Wilson (2009) suggests reducing opportunities for rent diversion with a stronger corporate governance system. With a strong corporate governance, shareholders trust management not to exploit the situation of tax savings, which leads to a better overall firm performance and higher valued shares. Desai and Dharmapala’s (2006) findings are coherent with those of Armstrong et al. (2012) concerning incentives for managers to avoid taxes and simultaneously not act opportunistically. They state that the decision about tax aggressiveness and rent diversion is made at the same time and therefore higher incentives will not only lead to less opportunistic behavior, but also to greater tax aggressiveness *per se*. An earlier study by Phillips (2003) already found some evidence for that: He examines and partly confirms the theory that lower effective tax rates are achieved by compensating business unit managers and CEOs on an after tax basis, though his findings show that this applies only for business unit managers.

Determining the given incentives for tax avoidance activities in different possible situations, Chen et al. (2010) investigate about the difference between family-owned companies and publicly held companies with a hired management. They find that the

---

9 Effective tax rate is the actual instead of the by the government given corporate tax rate. As this is one of the two options of measuring tax avoidance numerically, this will be further discussed in section 2.4.
benefits are higher for family owners, but at the same time the costs also weigh more heavily for the same reasons: family holders have a longer holding period and larger investments, despite their personal interest in reputation and name of the company. Their benefits from tax savings are therefore higher, but also long-run price discounts or penalties impact more than they would for example on a short-term manager or just someone who is hired externally. As with classic game theory, the actual benefits are calculated by offsetting the tax savings and the costs arising from that by the given risk of detection\textsuperscript{10}. Chen et al. suggest that these costs are higher for family owners than for a hired manager.

Concerning a possible detection of tax avoidance, however, Slemrod and Yitzhaki (2002) claim that as the true value of the taxable income is only known to the tax paying body\textsuperscript{11} and the tax authorities cannot monitor it without cost, there is the chance of non-detection if a lower value is reported than the true value. Determinants in their model are the probability of detection and the value of the penalty in case of detection. Because they are determining the incentives for tax avoidance in regard to individual tax payers, the agency problem is not present and adds, in the case of corporate bodies, additional risk. However, Crocker and Slemrod (2005) find some evidence in their study for managers being rewarded for avoiding taxes, by being required to perform tax avoidance strategies through the formulation of their contracts. Whether or not the agency problem arises seems to depend strongly on internal controls. Hanlon and Heitzman (2010) also note that separation of ownership and control is what makes tax avoidance valuable for both shareholders and managers instead of only managers.

Concluding that there are different incentives for increasing the level of tax aggressiveness that have to be weighed against the possible costs, the next section will have a closer look at the actual methods and determinants of corporate tax

\textsuperscript{10} There are legal and illegal ways to avoid taxes. If a company engages in tax evasion, the risk of detection has much higher consequences than for a company which is simply managing tax expenses in a clever way, naturally.

\textsuperscript{11} Although in their study they are determining individuals, their theory should applicable to each tax paying body. Of course the regulatory control is more elaborated for publicly listed companies than for each individual person, however.
avoidance in order to find a way towards a measurement of the degree of aggressiveness.

2.2 Determinants and Methods

The previous section has pointed out several incentives for companies to engage more or less aggressively in tax avoidance activities. This is only the first step towards possible detection of those activities, and measurement of the extent of them. But how do companies actually engage in those activities? In order to prevent tax avoidance, scientists and policy makers have undertaken several studies to draw a connection between tax avoidance activities and the determinants, methods and influences on them. Recognizable by means of the book-tax-gap as the difference between the accounting and the taxable income, tax avoidance activities can be detected by using financial accounting data to some extent.

Unfortunately, the income that is reported as taxable income to the authorities is not publicly available and therefore has to be estimated by using the accounting data (see Desai & Dharmapala 2009). As mentioned before, tax avoidance ranks from the legal management of income and expenses in order to create the best possible value for shareholders up to the illegal tax evasion and for instance the use of tax shelters. Several instruments can be positioned along this line in more or less grey areas.

According to Wilson (2009), for instance, an aggressive example of tax avoidance would be tax sheltering, reflected by differences between accounting and tax income, both permanent and temporary\(^{12}\). McGill and Outslay (2004:743) define tax shelters as instruments in form of a plan or arrangement that is only created for the mere purpose of avoiding taxes, rather than for creating any economic value. In particular, they refer to tax shelter as “generating tax benefits … without incurring economic losses or risk” by creating an inconsistency between the treatment of accounting versus taxable income (also see Lisowsky 2010). Bankman (2004) describes several methods of tax sheltering and the government’s responses to that. According to him,

\(^{12}\) The distinction between permanent and temporary book-tax-gaps will be further discussed in 2.4.
tax sheltering is clearly illegal and unknown to legislators by definition – as soon as it becomes known, it is not a shelter anymore. He defines it as “an activity that runs counter to the intent of the legislature, so that we may expect that once a shelter becomes public, the legislature will take steps to shut down the shelter.” (926). However, it must be unrelated to normal business operations, which means that if a corporation just takes advantage of a rule that is not worded appropriate enough in order to avoid taxes, this is not defined as a shelter. A shelter is, according to Bankman, clearly an illegal engagement (and could be therefore defined as highly aggressive). This also goes coherent with Lisowsky’s (2010) assumption that tax shelters are the most severe form of tax aggressiveness.

Wilson and also Graham and Tucker (2006) give some examples for such tax shelters as they are numerous, for instance lease-in/lease-out, corporate-owned life insurance, contested liability acceleration strategy, contingent-payment installment sales, cross-border dividend capture, transfer pricing, offshore intellectual property havens, interest rate swaps, money market principle strips, and sham transactions. All these examples involve complicated and complex transactions and structures, and related third parties which are tax-indifferent; and their intention is to disguise the main purpose of tax saving activities and avoid a detection (see Desai & Dharmapala 2009, and Graham & Tucker 2006).

Desai and Dharmapala (2009: 537) describe “corporate expatriations”, which is a way of achieving significant tax savings with hardly any changes in operations simply by turning a subsidiary located in a tax haven into the parent company. This action is not illegal but public, and can therefore contain disfavoring reactions by shareholders. A common practice is also investing in tax havens with lower foreign tax rates, or investments in tax exempt or tax-favored assets, or tax shelters that raise losses for tax but not for book purposes (see Chen et al. 2010). They furthermore name state tax planning, tax sheltering, use of flow-through entities to achieve tax savings, use of off-balance sheet financing that give rise to tax deductions but no debt or interest on the financial statements, structuring inter-

---

13 For instance choosing investments according to their implied tax savings only and not for any other reason.
corporate investments to get dividend treatment, aggressively claiming the R&D tax credit, and more. The options to manage taxes seem to be endless and hardly preventable completely. There might be interdependencies, however – according to Chen et al. firms with more foreign income compared to other domestic companies have already a lower effective tax rate by nature. Nevertheless, they claim, those among them who are engaging more aggressively in tax avoidance are more likely going to be more aggressive in transfer pricing, for example, in order to shift the income to be measured with the foreign (lower) tax rate.

Examining this broad range of participation in tax avoidance activities leads to questions about how those activities could be detected by the authorities, or even prevented. For the purpose of this study the detection weighs more, as the tax avoidance activity itself is the point of interest – in order to find a way to detect the activities, it is important to understand what exactly is happening when a company avoids taxes intentionally. The phrase “tax shelter” is used frequently in previous literature, but what exactly happens when a company makes use of a tax shelter? Keeping in mind this rather broad definition, there might be various answers to that. According to Graham and Tucker (2006), tax shelter participants use less debt and therefore appear to be underleveraged. Instead of having observable tax deductions, they have them off-balance sheet. This information is not easily accessible, as obviously companies do not publish their use of shelters – the authors found the information mainly in the media and after charges were pressed against the firms for illegal behavior. Using those off-balance sheet instruments is therefore a measurement of tax avoidance activity that can only be used ex-post. A contrary approach to the under leveraged appearance is using debt on the balance sheet in order to reduce taxes (see Desai & Dharmapala 2009).

However, tax reducing activities may not always be driven by the intention of avoiding taxes. They can also be a side effect of other decisions for economic purposes, or simply arise from the different purposes of financial and tax statements. The easiest and probably most legal example of a difference in taxable and book income, though only temporary, is depreciation (see Hanlon & Shevlin 2005). According to Hanlon and Heitzman (2010), there are many factors that result in a difference between book income and tax income, and not all of them are driven by
tax avoidance activities. The different purpose of each reporting practice determines a difference in results naturally: financial reporting follows standards that provide information for decision makers, while tax rules are written by lawmakers with regard to the overall economy (of the country), for instance in order to raise revenue or control certain activities. They point out that while tax reporting distinguishes between the locations of the earnings derived, consolidated financial statements make no difference about this issue.

Another point brought up by Mills and Newberry (2001) is that different inventory evaluation methods have different effects on tax expenses. If a company for instance decides to choose the LIFO\textsuperscript{14} method, the LIFO conformity rule requires an adjustment with the taxable income\textsuperscript{15}, which leads to a reduction in both taxable and accounting income. Mills and Newberry wonder which will influence the decision more, the lower tax income or the lower book income – probably a decision each company has to take in context. But here, it also becomes clear that it is not only tax savings that can lead to a book-tax gap. If the company for instance refrains from choosing LIFO because it does not want the lower book income, a book-tax-gap might arise but not for the purpose of tax savings.

Another approach for an explanation for the book-tax-difference, away from tax management but equally illegal, is that the difference can be (at least partially) explained by earnings management. For example Phillips, Pincus and Rego (2003) find that increased deferred taxes are a result of earnings management, and Hanlon (2005) examines the book-tax-differences in the context of earnings persistency and finds that shareholders are suspicious about future earnings if the taxable income is significantly lower than the book income\textsuperscript{16}. Armstrong et al. (2012) claim that book-tax-gaps are either attributable to manipulation of earnings or aggressive tax avoidance, or a combination of both. They refer to the discretion some principles under GAAP imply, which can be abused for managing book income without having

\textsuperscript{14} Inventory valuation method: last in, first out.
\textsuperscript{15} This is a requirement by the IRS (Internal Revenue Service) in the US and applies to taxpayers.
\textsuperscript{16} This is interesting as one might think shareholders require lower taxable income per se. Apparently another trade-off for this increase in earnings through tax savings is suspicion about future earnings.
to adjust tax income. Given the nature of accounting standards, this will also apply for companies which use IFRS instead of GAAP.

While accounting income can be manipulated by interpreting accounting principles freely to some extent, manipulation of taxable income might not be that easily available. According to Lev and Nissim (2004), the time-skewed recognition favors tax income manipulations. They furthermore claim that not only current but also future taxable income will be managed, therefore from high current taxable income also high future income can be predicted as managers try to smoothen the taxable income. Assuming that the taxable income is still lower than the accounting income, a high current tax income therefore predicts an even higher future accounting income.

The numerous options to avoid paying the right share of taxes seem to be endless and renewable, especially in the use of tax shelters. Policy makers seem to be rather in a reactive position than in a preventive one. Finding out what exactly drives the level of tax aggressiveness, and how it can be measured might however give some support in these matters. The next part will have a closer look at the determinants for the degree of aggressiveness, including possible consequences that might be implied with certain actions.

2.3 Level of Aggressiveness

In order to prevent tax avoidance it is not only important to understand the mechanics and techniques that are used to avoid paying the correct amount of taxes to the authorities, but also the question who or what is determining the level of aggressiveness needs to be answered. Whether it is an individual manager who seeks to steer the company into one or the other direction, or the overall governance or structure of the firm, or even the overall economy the company is located in that determines the level of tax aggressiveness might have important implications for researchers and policy makers.

Calling it the level of tax aggressiveness and not for example tax avoidance *per se* accounts for the assumption that to some extent, managing taxable income is quite
accepted. It might be interesting to find out, however, which components are the driving force for increasing the level of tax aggressiveness. Previous literature has many suggestions for that. As mentioned before, the agency conflict is a strong determinant of the level of aggressiveness according to many different authors. Desai and Dharmapala (2006) suggest more research on this topic. Insider control and other organizational factors are important factors of tax aggressiveness (see Shackelford & Shevlin 2001). Even when deriving other possible determinants, the basis seems to be the agency conflict.

Chen et al. (2010) for example examine the effect of founding family-ownership on tax avoidance aggressiveness, meaning the company is managed by the founding family and its members/descendants of the founders, respectively they retain positions in the board or as block holders. They assume that the agency conflict in such companies is bigger (compared to companies that are not owned by founding families) between outsiders (namely the non-family members) and insiders, and smaller between for example management and large shareholders given the fact that those are also founding family members. Hidden actions might only remain hidden towards minority shareholders, or “outsiders”. Contrary to previous research, Chen et al. find that family firms are less tax aggressive than non-family firms, although their characteristics are similar to private companies (which, according to previous research, are said to be more tax aggressive) rather than public companies. This is, according to their findings, due to “unique agency conflicts” and “differential non-tax cost” (43). What is consistent with previous research, however, is the conclusion that the difference in the level of tax aggressiveness is attributable to the difference in agency problems and “reputation concerns”.

Assuming the underlying agency problem, a closer look at the agent might be necessary – in this case the management of the company. Dyreng et al. (2010) examine the effect of executives on tax avoidance, in particular their general cost cutting strategies, by tracking them throughout their career and examining an eventual change in management style in the relative companies probably caused by

---

17 Majority shareholders.
18 This could for example be higher costs in case of a bad reputation.
those executives. Executives’ characteristics such as overconfidence, wealth sensitivity and optimism have, according to their findings, an impact on the level of tax avoidance aggressiveness, though a strong connection is not proven. So although biographical information about the executives hardly has an impact on tax avoidance activities, they do not exclude that it is the executives who have an influence on tax avoidance – they just do not seem to know why the executives are steering towards higher (lower) levels of tax avoidance aggressiveness. Economic influences and the general governance in a given country/economy could be as likely to have an impact on that as just the governance in the specific company.

Armstrong et al. (2012) might have an explanation for that. Being among the first to directly link these issues, they examine incentives for tax directors, and find that the level of aggressiveness depends on the compensation of those tax directors. The compensation is negatively correlated with the GAAP effective tax rate\(^\text{19}\). This means basically, the more incentives a tax director has to reduce the tax expense, the more aggressive the tax avoidance will take place. However, they formulate their assumption cautiously; as discussed before, instead of tax planning intentions it might also be possible that the decisions are taken for other purposes, like operational purposes, and the tax avoidance is just a side effect. As the compensation is determined by the shareholders and not by the tax directors themselves, logically those are the ones responsible for the level of aggressiveness. Slemrod’s (2004) findings draw on this theory, but nevertheless he admits that hidden actions of the managers can still occur as the compensation contract itself is not known to the shareholders, and, of course, due to the agency problem.

Coming back to the question whether or not decisions are taken because of tax avoidance activity, Lisowsky (2010:1697) claims that the level of tax aggressiveness is “a matter of judgment, degree, and scope”. Judgment because there are no common parameters that draw a clear line between what is necessary for business purposes, and where tax avoidance starts (e.g. as mentioned before, depreciation

\(^{19}\) See point 2.4 for further explanation on that. There is, for instance, no relation between tax directors’ incentives and the book-tax-gap, or cash effective tax rate, only GAAP ETR (Armstrong et al. 2012).
methods), and degree and scope because according to his definition, tax avoidance continues over aggressiveness to sheltering. What he means is that tax avoidance and tax aggressiveness is not necessarily the same thing. Also Hanlon and Heitzman (2010: 137) state that there is no generally accepted definition for tax avoidance or tax aggressiveness, but they define it broadly as “the reduction of explicit taxes”, implying all transactions that have any “effect on the firm’s explicit tax liability”. They see the whole concept of this as a continuum (as do Dyreng et al. 2008) from generally acknowledged legal activities like municipal bond interest to tax evasion, placing tax planning strategies somewhere along this continuum depending on the level of aggressiveness:

![Figure 1. Tax avoidance continuum on the basis of Hanlon and Heitzman (2010).](image)

They furthermore do not distinguish between legal and illegal avoidance, or “evasion” to label the latter, unlike other literature, mainly because for example tax shelters may be technically legal until they are detected as such, and determining the legality of a tax planning strategy is not as easy as it might sound when giving clear definitions for legal and illegal forms. But Slemrod and Yitzhaki (2002) define evasion as clearly illegal by picturing an act that goes beyond what law allows
(beyond the line that is drawn by law) although they admit that the grey areas cannot be defined clearly in practice.

Summed up, Chen et al. (2010) find that the level of aggressiveness seems to depend on to what extent benefits and costs are substantial to the decision makers. Determinants for this incentives, or counter-incentives, are for instance the extent of ownership, the duration of the investment horizon and the extent of the concern about reputation. Therefore it is also important to have a look at the costs and consequences of tax avoidance activities. Other determinants of the level of tax aggressiveness that need to be mentioned are firm size and industry membership (see also Dyreng et al. 2008), performance of the firm, as companies that perform better have a higher tax rate and therefore might appear to be less tax aggressive, or foreign income, which lowers the effective tax rate and can also increase the level of tax aggressiveness depending on the priority that is put on the foreign location decisions. All these factors might be considered as control factors as well when measuring tax avoidance.

As already discussed, the level of tax aggressiveness depends highly on the tradeoff of costs and consequences of tax avoidance strategies. Therefore it might be helpful to have a closer look at those consequences as well in order to understand why there are different levels of aggressiveness. According to Graham and Tucker (2006: 566), incentives for tax avoidance have to be weighed against “risk, potential penalties, and other negative effects”. Desai and Dharmapala (2009) remind of the eventual rent diversion that managers could abuse in the context of tax avoidance. They also claim, though, that even the rent diversion itself implies costs for the manager. However, their conclusion is that tax avoidance will increase firm value in firms having strong corporate governance to a greater extent than in those with a weak governance system. The reason for that is that shareholders anticipate managerial opportunism and therefore impose a discount on the share prices (see also Chen et al. 2010).

This penalty discount can of course also occur when rent diversion does not even take place, depending on the view of the external shareholders on the overall governance of the company. A larger book-tax-gap seems to be a reason for
shareholders to react suspiciously. Lev and Nissim (2004) and Hanlon (2005) provide evidence for larger abnormal negative returns subsequently to large book-tax gaps. This may, however, be also due to assumed earnings management activities. Lev and Nissim find taxable income as an indicator for earnings management, not for tax aggressiveness. As credit ratings of analysts seem to be negatively related to the book-tax difference (see Ayers, Laplante & McGuire 2010), this deserves a quick look as well: The ratings do not seem to be dependent on tax avoidance per se, as the evidence shows that this negative relation is weaker for firms that are supposed to be high tax planning firms. The credit ratings therefore give no hint about tax aggressiveness, but rather about earnings management. Thus, including worse credit ratings in possible costs or consequences for companies which engage in tax avoidance cannot be supported by empirical evidence and remains just a side note.

In general, the benefits and costs weighed against each other are similar to those of earnings management activities: Chen et al. (2010) find that although the benefits are higher for family owners in family-owned companies (than for managers in non-family-owned companies), of course the costs also weigh more. Despite their personal interest in reputation and name of the company, their longer holding period and larger investments make them more vulnerable to eventually occurring costs than for instance an externally hired manager would be. Similarly to earnings management, a larger share of stock or a longer binding to the company can therefore prevent tax avoidance abuse. Chen et al. (42) define the generally occurring costs as penalties by the tax authorities (meaning the likelihood of being audited plus the penalties once caught executing some illegal tax avoidance activities), implementation costs for the time and the effort it takes to implement tax strategies, and agency costs like rent extraction. Lower reported earnings due to book-tax-conformity as a direct result of tax avoidance strategies, and implicit taxes are also possibly occurring costs. In addition to a penalty upon detection, future taxes will rise (see Dyreng et al. 2010). However, large public companies for example might be able to avoid paying penalties; according to Armstrong et al. (2012: 394) settlements are arranged with the tax authorities and “non-evasive but aggressive tax planning can be viewed as merely a borrowing arrangement with tax authorities.”
Considering the loopholes the differences in accounting and taxation bookkeeping bring with them, literature has been dealing with considering establishing a conform system in order to avoid book-tax-gaps. Hanlon and Shevlin (2005) would not suggest that because it would reduce the information content of accounting information, as most likely, they point out, the accounting income would be conformed to taxable income and not the other way round, because then the government would give control over its revenues to the private sector. In Europe, however, this way of course would not work at all, as IFRS has just been established and there is not one single taxation system but multiple systems. Also they argue that in a market where all corporations’ reported income is also the taxable income, and all market participants are aware of this fact, earnings will no longer be such an important performance measure and therefore tax avoidance can still occur by understating earnings.

Influences on the level of aggressiveness in tax avoidance activities seem to be numerous, the main underlying principle is the trade-off of costs and consequences. In order to define those determinants and eventually establish a pattern as basis for policies and regulations, it is important to have a measure of tax avoidance. The next part discusses numerous measures previous literature offers so far.

2.4 Measuring Tax Avoidance

The previous sections have explained the basic concepts and underlying determinants of corporate tax avoidance. In order to use this information for empirical purposes, measures for this problem are needed. Naturally, differences in requirements for the financial accounting versus accounting for tax purposes lead to differences in the stated figures. This means that accounting income and taxable income are not necessarily the same. Without this fact being evidence for suspicious activities per se, the gap between the two income measures can be expanded intentionally, for instance by tax avoidance activities. For the purpose of examining tax avoidance, the gap can be used as a tax avoidance proxy, keeping in mind that the gap can, but not must, reflect tax avoidance activities. For instance, also simply changes in accounting methods (see Seidman 2010) can be a reason for a book-tax gap.
In order to use those proxies for studies and research, some basic distinctions between aforementioned differences have to be made. The main ones are between conforming and non-conforming tax avoidance activities, and temporary and permanent book-tax differences. According to Hanlon and Heitzman (2010), conforming versus non-conforming tax avoidance differs mainly in the ease of detection. The word conformity refers to book and taxable income accounting measures, so naturally non-conforming tax avoidance results in a gap between the accounting income reported to the shareholders and the income reported to the tax authorities, as the requirements for each do not conform with each other. Therefore, if a company applies conforming tax avoidance, the result on income statement and tax files is the same – there is no gap. It will reduce both taxable and financial accounting income.

Conforming tax avoidance is harder to detect than non-conforming tax avoidance. Although Armstrong et al. (2012) claim to be able to investigate conforming tax avoidance with the book-tax-gap, they admit it is harder to detect and there are several possible correlations to their measure of tax directors’ compensation (either negative or no relation), plus the fact that a reduction in both taxable and book income could also be due to other reasons besides tax avoidance. Mills and Newberry (2001) state that book-tax differences may arise because of high financial reporting costs. Those costs are usually higher for public than for private firms, so book-tax conformity results in more nontax costs and therefore larger differences. Book-tax income differences as a measurement for tax aggressiveness are more significant for public than for private firms, because public firms have a higher motivation to report conforming book income than private firms. This might be due to the fact that public firms want to have low taxable but high book income for the earnings per share, but naturally, private firms are not relying as much on income as a performance measure as public firms. Mills and Newberry’s findings imply that because of this lack of motivation a book-tax difference for a private firm might be less significant for determining tax avoidance aggressiveness than that of a public firm.

Aside from tax avoidance aggressiveness, another explanation for the book-tax gap could also be earnings management. Hanlon and Heitzman (2010) even claim that
the usual assumption in presence of a book-tax gap is that the book income has been manipulated upwards. They find an explanation for both a gap and no gap – they state that if, for example, earnings are managed upwards, managers have the choice between reporting analogously upwards-managed taxable income in order to avoid any suspicions, and at least reporting the actual income for tax purposes to avoid additional taxes. This also works the other way round – if both reports are managed, there are trade-offs between the benefits and additional costs, if only one report is managed (up or downwards, depending on whether it is the earnings or the taxable income), this might raise attention to a gap and therefore suspicion for aggressive practices.

To conclude, a book-tax gap does not necessarily derive from aggressive tax accounting only, but could also be the result of aggressive book accounting. It probably should be noted, however, that both practices come from an aggressive or even dishonest approach. In the given context of trying to measure tax avoidance it simply complicates the possibility to capture this. Desai (2003) and Armstrong et al. (2012) agree that an attempt to or a successful execution of increasing this gap seems to go along with tax aggressiveness. Hanlon and Krishnan (2006) find that book-tax gaps can derive either from earnings management or from tax aggressiveness. Their evidence shows that with larger book-tax gaps, the earnings quality decreases and therefore alludes to earnings management.

McGill and Outslay (2004) agree that book-tax differences can be due to a number of different factors, like different depreciation methods for financial reporting than for tax reporting, which leads to temporary differences. Differences in accounting rules versus tax rules as mentioned before lead to permanent book-tax gaps. This remark leads to the next distinction that has to be made, namely that between permanent and temporary book-tax differences. According to Hanlon and Krishnan (2006), the main difference is by definition: the temporary book-tax differences will be cleared in the future, so they may occur in one period and be eased out in the next or a later one. This is due to different requirements or accounting for certain items, like warranty
expenses under GAAP\textsuperscript{20}, which they cite as an example. The expenses have to be accounted for in the financial bookkeeping right away to match with the sales, but as they are uncertain to occur in the future they cannot be deducted from taxable income\textsuperscript{21} yet. Depending on whether or not they will occur, either the financial or the taxable income will then be adjusted in a future period.

One might think that this in fact raises the taxable income over the financial income, but considering that there have been warranty expenses booked in the past already that might be due now, it could be that due to these past expenses the taxable income is currently actually lower than the financial income. However big these gaps, the fact is they are present, and they reflect only a time distortion. The same might apply under IFRS, as with IAS 37 Provisions, Contingent Liabilities and Contingent Assets it is accounted for eventually arising expenses or revenues. Also McGill and Outslay confirm that the temporary differences are merely due to timely differences. They will not affect book income, but just the “present value of cash flows” (747), and result in deferred taxes\textsuperscript{22}. A permanent difference, in contrast, is caused for example by accounting for municipal bond interest (see Hanlon & Krishnan 2006), which is only mandatory to recognize in financial accounting income, but not in taxable income\textsuperscript{23}. This difference will never be balanced and is a permanent book-tax difference caused by non-conforming accounting. McGill and Outslay add that this difference does impact book income and therefore earnings per share and shareholder value, consequently.

Because of these differences, it is, according to Hanlon and Heitzman (2010), almost impossible to match tax returns and financial statements of a company with each other. The non-conformity is caused by the estimates and interpretations a company has to make when accounting for an item financially, and in contrast the rules and regulations for taxable income are rather strict and distinct. Also, different consolidation rules for each taxable and accounting income of consolidated

\textsuperscript{20} Generally Accepted Accounting Principles in the US.

\textsuperscript{21} This refers to IRS in the US, as the paper examines the matter in a US context.

\textsuperscript{22} See also Armstrong et al. 2012:398: “Deferred tax expense captures the tax implications of differences between book and tax accrual accounting”.

\textsuperscript{23} Under GAAP and IRS in the US.
companies support a gap. Measuring actual taxable income is problematic due to the fact that financial statements do not really require disclosing taxable income in the same manner as it will be reported to the authorities. This means having only financial statements to interpret and extract information from, and no tax returns, leads to an estimation of the actual taxable income and the cash taxes paid.

Therefore, the ground for measuring tax avoidance proxies is already based on estimation. Also, Lisowsky (2010) admits that calculating a company’s taxes accurately is rather difficult. He refers to a study by Hanlon (2003) in which she finds that one of the reasons for this inaccuracy lies in the nature of the timely distortion between the due dates of each financial and tax report. Usually, there is a delay of half a year before the tax report needs to be filed, so the current tax expense on the income statement and the tax liability on the tax return will differ naturally already. McGill and Outslay (2004) warn that the current accounting rules are not requiring enough information to define the company’s tax status.

However, literature offers some proxies that shall capture tax avoidance deriving from tax planning strategies. Chen et al. (2010) use four different measures for this, the first two are effective tax rate measures which are used in the same manner by Dyreng et al. (2010), and the second pair is book-tax difference measures. Generally, companies that are more aggressively avoiding taxes have a lower effective tax rate or higher book-tax differences, respectively. However, they claim it has to be controlled for better performing firms, as those appear to have a higher effective tax rate due to their performance (so the delta between the effective tax rate and the corporate tax rate seems smaller). The first measure they use is the total effective tax rate \( (ETR) \), calculated by total tax expense (meaning the current and the deferred tax expense) divided by pretax income. According to the authors, this tax rate reflects aggressive tax planning because it reflects permanent book-tax differences that will not be balanced out. For example, investments in tax havens with lower foreign tax rates, investments in tax exempt or tax-favored assets, or participation in tax shelters that increase losses for tax but not for book purposes will be captured in this effective

\footnote{This refers to USA 2004, but is probably applicable in IFRS as well, given the nature and requirements of accounting rules}
tax rate. Dyreng et al. also claim that this ETR measures to what extent tax avoidance influences a reduction in tax expenses for accounting purposes.

The second measure used is the *cash effective tax rate (cash ETR)*, defined by cash taxes paid divided by pretax income. It measures to what extent tax avoidance is reducing the actual current cash taxes paid and, according to Hanlon and Shevlin (2002), it avoids an overstatement of current tax expense due to the accounting for the income tax benefits of employee stock options. Also Graham and Tucker (2006) use this measure (taxes paid according to cash flow statement divided by pre-tax net income).

The other two measures which are used by Chen et al. but not by Dyreng et al. are the Manzon and Plesko (2002) model *book-tax difference* and the *residual book-tax difference* measure advanced by Desai and Dharmapala (2006). Manzon and Plesko want to explain the reasons for the difference between book income and tax income, assuming there are those which derive from the use of different principles (or systems), and those which derive from other economic factors. They also distinguish between temporary differences (e.g. because of different depreciation methods for each system) and permanent differences (e.g. because one system requires an expense to be recognized as such while the other does not), and offer two methods to measure the total tax expense that they need for their model: Either by multiplying pre-tax taxable income from the financial statement with the statutory tax rate, or by adding up deferred and current tax expense. They estimate the taxable income of a company by dividing the current tax expense by the statutory tax rate – this they need for their final measure, the gap between book and tax income, which they call *spread*. The *unadjusted spread* is simply the domestic income less the taxable income which has been estimated before. To make the variable less noisy, they adjust the *spread*, however: They subtract the statutory income taxes, other income taxes and any equity in nonconsolidated subsidiaries because under GAAP and tax requirements there are differences for the ownership percentages and the recognition of those.

Manzon and Plesko (2002) also suggest controlling for any other factors that could influence the book-tax gap, like operating losses that can be carried forward and
nonqualified stock option compensations\textsuperscript{25}, and claim that profitable companies can make use of the book-tax gap to a greater extent. Also the growth of companies plays a role and is positively related to the gap. Firm size might play a positive or negative role. Their results show that the book-tax gap can be heavily influenced by only a small set of variables, namely those which “reflect the demand for tax-favored investing and financial activities” (211), those which derive from the accounting rules and are responsible for temporary and permanent differences, and those which create noise in the estimations of the income (taxable as well as financial income).

Desai and Dharmapala (2006) construct the book-tax gap as a tax sheltering proxy based on the model developed by Manzon and Plesko, but excluding the component that is attributable to earnings management (total accruals), in order to figure out which part is really attributable to tax avoidance activity. Also in a later study, Desai and Dharmapala (2009) construct a measure that starts with the book-tax gap as a basis. Lisowsky (2010) has developed some other proxies for tax sheltering. Besides the ETR for inconsistent book-tax treatment, he suggests examining the companies for the usage of financial engineering products like hedges or structured transactions as indicators for tax avoidance. Furthermore, consulting “promoters” such as one of the Big 5\textsuperscript{26} auditing firms is claimed to be positively related to tax shelter usage according to previous literature, he says. The explanation for that is that once there is a tax shelter established which has not yet been detected by the tax authorities, it will most probably be promoted by the audit firms to their other clients.

Another proxy is that companies which are currently engaged in a lawsuit are more likely to be engaged in tax sheltering, and less debt usage is another hint on tax avoidance activity, as leverage is negatively related to tax sheltering (this is coherent with Graham & Tucker’s 2006 findings). Also companies with subsidiaries in tax havens, or simply more foreign income, are likely to be engaged in tax sheltering. He furthermore mentions profitability and size and inconsistent book-tax treatment.

\textsuperscript{25} The IRS allows companies to deduct compensation which is related to nonqualified stock options when the taxable income is calculated, but it does not influence the current tax expense, it only reduces the current tax liability. It does not have an impact on the book tax gap.

\textsuperscript{26} He gets this definition from a US Treasury report from 1999, therefore the nowadays Big 4 still consisted of five audit firms.
(probably as a method to conceal illegal actions) as being positively related to the probability of being engaged in tax sheltering.

Armstrong et al. (2012) examine the incentives of tax directors in relation to tax avoidance measured by lower effective tax rates and wider book-tax gaps, determining the tax rates according to their components of cash flows and earnings: if the correlation is stronger between the incentives and cash effective tax rates and taxable income\(^{27}\), cash flows are more affected. If the correlation is stronger with GAAP effective tax rates and pre-tax book income\(^{28}\), earnings are more affected. Their results show that it is earnings which are more affected as the negative correlation between compensation and GAAP effective tax rates is strong (and there is none between the cash effective tax rate and the incentives). Other tax attributes seem to be either not controllable by the tax directors or not valuable for compensation contracts. Therefore, Armstrong et al. find that GAAP ETR is a more informative measure for tax directors’ actions: Total tax expense divided by pre-tax book income. They explain that a lower GAAP ETR than the statutory tax rate means that the company’s book income implies income that will never be object of taxation, for example the aforementioned municipal bond interest or earnings that are being reinvested constantly. This is coherent with the definition of the book-tax gap, which underlies the same logic but is not a ratio\(^{29}\). They do not find a relationship to cash ETR and to book-tax gap\(^ {30}\).

Also Dyreng et al. (2010) confirm that the cash ETR is more volatile than the overall ETR, noisier, and for these reasons more difficult to use as a proxy. Also they say that generally, the cash ETR is lower than the GAAP ETR as firms have lower taxable income than book income (pre-taxes) on average. As they are determining

\(^{27}\) Cash effective tax rate is defined as total income taxes paid plus the tax benefit of stock options divided by pre-tax book income.

\(^{28}\) GAAP effective tax rate is defined as total tax expense (current and deferred) divided by pre-tax book income.

\(^{29}\) Also other financial statement numbers are manipulated in the book-tax-gap, but the underlying logic is the same.

\(^{30}\) Also here defined as the difference between pre-tax book income and taxable income, adjusted by minority interest, however: book-tax gap = (pre-tax income – minority interest income) – taxable income. Taxable income is defined as ((current federal tax expense * (1 + the maximum federal statutory tax rate) + pre-tax foreign income – the annual changes in net operating liabilities)/total assets.
tax avoidance in the long run, the cash ETR is not of much use for them as by definition it can predict only in the short-term. According to Hanlon and Heitzman (2010: 139) it is the GAAP ETR which affects accounting income while the cash ETR is affected by “tax deferral strategies” (instead of tax avoidance strategies) but not by changes in the accounting accruals. They find that “Most effective tax rates use pre-tax GAAP earnings as the denominator and thus can only capture non-conforming tax-avoidance”, which means although the GAAP ETR is the more effective one, it cannot detect conforming tax avoidance yet.

Armstrong et al. (2012) have two measures to capture tax aggressiveness: the modified version of Frank et al.’s (2009) measure DTAX and Wilson’s (2009) measure of tax sheltering. Wilson also uses the effective tax rate (total tax expense divided by pre-tax book income), but he takes only those firms that are known to have been involved in tax shelter activities, and he averages the ETR over the years the firms were engaged in those, comparing it with the ETR that would have been under normal, not aggressive circumstances. This measure, however, is only applicable ex-post and with the knowledge of the tax sheltering activities. Frank et al.’s (2009) DTAX measure relies according to them on permanent rather than total differences – instead of deflating taxes by pre-tax income, they deflate it by total assets at the beginning of the period. Their tax avoidance proxy is the delta between total book-tax difference and temporary book-tax difference.

McGill and Outslay (2004) determine by means of specific examples how to find particular information on tax sheltering on the financial statements. They use the book-tax gap as a long known indicator for suspicion-arising differences between the taxable income and the reported income for accounting purposes. Their assumption is that if all information were accessible, most likely findings like tax deductions that are not deducted from book income, book income that is not taxable, and a tax rate lower than the corporate one could be found in each company’s statements. They point out the changes in U.S. GAAP concerning the treatment of future tax benefits/expenses, shifting it from the income statement to the balance sheet. It might be interesting to have a look at how IFRS is taking that into consideration. IAS 12 gives details about the accounting treatment of deferred tax assets/liabilities, but it does seem to make it even more complicated. Deferred taxes can increase through
the revaluation of assets that is mandatory at each balance date, for example through an increase in the carrying amount of the asset, but the same remaining basis for the taxable valuation. Through the conservative approach under IFRS the temporary book-tax gaps seem to increase more (see Wong 2006).

However, it has to be kept in mind that tax avoidance aggressiveness cannot be measured to its full extent by book-tax gaps. Dyreng et al. (2008) give some examples for tax aggressiveness that would not be captured by the book-tax gap, for instance shifting income to low-tax jurisdictions. Using those measures only reveals a part of the aggressive activities.

The literature review of the first strain relevant for the thesis shows that there are not only several factors that influence the level of tax aggressiveness, but also several possibilities to measure this level. However, previous literature agrees that this measurement is only based on estimations, does not capture every single activity that leads to a reduced taxable income and may only approximate the real level of aggressiveness. Furthermore, the real benefits from tax avoidance activities cannot be measured, either – it might have been interesting to also draw a comparison among those, instead of the mere proxy.

Based on this previous research and keeping the limitations in mind, a model to estimate a tax avoidance proxy in order to measure the level of aggressiveness can be developed in section 4. The influences on a cross-country comparison have yet to be determined, however, and will be after a thorough discussion of country-specific issues in the following section 3.
3 COUNTRY SPECIFIC FACTORS

3.1 Economic Stability

In the previous chapter it became clear that one key point was repeated in several studies in the prior literature about tax avoidance: that corporate governance protects against exploitation performed by one, more informed party, of the other, less informed party. This might also be applicable in a broader picture, seeing corporate tax avoidance as exploitation of the society, performed by the companies. Therefore, the logical conclusion would be that a strong governance of a country provides from exploitation, in this case tax avoidance. Inferentially, in a country with weaker governance, companies might exploit the system more. An economically stable country would logically have stronger governance then, just like a well-performing, sustainable company has a good corporate governance. But what defines a strong or weak governance of a country?

There might be several factors that play together in order to have a well-working, economically stable country. Conversely one could ask whether a country with a weak economy and an unstable governance system has more problems on the micro-economic level as well, namely whether the problems that are present throughout the whole society (such as a high unemployment rate, high debt, a low or negative growth rate etc.) are also reflected and to be found on the business level. Currently in Europe it might be obvious to distinguish between weak and strong economies due to the aftermath of the financial crisis from 2007/2008. Having a closer look at the governance situation of the countries that got struck harder might provide an answer to the question of weak versus strong economies.

It could also be interesting to find out whether the financial crisis was being influenced, among other things, by tax avoidance of the companies, weakening the economy of the country also through withholding taxes\(^\text{31}\). Logically, the effect

---

\(^{31}\) This might be concluded from determining the level of tax avoidance in the weaker countries and the stronger countries and comparing the results with each other, which is what will be done in this thesis.
should be a minor one as also many other factors play a role in defining the extent to which a country got hit by the financial crisis, but it might be interesting to find out whether or not there is a tendency also on the business level towards a less stable and more selfish economy.

La Porta et al. (1999b) examine the quality of government as they claim that a “good” government ensures a stable and growing economy, they even state that using the word good means in their study “good-for-economic-development” (223). They develop measurements as proxies for good government and find also that not only those indicators play a role in determining a good government, but also cultural and historical influences. Beginning with an explanation of institutions and that they are only established when the benefits exceed the costs of doing so, one can derive from their explanation that taxes paid are then the way to maintain those institutions and ensure a sustainable good government (and therefore economic development).

As for the measurement proxies, La Porta et al. (1999b) name legal systems as a potential government performance measure, religion as a cultural proxy and interventionism as a proxy for the quality and efficiency of government. “Government expenditures on transfers, its own consumption, and public sector employment” (226) is another indicator they use for performance, so in order to distinguish good versus bad governments or economies, it might be worthy (although eventually complicated) to have a look at those. Democracy and political freedom is one indicator, too, and might be connected to corruption (which belongs into the group of efficiency).

Other variables are, for example, a property rights index (the level of protection of private property indicates how well an economy is working), corruption (obviously, a corrupt government does not work for the benefits of the society), gross domestic product (GDP) per capita, then variables for the output of public goods, the size of the public sector, and political freedom (e.g. democracy index). For economic development La Porta et al. (1999b) have the latitude and the logarithm of gross national product per capita as measurements. Their findings show that generally, governments are better in rich, ethnolinguistically homogenous, Common Law countries. Logically, tax avoidance activities should be lower in those countries as
the government has a stronger influence here, if the shareholders have not a greater power over the companies than the government does. If they do, it should be kept in mind that if additional bottom-line earnings are not diverted, shareholders might actually wish for tax avoidance aggressiveness as it will increase their share of earnings.

Returning to the distinction of weak versus strong economies in relation to the impacts of the financial crisis, Berkmen et al. (2012) find that some factors influencing the extent of the financial crisis among countries are financial leverage (they measure it as the credit to deposit ratio) of the country’s system, more rapid growth in credit provided to the private sector, flexibility of exchange rates, and fiscal policies. They find evidence that the leverage and the rapid credit growth are negatively correlated with the impact the financial crisis had on the countries, and the flexibility of the exchange rate is positively correlated as countries with more flexible exchange rates can absorb external shocks better. A strong fiscal position, though the evidence is weak, seems to be positively correlated with the impact. How hard a country got struck by the financial crisis is measured by them in the change of the forecasted GDP that took place after the financial crisis. They claim that a measurement of the actual change could imply other influences that are not related directly to the crisis, therefore the forecasted GDP and its change reflects the influence of the crisis only. However, the business sector and the economy are not discussed in direct linkage.

Many studies try to find out what exactly was the cause of the financial crisis, in order to prevent it in the future. It becomes clear throughout the literature that not one main factor, but many in cooperation with each other can be found responsible for causing the crisis. How much impact each of those had can lead to implications that can be implemented to avoid it happening again. A major point might be the growing globalization that on the one hand eases comparison and competition, and on the other hand enables effects of flaws to spread widely and quickly around the globe.

According to Karanikolos et al. (2013), the financial crisis could eventually have been avoided. They review briefly the initial causes for the crisis in the US and claim
that based on different economic backgrounds the crisis had different outcome and impact on the various countries in Europe. More particularly, they explain that specific problems in each country worked as a multiplier for the impact. It becomes clear that the given economic backgrounds enhance the negative effects and that in a cross-country comparison, those backgrounds have to be taken into consideration, for example low interest rates in countries like Italy and Spain. They even state that government deficits in the concerned countries were also caused by falling tax revenues.

Onaran (2010) agrees that the financial crisis was depending on global imbalances and unequal distribution, for instance the strong financial position of Germany which was supporting the imbalance within Europe. Account deficits and debt (public and private) were, according to her, rather exposed by the crisis than created by it. This leads to the assumption that imbalances in the different economies are one reason for the extent of the crisis, but the question of how those imbalances are driven remains. Onaran has some suggestions for indicators, such as high public debt, budget deficit to GDP ratio, account deficit, downgraded bonds, decreasing productivity, share of wages declines in GDP, and loss of tax revenues\(^{32}\) due to decreasing productivity. Also the fact that there was no clear policy reaction in Europe to the crisis, unlike in the US (as they are one nation and not several different countries, this might be one reason for that) enhanced the impacts of the financial crisis. She mentions another problem present in Europe and enhancing the effects of the financial crisis, namely the Stability and Growth Pact of the European Union and the pressure that is put on less strong economies with the try to even out Europe amidst the given imbalances: “Stability and Growth Pact as well as EU competition regulations limited the area for manoeuvre for the implementation of national industrial policy” (7).

It is not only the impacts of the financial crisis that distinguish between weak and strong economies. Several studies before the crisis were already establishing and examining certain government indicators that might give more insight on the key

---

\(^{32}\) Here indirect taxes rather than corporate taxes might be meant, as the reference is to productivity.
factors that determine an economy and its characteristics. The next section will go into more detail regarding those.

### 3.2 Governance Indicators

Aside from the requirements of the European Union that seem to ignore differences across their member countries and therefore be hard to fulfill, other factors might already have been present before a competitive EU started to take its impact on the different countries. Kaufmann and Kraay (2008) confirm that a stable economy and constant economic development can only be given if good governance is guaranteed. They define this term by having a state that is liable to its citizens and effectively functioning under the rule of law\(^{33}\).

Ball et al. (2000) investigate the quality of accounting income due to institutional factors that differ among countries. They claim that different accounting environment, such as Code Law versus Common Law countries and different financial systems have an influence on the demands for accounting and for example recognition principles and the level of conservatism in accounting. However, as through the implementation of IFRS\(^{34}\) since 2005 the demands should be more or less the same – at least in the concerned countries – concerning the accounting income (at least in relation to recognition; the degree of conservatism is still likely to differ across countries), this argument might seem less valid by now.

Nevertheless the distinctions they make have been used in several studies thereafter and give important indicators for the overall governance of the country as well. Therefore the distinctions themselves are still worth considering, even if in a slightly different context. As the authors claim for instance that in Code Law countries, the political influence is stronger and therefore noticeable also at firm level, this can be interpreted as detecting more or less aggressive accounting/tax avoidance practices.

So even though the accounting demands are no longer required by the country but

\(^{33}\) See section 3.2.1 for definitions and more information on this.

\(^{34}\) Of course IFRS are only mandatory for listed firms. As the accounting information is less accessible for private firms, however, those are harder to investigate anyway.
should be more or less even due to IFRS implementation, the application of those can still be impacted, and apparently even countrywide. They address also the information asymmetry (principal-agent problem) in the context of Code Law versus Common Law countries and find that companies, or rather insiders, in Code Law countries have more leverage to use this asymmetry for themselves, as the public disclosure is less regulated. However, applying this to private versus public firms, the private ones might have less incentive to manage earnings or taxable income as the profit is distributed in a different way than for public firms. So although public firms in Common Law countries might have less latitude to abuse the system, they on the other hand might have stronger incentives. Still, the governance in Common Law countries is strengthened by public monitoring of managers.

Before going into more detail with these governance indicators (e.g. rule of law), another distinction for defining governance can be pointed out. Kaufmann and Kraay (2008) differentiate between rules-based and outcome-based indicators for corporate governance, and only a combination of both can support a good governance system of a country. Rules-based indicators are those measuring certain input factors, like the rule of law, legislation or anticorruption measures. Outcome-based indicators measure the outcome and investigate for example to what extent a party that has been elected is ruling the parliament. These measures caution against a too naïve view on the governance of the countries, as most of them seem to have a good governance on paper, when in fact also the implementation of it is important.

Kaufmann and Kraay (2008) call this the distinction between “de jure foundations of governance” (the environment given by constitution through rules and regulations) and the “de facto governance outcomes” (the actual application and implementation of those). In order to distinguish a well-working, stable economy from a weak economy, both views have to be taken into consideration. Unfortunately and naturally, the outcome can only be determined in retrospective, as bad implementation is usually only revealed when something already has happened. Also the links between the theory and practice are often less obvious than one might think, and the gaps are huge.
The de jure foundations of governance however can be examined in a more straightforward way, by the governmental system for example, or the regulatory environment. When it comes to the source identification, meaning how to extract this information about different countries, they suggest to either rely on expert views, or survey data. Examples they mention are Investment Climate Assessment and the Business Environment and Enterprise Performance Surveys conducted by the World Bank, the Executive Opinion Survey of the World Economic Forum, the World Competitiveness Yearbook, Voice of the People, and the Gallup World Poll, and also commercial risk rating agencies that give an opinion on the “quality” of a country’s governance. They warn that experts’ reports might be biased, but surveys might be influenced by cultural factors – however, this might actually be an advantage as it shows that culture in a country and its governance are inevitably connected with each other.

Also La Porta et al. (2000) stress to put more focus on the enforcement of laws rather than just distinguishing between differences of origin, meaning the investor protection situation is more important than dividing countries according to the source of debt for companies. Determining country differences in a legal context rather than the common bank-based versus market-based view is more effective in explaining differences in corporate governance and understanding the differences in investor protection. It might already be difficult to classify them, as several countries do not even have a developed stock market or banking system. This means looking at the laws only is not enough, also their enforcement has to be examined.

Contract laws, company laws and bankruptcy laws determine the extent of protection of parties involved both in private and business arrangements. Those laws are enforced by the market itself, by courts or by market regulators. In countries with capital markets, according to La Porta et al.’s (2000) findings, those laws and regulations are better developed than in bank-based systems. They measure the differences in the different qualities in law enforcement according to level of corruption, quality of accounting standards and the efficiency of justice. Put in a context of Code Law versus Common Law countries, it is interesting to note that in Code Law countries the courts do not interfere with business transactions, generally, but the government is more interventionist in these countries. This might hint again
at less protection of investors. Political and historical differences among countries are partially responsible for the differences in law enforcement as well. Even a connection to the financial crisis is drawn, claiming that those countries with poor investor protection are more prone to effects of a financial crisis as insiders act selfishly. In an earlier paper (La Porta et al. 1999a), they find that poor investor protection also leads to high ownership concentration, even in the largest companies. This would, in a case of high tax avoidance, probably support rent diversion and opportunistic behavior. Also the problem of ownership and control distinction is present therefore.

Leuz et al. (2003) go a step further and find evidence across 31 countries that poor shareholder protection supports earnings management. This would confirm the assumption that poor shareholder protection has a negative effect on tax avoidance activities, as the managerial opportunism is the same scheme in both abuses. They find evidence that companies in countries with “developed equity markets, dispersed ownership structures, strong investor rights, and legal enforcement engage in less earnings management” (506). The logic is understandable: with good rights and protection for outsiders, insiders cannot abuse their information advantage for their own benefit, therefore earnings management does not make much sense. When comparing the countries with each other, Leuz et al. classify them into three clusters, namely outsider economies (the characteristics being mainly stock markets) with strong investor protection, and insider economies (having less-developed stock markets), distinguishing here between weak and strong legal enforcement. The smallest amount of earnings management is among those countries with developed stock markets and good law enforcement.

Leuz et al.’s (2003) results give evidence about the linkage between legal enforcement and the business level, here reflected in the principal-agent problem. Due to their results, almost half of the earnings management variation is explained by investor protection, and both outsiders’ rights and legal enforcement are negatively correlated with the earnings management proxy. However, regarding ownership concentration and linking their work to La Porta et al.’s papers, they cannot find strong evidence for a variation in earnings management across countries,
but at least within countries (cross-sectional). The investor protection seems to be more important than the ownership concentration.

In the next two sub-sections, particularly two governance indicators will be examined, namely the rule of law and the financial system.

3.2.1 Rule of Law

As mentioned before, countries can be distinguished according to the legal system they operate in. Operating under the rule of law is essential, but there are differences. The main approach is to differentiate between Code Law and Common Law countries, based on the legal system they use. La Porta et al. (1998) provide some definitions: Code Law, or Civil Law, stems from Roman Law and provides rules, statutes, and comprehensive codes that are developed and incorporated into commercial codes by scholars. There is French (since the beginning of the nineteenth century), German (since the end of the nineteenth century) and Scandinavian Civil Law (this consists basically of Norway, Finland, Denmark and Sweden only, and depends less on Roman Law than French and German Civil Law) tradition. Common Law however is of British origin and formed based on cases.

So the main difference is that Civil Law provides with rules as a system to act in beforehand, and Common Law is arising with the needs (based on cases, for instance because a judge has to take a decision, which is thereafter established as a precedent matter). Common Law can therefore be defined as case law, not enacted law. Determining the legal systems across countries in order to examine shareholder protection and their rights, La Porta et al. (1998) find that Common Law countries give shareholders more rights than civil-law countries, and that the “worst” concerning this amongst civil-law countries are those under French Civil Law (German and Scandinavian Civil Law countries are in the middle). Ownership concentration is negatively correlated with the quality of legal protection, so the less rights the shareholders are given, the more concentrated (and therefore powerful) they are. A high ownership concentration means bad controlling and monitoring power for the outsiders, and a lot of power to the few, concentrated shareholders.
Also good accounting standards and shareholder protection are negatively correlated with the concentration of ownership.

With these findings La Porta et al. (1998) demonstrate that legal systems have an impact on corporate governance. They claim that the specific rights for shareholders depend on the legal rules of the jurisdictions the market is based in, and the law of those jurisdictions plus their enforcement is of importance. They give an explanation about the fact that firms are financed and owned completely differently in different countries (although at first sight their financial structure or rule of law might look similar) – it is the implementation of these laws, not only the origin, that distinguish the countries and their governance from each other. That agrees with the aforementioned finding of law implementation as an important outcome based indicator.

By empirically testing how far the quality of implementation of the laws differs across countries, they contribute to previous literature which had not found profound evidence until that point. Their measurements are for instance voting power for shareholders, how accessible the participation in corporate voting is for them, and the legal protection against an eventual expropriation by management. Also the quality of the accounting systems and disclosure requirements are a measure. Having reached the post-IFRS period by now, those should be more unified, at least in Europe. One interesting finding is that although poor countries do not per se have bad investor protection, it does increase with increasing income. They furthermore find that distinctions in rules and outcome are merely reflecting other distinctions concerning exogenous conditions among countries, and often the quality of shareholder protection does not even stem from legal rules.

Relating these findings to the concept of tax avoidance aggressiveness, one can assume that, given the fact that shareholder protection is worse in Civil Law countries than in Common Law countries, tax avoidance activities can lead to rent diversion in Civil Law countries more than in Common Law countries. Shareholders cannot control management as well as they are able to in Common Law countries. Also a high ownership concentration might mean that only a few people benefit from
tax avoidance activities. It might be logical to assume that in civil-law countries, tax avoidance aggressiveness is not desired by the shareholders.

That the legal and the financial system of a country are strongly connected with each other can be derived from Xiao’s (2011) findings. According to those, the financial system is formed by the origins of the legal system with influence of the rule of law practices and the additional laws for investor protection. Also, it seems to be common that in Civil Law countries the financial system tends to be bank-based rather than market-based, which makes sense, given the poor shareholder protection: In a country that does not offer its shareholders a good protection, it is more likely that the financial system develops away from the market and towards a financing through banks. A deeper discussion on the financial systems among different countries follows now in part 3.2.2.

3.2.2 Financial System

Aside from the classification according to different legal systems, another country-specific issue distinguishing them from each other might be their financial system. According to Allen (2004), even though globalization has been taking place throughout the past years increasingly, countries differ a lot concerning their financial structure, which is directly impacting the stability and also efficiency\(^{35}\) of their financial systems. A country’s financial system can either be market-based or bank-based, and previous literature does not particularly see either one of them as advantageous over the other one for numerous reasons.

In fact, whether a market-based financial system is better or worse than a bank-based financial system depends on the purpose of the measure. Previous literature has not yet addressed the financial system in relation to corporate tax avoidance, but according to the definitions of the systems it might be possible to draw some conclusions into this direction. It is interesting to note that in general, countries which are under Common Law tend to be the ones which use a market-based

\(^{35}\) According to Allen (2004), this defines as how to maximize everybody’s welfare in an economy.
financial system as well, as shareholder protection is better under Common Law countries (see La Porta et al. 1998). Nevertheless, looking at a broad picture, most countries seem to operate under a bank-based system rather than a market-based one (Allen & Gale 2001).

Allen and Gale (2001) give a detailed definition of financial systems. First, they stress that a financial system helps to allocate resources in the economy, from households and companies to the corporate, private and public sector. There seem to be very different possibilities of financial systems applied along the continuum between bank-based and market-based systems, taking Germany and the U.S. as the extremes at each end. Market-based systems as in the U.S. are defined as depending on financial markets, i.e. those market that issue securities such as “stocks, bonds, future contracts, options and other financial instruments” (3). Bank markets consist of financial intermediaries like credit institutions, as banks, money-market funds, insurance companies, pension funds, and mutual funds (Allen 2004).

The main difference that Allen and Gale (2001) see between market-based and bank-based countries is the way corporations obtain their external funding – either through shareholders and selling parts of the company as shares and financial instruments, or through banks with taking loans and debt. They refer to Germany as the most extreme example in allocating resources to companies through banks solely. Concerning the implied effects on corporate governance of the companies, aside from the fact that both systems influence corporate governance in reference to contributing to economic growth (Xiao 2011), this means that a market-based system provides corporate control by nature, as bad management can for example simply be bought out and taken over and therefore replaced. If managers do not create enough shareholder value, they are controlled by the market. The market-based system furthermore allocates control rights and provides a separation of ownership and control that might be wished for as a high concentration of power naturally leads to abuse sooner or later, and also a more diversified number of opinions might be useful in certain situations.

36 Theoretically, this is how it works. Xiao (2011) warns that in practice, there is no guarantee for a detection of abusive behavior of management.
In a bank-based system management turnovers could theoretically happen, but according to Allen and Gale (2001) this does not occur in practice. Here the banks are the ones who monitor management. According to Xiao (2011), one of the bankers is part of the board of the corporation and therefore able to monitor right on the spot – this is not given for shareholders, they do not participate in every board meeting and certainly not personally. Trying to draw a connection to tax avoidance, this might imply that tax avoidance is more likely in market-based countries as the shareholder value is the direct and increasing measure of control of a corporation avoiding taxes. Of course, if it goes into the illegal areas of tax avoidance, additional costs and penalties arise and tax avoidance is not desirable anymore, as mentioned in part 2. Again, the degree of tax aggressiveness depends on the corporate governance of the company and the chances of detection and also the chances of management to exploit it for rent-seeking behavior.

In a market-based financial system, market failures are just as big a problem as government failures, as it is the market which defines and controls the happenings in the economy. However, although market-based financial systems give more spread information, they also imply the free-rider problem: who will collect the information? In bank-based systems information is gathered more reliably by the banks (there is a problem of incompleteness of information given in market-based systems), which also carry the costs for doing that. The problem is that markets and banks deal with different kinds of information, therefore Allen and Gale suggest a financial system towards a market-based system with intermediaries as auxiliaries as the ideal one. Xiao (2011) confirms that there is no better or worse system, but it has to be looked at in the context of efficiency.

It is interesting to note that although market-based systems are exposed to competition and market risk, bank-based systems are fragile towards financial crises as well, so the only way to protect shareholders and stakeholders is a well-balanced financial system in combination with good and sensible regulation and policies. Legal rights for investors are important determinants in carrying out the theoretical ideas of both financial structure and rule of law of a country. Rule of law and financial systems seem to be strongly interwoven with each other, and the system as a whole has to be determined instead of distinguishing only according to the source
of money for corporations. Concerning the source of money, according to Xiao (2011), in bank-based systems the last resort is always the government which might help out in case of a bank failure. In market-based systems, the invested money is gone. In how far this is justifiably in reality of course depends on other factors as well, like size of investment and size of failure.

Also Demirgüç-Kunt and Levine (1999) do not simply distinguish between market- or bank-based countries, but rather classify countries according to a certain degree of market-basis or bank-basis based on certain ratios of banking sector development (size, activity and efficiency) compared to market development (same measurements). The larger the ratios, the more bank-basis of a system is indicated. They discover one problem though: The distinction between bank-based versus market-based might classify countries with an underdeveloped financial structure overall as one or the other just because of these indicators relative to the other side.

Therefore, Demirgüç-Kunt and Levine use a third classification: the underdeveloped financial systems (if both indicators have mean values only compared to other countries’ values). With this classification, they provide a linkage between the financial system of a country and legal, regulatory and policy factors. In a later research, Levine (2002) confirms that simply sorting countries into either bank- or market-based is not efficient. Here however, Demirgüç-Kunt and Levine find evidence that richer countries have more developed financial systems. Those tend to have market-based rather than bank-based financial systems, which is interesting to put in the context of Allen and Gale’s (2001) findings about the majority having bank-based systems. Also other indicators, like the rule of law, the level of corruption and the quality of accounting regulation seem to have an influence on the financial system: it is the market-based countries which have common rather than Code Law systems\(^{37}\), strong shareholder protection and good accounting regulations, and low corruption levels. Concerning the wealth of a country, they furthermore find that the richer a country, the more efficient, active and big banks are to be found in this country. The same applies for the stock markets in

\(^{37}\) See also Xiao (2011).
market-based countries. Overall, the financial system becomes larger, more active and more efficient in higher income countries. Furthermore, while the size of the banks does not depend on the size of the stock markets in higher income countries, stock markets become more active and more efficient relative to banks the higher the income of a country.

According to Levine (2002), relying on one of the two views only generates the other one automatically as the opposing one. The fear in a country which is bank-based is, for instance, that a development of the market might cause problems in corporate control and restrain economic growth, eventually. He finds, however, that the financial development and economic growth do not depend on the choice of bank versus market. His findings in comparing the two systems with each other shed light on the fact that bank-based systems mobilize savings, allocate capital and, contradictory to previous research, exert corporate control in a better way than market-based systems, but on the other hand market-based systems seem to enhance long-run growth and innovation more than bank-based systems. In bank-based systems, he claims, managerial compensation can be tied to firm performance. This is interesting as it would then have a positive relation with tax avoidance, most probably. His conclusions are that the part of financial development that is explainable by legal rights of outside investors and legal rights enforcement influences long-run growth positively, which connects again to the legal system.

Concluding this section it can be said that not one indicator of governance, or one factor that is different across countries and distinguishes them from each other, can define whether a country has a stronger or weaker economy than another one. Only a combination of several factors and indicators, having the rule of law and the financial system as two very important ones, might give insight on the causes for different reactions to external shocks like the financial crisis, and offer room for interpretation for a linkage to tax avoidance behavior. However, having had a look at each of them individually eases the next step of determining the data and developing the model for the empirical analysis. Before that, the hypotheses will be formulated in the following section.
3.3 Hypotheses Development

Given these insights from previous literature, the implied questions from part 1.3 can be defined more to detail and the hypotheses can be developed. The countries in the north have a more stable economy, according to recent evidence and their (lower) impact by the financial crisis. Given the research evidence, it does make sense that in a country with a less stable economy, companies would abuse the system more than in a better protected country and therefore be more tax aggressive. However, research has also shown that in a country with less shareholder protection and less legal enforcement, shareholders might not appreciate it when companies avoid taxes aggressively, because it can lead to rent diversion and managerial opportunism. Which one of the conditions weighs more has to be found out – a dishonest overall attitude in a country might lead to tax aggressiveness, but as shareholders do not appreciate it in such an environment, they might have the power to control for it.

In the beginning of the research for this thesis it was assumed that southern countries would be clearly more aggressive in tax avoidance activities than northern countries, for the lone assumption that the dishonesty and unstableness of the economy is reflected on the business level as well. However, after going into more detail with support of the previous research, it makes more sense to apply a theory like this to for example earnings management, but not to tax avoidance. The latter one is actually value creating in a sense, unlike earnings management, and the only problem (on the business level solely, aside from the governmental disagreement, of course) would be where the extra income would be steered to – the shareholders or the managers. In a country with a strong shareholder protection it would probably flow to the shareholders. Being located in a stable economy does not necessarily lead to more altruistic behavior, and as long as the companies are not directly punished by their shareholders or by their government for tax avoidance activities (or in fact eventually even rewarded for it by their shareholders), they might not have an incentive to abstain from it. Therefore, contrary to the initial assumption, the first hypotheses to be tested is

\[ H1: \text{Companies located in the north tend to be more tax aggressive than companies located in the south.} \]
This will depend also on other factors, like regulatory quality and most likely the financial system. Therefore, the second hypothesis is

\textit{H2: With increasing value of rule of law in a country, the tax avoidance aggressiveness will increase.}

Out of the same reasoning, namely that with increasing shareholder protection those might wish for increasing tax avoidance aggressiveness, plus that the benefits for shareholders are bigger below the line, the next hypothesis is

\textit{H3: In market-based countries, companies tend to be more tax aggressive than in bank-based countries.}

The question whether or not tax avoidance changes after the financial crisis, and tax avoidance might have influenced the impacts of the crisis, leads to the fourth hypothesis:

\textit{H4: After the financial crisis, companies tend to be less tax aggressive.}

The fourth hypothesis is not closely related to the other three ones which answer the main question of the thesis, but nevertheless interesting to find out more about, having the data in this form available for testing. Also the reason for distinguishing the countries into north versus south was partially derived from the financial crisis effects. Additionally, it gives an insight on how shareholders might cope with unplanned events like this external shock, and whether or not they desire more safety and “real” value creation. The next section will explain the given data in detail and also the model that will be applied, before then the empirical results are examined.
4 DATA AND METHODOLOGY

4.1 Data

As the purpose of this thesis is to examine the economic impact on tax avoidance aggressiveness, in particular in relation to the impacts of the financial crisis in Europe and strong versus weak economies, these points have to be kept in mind when selecting the data. Tax avoidance aggressiveness is measured with a tax avoidance proxy that will be explained more in part 4.2. The information for computing this proxy is drawn from financial statement information. For the ease of accessing this information, only public companies are chosen. Another advantage of listed companies within Europe is the common accounting base, as since 2005, all listed companies have to apply IFRS as their accounting standards. Therefore, the data chosen do not go back further than 2005. All the data needed for the tax avoidance measures and control variables are drawn from the World Bank Database from 2005 through 2012. The independent variables, however, which will be explained in more detail also in section 4.2, stem from several different sources and can be seen in an overview in table A138. As Civil Law systems underlie all the studied countries in Europe, though stemming from different initial Code Laws, a distinction between Common Law and Code Law countries does not need to be made.

To identify strong and weak economies, several factors need to be taken into consideration. As discussed in part 3, globally acknowledged governance indicators might be a good basis for determining economies. The control for corruption, the rule of law and the regulatory quality are all given by the World Bank, in the scope of the Worldwide Governance Indicators (WGI) research project. Although having a look only at these numbers gives already a hint into the direction of which countries to choose for the empirical analysis, a combination with other factors might be necessary. Therefore, also the GDP growth rate and the change in the unemployment rate, both taken from Eurostat statistics, are taken into consideration for determining

38 Table A1 in the appendix.
the countries to examine. Karanikolos et al. (2013) use for example also the debt-to-GDP ratio to indicate the weak economic situation of a country. Here the GDP growth rate is taken, however.

As one hypothesis refers to the location of the companies being either in the north or in the south of Europe, as there is a strong hint on the countries in the south being more affected by the financial crisis than those in the north, the location is another factor that plays a role while choosing the countries represented in the data.

Finally, as discussed before, the financial system might play a role as well, therefore the distinctions made by Demirgüç-Kunt and Levine (1999) are relied on. They do not simply distinguish between bank- and market-based countries, as mentioned, but sort the countries into financially developed and financially underdeveloped economies, and then give rankings according to the degree of bank-basis or market-basis, respectively. Also Allen and Gale (2001:5) find that for example France and Germany, which are very much alike concerning the financial system, differ in the detail, for instance through government ownership of banks. However, although this is known, in this thesis the distinction will be bank-based versus market-based, indicated by a dummy variable. The range defined by Demirgüç-Kunt and Levine can be seen in table A1, and based on this definition the distinction between bank-based and market-based countries is made. In order to simplify the usage of the information and because it is not the most weighed part of the purpose of this study, the dummy variable is created here and the aspect of developed and underdeveloped financial systems is ignored for the purpose of this thesis.

The data finally chosen consists of eight countries across Europe, four of them located in the south, and four of them located rather in the north of Europe. The four countries in the south are Spain, Italy, Portugal and Greece, also known to be hit hard by the financial crisis and its aftermath. The northern countries are Finland, Germany, Sweden and the Netherlands. While in the year 2009 all eight countries, regardless of the other indicators, have a negative GDP growth rate, the ones in the north recover soon after that, while the ones in the south keep on struggling. Greece is the one with the lowest GDP growth rate. Also regarding the change in the unemployment rate, it is worth mentioning that before the financial crisis, so in the
years 2005 until 2008 even, the countries do not differ too much from each other, but afterwards the gap between those in the south and those in the north concerning this rate increases. Countries with particularly bad levels of regulatory quality compared to the others are Italy and Greece, and also the indicators for rule of law and level of corruption are worst in these two countries.

Kaufmann, Kraay and Mastruzzi (2009) give explanations of what the governance indicators used capture; for instance the regulatory quality indicator captures how far the government is able to implement policies for the private sector development, the control for corruption indicates to what extent the economy is exposed to the public abusing its power for private benefits. The rule of law indicator captures, as mentioned before, the quality of rules and regulations as for property rights, contractual rights and the likelihood of crime, for instance. The higher the figures, the better, so a country with a low number in both rule of law and regulatory quality is likely to neither have good rules and regulations nor being able to implement the ones it has accordingly. Drawing a connection to the governance of the country, and therefore the implications on the economy, it can be easily concluded that for example Italy and Greece should have a weak and unstable economy.

There is more evidence on that to be found in the literature. According to Rauch, Gottsche, Brahler and Engel (2011), the Stability and Growth Pact criteria given by the EU might drive countries into falsifying their statements. They apply Benford’s law to investigate the accounting quality of the data given by the countries and find that especially Greece is deviating far from the Benford mean, which means they are faking their data to a huge extent. These facts are just another indicator for the difference in the economies the countries were provided with when the financial crisis hit them and might be one explanation for Greece being struck so hard, for instance. Also Karanikolos et al. (2013) claim that Greece had frauds in their finances before the crisis already, and that for instance Portugal’s economy did not grow for years already before the financial crisis hit them. Those influences work as a multiplier to the economic impacts of the crisis.

Both types of countries chosen, the stable and the weak ones, are selected and classified in regard to these numbers, plus the location within Europe, and the recent
happenings drawn from media. The data range from year 2005 (when IFRS became mandatory for listed companies in Europe) to 2012. The sample size totals 20,017 with 2,494 observations per year in all eight countries together. The independent variables are the same per year for all observations in one country, and can be seen in detail in table A1. The corporate tax rates that are needed for the tax avoidance proxy in order to be comparative across countries are drawn from KPMG, though they are only available from 2006 onwards. Therefore it is assumed that the corporate tax rate in 2005 was the same as in 2006 for each country. To simplify the analysis, besides the individual corporate tax rates of each country per year, further information about the different taxing systems is not taken into consideration. This is one of the limitations of this study.

In the next part, the model will be explained in detail.

4.2 Methodology

The most challenging part of the model development might be to define an appropriate tax avoidance proxy, while taking previous literature into consideration and the fact that the determination will be three-dimensional, given the time, different countries and different companies within the countries. Relying on previous literature only while developing a suitable model is in so far not possible, as the research deals with US companies mainly and a cross-country comparison of tax avoidance within Europe has not taken place yet. Fortunately, at least the accounting regulations are the same among those countries given the IFRS adoption in 2005. The corporate tax rates however are not, and the interpretation of the accounting principles could also differ across or even within countries. In order to ensure an accurate analysis, more information than simply the numbers of the financial statements should be taken into consideration eventually, for instance the debt policies of the individual companies, and the footnotes. As with the given sample

39 Previous literature has not dealt with a comparison across European countries yet. It deals with corporate tax avoidance within the US, therefore the federal tax rate is the same. Here it would be dangerous to simply compare the effective tax rates of the different countries with each other, therefore the difference between those and the respective corporate tax rates is what will be compared. More explanation on that is to be found in part 4.2.
size a more qualitative research is at this point not possible, however, it will be simplified to a tax avoidance proxy derived from the financial statement data and the corporate tax rates of the respective countries, namely as the delta between the effective tax rate and these corporate tax rates.

The idea is to measure the influence of certain economic factors on corporate tax avoidance, by trying to find out whether or not those factors have an impact on the level of tax aggressiveness. The level of tax aggressiveness is measured by the tax avoidance proxy, assuming that a higher delta implies more tax aggressiveness and a lower delta implies less tax aggressiveness. Previous literature offers, as discussed, several measurements for computing a tax avoidance proxy. As seen in part 2.4, the most reliable proxy might be the total effective tax rate (ETR), as the cash effective tax rate is more volatile and not able to capture permanent differences as good as the total effective tax rate (see for example Armstrong et al. 2012, Dyreng et al. 2010). Therefore the ETR will be computed by scaling the total tax expense (current and deferred) by the pre-tax income of the company in the given year:

$$ETR_{it} = \frac{Income\ taxes\ payable_{it} + deferred\ taxes\ balance\ sheet_{it}}{pre-tax\ income_{it}}$$ (1)

where $i$ refers to a single company observation of any company out of these eight countries at the end of year $t$ the observation was taken from.

*Pre-tax income* represents all income/loss before any federal, state or local taxes, extraordinary items reported net of taxes are excluded. In order to compute the tax avoidance proxy, the delta between this measure and the respective corporate tax rate is taken for the model.

$$TaxAggr_{it} = ETR_{it} - corporate\ tax\ rate_{it}$$ (2)
A linear regression helps understand the relations between the tax avoidance proxy and the indicators that are assumed to influence the proxy:

\[
TaxAggr_{it} = \beta_0 + \beta_1 \text{Corruption Control}_{it} + \beta_2 \text{Rule of Law}_{it} + \beta_3 \text{RegQuality}_{it} + \beta_4 \text{Unemployment}_{it} + \beta_5 \text{GDP}_{it} + \beta_6 \text{FinSystem}_{it} + \beta_7 \text{Location}_{it} + \beta_8 \text{FinCrisis}_{it} + \beta_9 \sum \text{Control}_{it} + \varepsilon_{it} \tag{3}
\]

The independent variables are as explained above\(^{40}\). \text{Location}, \text{FinSystem} and \text{FinCrisis} are dummy variables. If the company is located in the north, \text{Location} is set to equal 1, if it is in a bank-based country \text{FinSystem} is set to be 1, and if the data are prior to the financial crisis, \text{FinCrisis} is set to be 1. In the respective other cases, the values are 0. The control variables are drawn from previous literature and include a control for leverage \text{LEV}, computed as the debt-to-equity ratio (total debt to total common equity) as possible tax shields (there are no taxes to be paid on interest for debt), as discussed before, might affect the tax avoidance aggressiveness; a control for profitability as more profitable firms seem to have higher effective tax rates and that has to be controlled for as it would distort the results, \text{ROA} (return on assets, calculated as net income divided by total assets), and the natural log of total assets as control for the firm size, \text{SIZE}. This agrees with research executed for example by Armstrong et al. (2012), Desai & Dharmapala (2009), Chen et al. (2010), and Dyreng et al. (2010).

Including control variables in this regression is important insofar as it might be possible that there are other factors that influence the degree of tax avoidance, but not intentionally with the aim of avoiding taxes. It is not even given that an influence will take place, it is merely likely. However, as it is not easy to decide whether an effect was intentional or unintentional, even control variables have to be chosen carefully. If they are included, it is assumed they affect unintentionally, if they are

\(^{40}\) An overview of all independent variables and the figures for each year per country is in the appendix in table A1.
excluded, the opposite. Additionally, if there are too many control variables controlling for the change in tax avoidance, logically there will be not much change left to be explained by the independent variables (see Dyreng et al. 2010). Therefore only these three control variables will be chosen.

In the empirical analysis, also several combinations, with as well as without control variables, will be tested in order to exclude as many random errors as possible. This can be done by a stepwise regression, but as this chooses the independent variables stepwise according to their statistical quality and not according to their importance for the hypotheses, a manual approach might be better. The idea is to examine the individual variables and their explanatory power in relation to the dependent variable tax avoidance proxy.
5 EMPIRICAL RESULTS

As discussed before, the data used in this thesis contains observations within countries, per company, and across time, so they exist on three dimensions. Given the incompleteness of the data, some adjustments have to be made, however. From the 20,016 observations in total, only 12,838 can be used for the total ETR tax avoidance proxy, and 7,965 for the cash ETR tax avoidance proxy. Also the distribution of the observations is far from being even among countries, so Germany is for instance the country with the most observations (1,048 in total, 583 of those can be used for the total ETR, and 364 for the cash ETR), while Portugal is far away from those values, having the smallest number of observations with 57 observations of which 27 can be used for the total ETR and 37 for the cash ETR. All other countries lie in between those two, while the location and stableness of economy is not related to this order. Italy, for example, has the third most observations and the Netherlands have the second fewest ones. The smaller the sample of the country, the less likely it will be that the results present a reliable distribution of values. Taking the mean of the company values per country, and then comparing them with each other (with one observation per country, and eight countries over eight years) might give clearer results, but also the sample size is reduced drastically.

Given the sample size and reconsidering the research question, it might be helpful to start with a univariate analysis before running the regression with all available observations. Therefore the empirical part is divided into two analyses, first a simple two-sample t-test will be applied, by dividing the observations into taken from northern and from southern countries, and then a linear regression with all observations and the location as independent variable will be run. Before this is done, however, a look at the descriptive statistics of all variables makes clear that not all data can be used for the analysis. Extreme outliers might pull the distribution into one or the other direction. The average total ETR is -9.5 %, and the correlation with the independent variables is almost non-existent. This becomes obvious when looking at the Pearson correlations, or also at the value of the $r^2$, which is 0.001$^{41}$, so

---

$^{41}$ This means the independent variables explain 0.1% of the variance in the distribution of the tax avoidance proxy.
almost not present. Also the average cash ETR has almost no relation to the independent variables. Logically, the results for the tax avoidance proxies, TaxAggr total and TaxAggr cash are equally insignificant. That there is too much noise in the observations can also be seen with the average tax avoidance proxy TaxAggr total which has a value of 39.3\%\textsuperscript{42}.

Therefore, the outliers are removed at first at 1% at each end (the highest and lowest extreme values). This smoothens the data and decreases the likeliness of extreme values influencing the results too much. As the kurtosis is still 18.37 when removing only 1% of the outliers, which means the values are concentrated around the mean and also extreme values have a high probability, still, the outliers are now removed by 5% at each end of the distribution. Now the distribution seems more normal with a kurtosis of 2.27 and a skewness of -0.23, which indicates a slight tail to the left, where the extreme values would be now, and a higher concentration on the right side of the distribution. This makes sense as it means the tax avoidance proxy is mainly positive.

As removing outliers also reduces the sample size, however, namely from 12,841 observations in total to 11,556, the results might be influenced by that. Therefore, Winsorising the outliers instead of removing them could be the better approach. Given the fact that a 2% adjustment (1% at each end) still contained too many extreme values, the sample is Winsorised at the 10% level. That means that the most extreme 5% of the values at each end of the distribution are replaced with the next, less extreme value. The sample size remains the same, but the result is smoothened. Kurtosis (1.44) and skewness (-0.26) seem acceptable, and also the mean value of the tax avoidance proxy, although being quite high still with 0.24, seems to make more sense than without the data smoothening. After including the control variables, there are now 12,838 observations in total. First, the univariate analyses might give some

\textsuperscript{42} As the corporate tax rate and the total ETR represent percentages, they are defined in per cent. Therefore, the delta has to be interpreted as a total value of 39, instead of reading it as the given decimal digits. This means, the total ETR is on average 39 per cent points lower than the corporate tax rate, which is not even logical given the fact that the corporate tax rates rank between 20 and 30 per cent.
answers to the question whether or not the location has a strong influence on the level of tax aggressiveness.

5.1 Univariate Analyses

In this analysis, instead of running the regression model developed in section 4, a simple t-test with two samples will be executed. The two samples consist of company observations from countries in the south and company-observations from countries in the north. This makes sense as the purpose of the thesis is to find out in how far economic factors that are in particular different between southern and northern countries have an influence on corporate tax avoidance aggressiveness.

Table 1. Descriptive statistics for TaxAggr total, grouped by Location.

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>7958</td>
<td>0.2677</td>
<td>0.2875</td>
<td>-0.295</td>
<td>1.890</td>
<td>0.995</td>
</tr>
<tr>
<td>South</td>
<td>4883</td>
<td>0.2070</td>
<td>0.2423</td>
<td>-0.189</td>
<td>0.862</td>
<td>1.140</td>
</tr>
</tbody>
</table>

Table 1 shows the descriptive statistics for this two-sample t-test. It can be seen that in the north there are almost twice as many usable observations as in the south, which should however not be relevant to compare the distributions. The standard deviation of the tax avoidance proxy of the companies located in the south is however greater than the one of those in the north – the observations seem to be more widely spread than in the north. Also having a look at the kurtosis confirms that, the distribution is more flat than the one in the north. Both distributions have a negative skewness, which indicates a longer left tail and more outliers on the left side. A negative tax avoidance proxy does not make much sense, however (it indicates an ETR greater than the corporate tax rate), therefore it is logical to assume that those are extreme values that probably derive from measurement error.

43 It is interesting to note that without Winsorising the data, the results are reverse and the mean in the south is higher than the mean in the north – this means the more extreme observations stem from companies located in the south. Once the outliers are eased out, however, the results go coherent with the results in section 5.2.
The median values of 28.75% and 24.23% do not differ too much from each other, neither do the mean values, but they both point into the direction that companies located in the north seem to be more tax aggressive than companies located in the south. This would support \textit{H1: Companies located in the north tend to be more tax aggressive than companies located in the south}. Whether or not these results can be interpreted as statistically significant has to be seen from the p-value, however. Table 2 describes the results for the independent samples t-test and gives more insight on that:

\begin{table}[h]
\centering
\begin{tabular}{llllllll}
\hline
 & Levene’s &  &  &  &  &  &  \\
 & F    & Sig. & t    & df & Sig. (2-tailed) & Mean Difference & Std. Error Difference & Lower & Upper \\
\hline
& 92.186* & 0.00* & -3.170* & 12839* & 0.002* & -0.061* & 0.019* & -0.098*** & -0.02*** \\
& -3.070** & 9273.3** & 0.002** & -0.061** & 0.019** & -0.099*** & -0.02*** \\
\hline
\end{tabular}
\caption{Independent samples test.}
\end{table}

As the significance value in Levene’s test for equality of variance is exactly zero, equal variances are not assumed, and it is read from the bottom row. That the variances are not equal could also be seen in the previous table with the descriptive statistics. The means of the values in the two country groups differ from each other, and so do the distributions. However, due to the 2-tailed significance value (the p-value) smaller than 0.05, it can be interpreted that this result is statistically significant in the meaning that the variance, or the differences in the values across country observations are not likely due to chance, but due to the independent variable \textit{Location}.

Considering the question of tax avoidance having an impact on the financial crisis in some way, this should be examined closer as well. Although from the results given before it seems as if the northern countries are more tax aggressive than the southern countries, it might be worth looking at this in the context of the financial crisis. Comparing the country means with an independent samples t-test first before (2005 – 2007), then after the financial crisis (2008 – 2012), gives the insight that before the crisis, the tax avoidance proxy was larger in the southern countries and only after it
decreased immensely. As the samples after the financial crisis are bigger given the greater time dimension, this weighs more and therefore the result from the previous analysis indicates clearly a higher tax avoidance aggressiveness in the north. Table 3 gives an overview of the means that are compared before and after the crisis:

**Table 3. Descriptive statistics for TaxAggr total, grouped by Location, before/after financial crisis**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>p-value</td>
</tr>
<tr>
<td>South</td>
<td>1,846</td>
<td>0.2716</td>
<td>0.530</td>
</tr>
<tr>
<td>North</td>
<td>2,953</td>
<td>0.2526</td>
<td></td>
</tr>
</tbody>
</table>

The results from the before-crisis test are not statistically significant with a p-value of 0.53, which is probably due to the small time dimension. Unfortunately, a more reliable comparison cannot be done at this point due to the limited data availability of company observations due to the *after*-IFRS-implementation condition. It is nevertheless interesting that while the tax avoidance proxy is slightly increasing in the north after the financial crisis, it is drastically decreasing in the south. This could mean, aside from all measurement errors, that the government in southern countries might have enforced legislation more strict after the financial crisis as they saw an opportunity to re-stabilize the account balance through taxes. At the same time this would imply that northern countries had so much buffer that this was not necessary, and not much changed.

With a regression as used in part 5.2 and more independent variables than the location dummy that has been applied here, it will be seen in how far the other independent variables play a role in this.

### 5.2 Multivariate Analyses

The univariate analyses in part 5.1 have given a direction to answer the research question, but the only variable used was *Location*, and a simple mean-comparison was executed. Eventually, a multivariate analysis with more independent variables and control variables as developed and described in part 4 might offer more
explanatory power. The data is the same as in the univariate analysis, Winsorised at 5% at each end. Table 4 sums up the descriptive statistics as an overview:

Table 4. Descriptive statistics, multivariate analysis.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>TaxAggr total</td>
<td>-2.42</td>
<td>2.65</td>
<td>0.24</td>
<td>1.05</td>
<td>12,841</td>
</tr>
<tr>
<td>TaxAggr cash</td>
<td>-0.59</td>
<td>0.63</td>
<td>0.10</td>
<td>0.27</td>
<td>7,965</td>
</tr>
<tr>
<td>Corruption Control</td>
<td>-0.25</td>
<td>2.56</td>
<td>1.47</td>
<td>0.79</td>
<td>20,016</td>
</tr>
<tr>
<td>Rule of Law</td>
<td>0.28</td>
<td>1.97</td>
<td>1.44</td>
<td>0.53</td>
<td>20,016</td>
</tr>
<tr>
<td>RegQuality</td>
<td>0.50</td>
<td>1.89</td>
<td>1.39</td>
<td>0.35</td>
<td>20,016</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.02</td>
<td>0.23</td>
<td>0.08</td>
<td>0.03</td>
<td>20,016</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.09</td>
<td>0.07</td>
<td>0.01</td>
<td>0.03</td>
<td>20,016</td>
</tr>
<tr>
<td>FinSystem</td>
<td>0</td>
<td>1</td>
<td>0.71</td>
<td>0.45</td>
<td>20,016</td>
</tr>
<tr>
<td>Location</td>
<td>0</td>
<td>1</td>
<td>0.70</td>
<td>0.46</td>
<td>20,016</td>
</tr>
<tr>
<td>FinCrisis</td>
<td>0</td>
<td>1</td>
<td>0.38</td>
<td>0.48</td>
<td>20,016</td>
</tr>
</tbody>
</table>

As a next step, the correlations of the variables with each other and of course with the dependent variable are examined. Table 4 shows the Pearson correlations. As expected (and chosen therefore), Location is highly positively correlated with Corruption Control, Rule of Law and RegQuality. Those variables are also highly positively correlated with each other, logically. More interesting are the correlations between the dependent variable and the independent ones, as they indicate the extent of influence and the direction of the variance of the tax avoidance proxy in relation to these independent variables:
Table 5. Pearson correlation matrix, model 1.

<table>
<thead>
<tr>
<th></th>
<th>SIZE</th>
<th>LEV</th>
<th>ROA</th>
<th>Corruption Control</th>
<th>Rule of Law</th>
<th>Reg Quality</th>
<th>Unemployment</th>
<th>GDP</th>
<th>Fin. System</th>
<th>Location</th>
<th>Fin. Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TaxAggr total</strong></td>
<td>.012</td>
<td>.002</td>
<td>-.042</td>
<td>.024</td>
<td>.020</td>
<td>.028</td>
<td>-.038</td>
<td>.032</td>
<td>-.020</td>
<td>0.28</td>
<td>.011</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.01</td>
<td>.149</td>
<td>.057</td>
<td>.013</td>
<td>.050</td>
<td>-.060</td>
<td>.008</td>
<td>-.210</td>
<td>-.025</td>
<td>-.044</td>
<td></td>
</tr>
<tr>
<td>LEV</td>
<td>-.004</td>
<td>.001</td>
<td>.001</td>
<td>.002</td>
<td>-.002</td>
<td>.005</td>
<td>.009</td>
<td>.003</td>
<td>-.007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>.044</td>
<td>.034</td>
<td>.043</td>
<td>-.035</td>
<td>.079</td>
<td>-.014</td>
<td>.026</td>
<td>.090</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corruption Control</td>
<td></td>
<td></td>
<td></td>
<td>.978</td>
<td>.959</td>
<td>-.336</td>
<td>.325</td>
<td>-.534</td>
<td>.913</td>
<td>.044</td>
<td></td>
</tr>
<tr>
<td>Rule of Law</td>
<td>.944</td>
<td>-.266</td>
<td>.293</td>
<td>-.494</td>
<td>.927</td>
<td>-.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reg Quality</td>
<td>-.418</td>
<td>.323</td>
<td>-.514</td>
<td>.919</td>
<td>-.004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>-.323</td>
<td>.429</td>
<td>-.374</td>
<td>.065</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>-.136</td>
<td>.263</td>
<td>.478</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fin. System</td>
<td>-.444</td>
<td>.065</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.007</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although the correlations are very weak, the signs can still be interpreted\(^{44}\). Corruption Control, Rule of Law, GDP and RegQuality are all positively related with the tax avoidance proxy, which means when those values increase, also the degree of tax aggressiveness is increasing. Also the location is positively related with tax avoidance, which means that when the value of the dummy variable location is 1 for northern countries, tax avoidance aggressiveness is increasing. This is coherent with the findings from section 5.1. The financial crisis dummy shows that prior to the financial crisis, companies were more tax aggressive than afterwards. Negatively correlated variables include only the unemployment rate and the financial system. For the unemployment rate this is coherent with the other correlations – the less unemployed the people (and therefore the more GDP growth and stableness of economy), the more tax aggressiveness among the companies in the country.

\(^{44}\) In a real life analysis instead of this thesis work, however, the significances are way too low to have any impact on the result. As will be seen later, the r square which explains the portion of the dependent variable that is explained by the independent ones is close to zero, so statistically, the results have no significance.
negative correlation with the financial system dummy means that the more bank-based a country is, the less tax aggressive the companies in it are.

These correlations are also seen when running the regression. The coefficients are calculated, which means the weight that is given to each of the independent variables, and the sign of the correlations stay the same (except for the rule of law predictor). The results are presented in table 6.

Table 6. Coefficients for model 1.

<table>
<thead>
<tr>
<th>Regression Coefficients</th>
<th>Model 1</th>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td>0.128</td>
<td>0.134</td>
<td>0.961</td>
<td>0.337</td>
</tr>
<tr>
<td>SIZE</td>
<td></td>
<td>0.008</td>
<td>0.004</td>
<td>1.959</td>
<td>0.050</td>
</tr>
<tr>
<td>LEV</td>
<td></td>
<td>1.549E-05</td>
<td>0.000</td>
<td>0.170</td>
<td>0.865</td>
</tr>
<tr>
<td>ROA</td>
<td></td>
<td>-0.264</td>
<td>0.050</td>
<td>-5.335</td>
<td>0.000</td>
</tr>
<tr>
<td>Corruption Control</td>
<td></td>
<td>0.004</td>
<td>0.066</td>
<td>0.061</td>
<td>0.951</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>-0.104</td>
<td>0.096</td>
<td>-1.079</td>
<td>0.281</td>
</tr>
<tr>
<td>RegQuality</td>
<td></td>
<td>0.048</td>
<td>0.102</td>
<td>0.471</td>
<td>0.638</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.565</td>
<td>0.372</td>
<td>-1.519</td>
<td>0.129</td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td>0.745</td>
<td>0.351</td>
<td>2.123</td>
<td>0.034</td>
</tr>
<tr>
<td>FinSystem</td>
<td></td>
<td>-0.004</td>
<td>0.028</td>
<td>-0.138</td>
<td>0.890</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td>0.107</td>
<td>0.058</td>
<td>1.837</td>
<td>0.066</td>
</tr>
<tr>
<td>FinCrisis</td>
<td></td>
<td>0.010</td>
<td>0.023</td>
<td>0.426</td>
<td>0.670</td>
</tr>
</tbody>
</table>

However, the $r^2$ with 0.005 is still indicating very little explanatory power. The only variables that seem to be significant are Location and GDP with p-values less than 0.05 (for Location only slightly above this value). The t-values should, in order to present statistical significance, be 2 or higher. Again, the only variable fulfilling this is GDP, with Location reaching this value almost as well. The control variables are ignored here as they should fulfill this condition in order to work as control variables. Only LEV seems to be off, possibly the debt-to-equity ratio is not appropriate enough for this model. The equation looks now like this:
\[
\text{TaxAggr}_{it} = \beta_0 + \beta_1 \text{SIZE}_{it} + \beta_2 \text{LEV}_{it} - \beta_3 \text{ROA}_{it} \\
+ \beta_4 \text{Corruption Control}_{it} - \beta_5 \text{Rule of Law}_{it} \\
+ \beta_6 \text{RegQuality}_{it} - \beta_7 \text{Unemployment}_{it} \\
+ \beta_8 \text{GDP}_{it} - \beta_9 \text{FinSystem}_{it} \\
+ \beta_{10} \text{Location}_{it} + \beta_{11} \text{FinCrisis}_{it} + \epsilon_{it}
\] (4)

The control variables \(\text{LEV} \), \(\text{ROA} \) and \(\text{SIZE} \) should be looked at first. Previous literature generally does not predict a sign for firm size, here it is positively correlated with tax avoidance aggressiveness. However, prior literature does predict signs for both leverage and profitability – the more profitable the firms are, the higher effective tax rates they seem to have, so profitability would be negatively correlated with the used tax avoidance proxy. This seems to be confirmed here as \(\text{ROA} \) has a negative coefficient. Leverage is positively correlated with the level of aggressiveness, this also confirms previous literature’s theories. That the indicators for control for corruption, regulatory quality and GDP growth have positive coefficients, and the one for unemployment rate has a negative one, all is coherent with each other, and supports \(H1: \text{Companies located in the north tend to be more tax aggressive than companies located in the south.} \) It means that companies in stable economies with a good implementation of rules and regulations and a low level of corruption tend to be more tax aggressive than companies in the weaker economies.

Having a look at the predictor for location confirms this, as the dummy variable is also positively correlated with the tax avoidance proxy, where 1 indicates a country in the north. The hypotheses development in section 3.3 showed that after a thorough study of the previous literature, this might be as expected, as due to lower shareholder protection a higher level of tax avoidance aggressiveness is not desired. However, the only indicator falling out of the pattern is the one for rule of law, the beta coefficient is negative. This rejects hypothesis \(H2: \text{With increasing value of rule of law in a country, the tax avoidance aggressiveness will increase.} \) Nevertheless, from the Pearson correlation matrix it could be seen that the correlation with the tax avoidance proxy was positive as well – there has been a switch when running the regression, which indicates unusual characteristics concerning this variable already.
A negative correlation with the financial system dummy, which is 1 for bank-based countries, supports the third hypothesis: \textit{H3: In market-based countries, companies tend to be more tax aggressive than in bank-based countries}. It does look like tax aggressiveness is higher among companies located in market-based countries. Also the fourth hypothesis, \textit{H4: After the financial crisis, companies tend to be less tax aggressive} seems to be supported. The coefficient for the financial crisis dummy, which is 1 for years prior to the crisis, is positive.

Concerning the odd sign change of \textit{Rule of Law}, it can be assumed that the correlation with the indicators \textit{RegQuality} and \textit{Corruption Control} are causing this. Those three variables are highly correlated with each other, so most likely this causes a sign switch as something is happening between those variables that the model used does not account for.

It might be interesting to find out whether or not a stepwise regression gives any more insights on that. When running the regression stepwise, only the variables \textit{ROA}, \textit{Unemployment} and \textit{GDP} are entered, in this order. This is, as mentioned before, due to the statistical relevance, and not due to the significance for the hypotheses. When excluding the control variables, still \textit{Unemployment} and \textit{GDP} are entered. In order to find out what causes the sign of the predictor for rule of law to change, this variable is chosen to be entered stepwise manually. First, only this independent is entered, then \textit{RegQuality} is added, and in the third case the \textit{Corruption Control} is added to those two variables. The results remain more or less the same, the $r^2$ is slightly increasing when increasing the number of independent variables. \textit{Rule of Law} remains positively correlated with the tax avoidance proxy until one of the other two variables that are related to the governance of the country are entered, as can be seen in table 7:
Table 7. Coefficients for stepwise regression 1, variables entered manually.

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression coefficients</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>t-value</td>
<td>p-value</td>
</tr>
<tr>
<td>Model 1</td>
<td></td>
<td>(Constant)</td>
<td>0.194</td>
<td>0.024</td>
<td>8.090</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rule of Law</td>
<td>0.037</td>
<td>0.016</td>
<td>2.262</td>
</tr>
<tr>
<td>Model 2</td>
<td></td>
<td>(Constant)</td>
<td>0.084</td>
<td>0.044</td>
<td>1.886</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rule of Law</td>
<td>-0.101</td>
<td>0.049</td>
<td>-2.048</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RegQuality</td>
<td>0.222</td>
<td>0.075</td>
<td>2.966</td>
</tr>
<tr>
<td>Model 3</td>
<td></td>
<td>(Constant)</td>
<td>0.127</td>
<td>0.076</td>
<td>1.676</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rule of Law</td>
<td>-0.144</td>
<td>0.078</td>
<td>-1.838</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RegQuality</td>
<td>0.190</td>
<td>0.088</td>
<td>2.152</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Corruption Control</td>
<td>0.043</td>
<td>0.061</td>
<td>0.704</td>
</tr>
</tbody>
</table>

a. Dependent Variable: tax avoidance proxy total

When entering none of them but all the other independent variables stepwise, Rule of Law remains positively correlated with the tax avoidance proxy until the variable Location is entered. Although it could be assumed that Unemployment and GDP growth are somehow connected to these predictors, at least concerning the direction, they have no impact on the sign of the coefficient for Rule of Law.
Table 8. Coefficients* for stepwise regression 2, variables entered manually.

<table>
<thead>
<tr>
<th>Model</th>
<th>Regression coefficients</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>t-value</td>
<td>p-value</td>
</tr>
<tr>
<td>Model 1*</td>
<td>(Constant)</td>
<td>0.194</td>
<td>0.024</td>
<td>8.090</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>0.037</td>
<td>0.016</td>
<td>2.262</td>
</tr>
<tr>
<td>Model 2*</td>
<td>(Constant)</td>
<td>0.300</td>
<td>0.036</td>
<td>8.289</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>0.019</td>
<td>0.017</td>
<td>1.144</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-1.084</td>
<td>0.278</td>
<td>-3.894</td>
</tr>
<tr>
<td>Model 3*</td>
<td>(Constant)</td>
<td>0.293</td>
<td>0.036</td>
<td>8.083</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>0.011</td>
<td>0.017</td>
<td>0.637</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.923</td>
<td>0.289</td>
<td>-3.197</td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td>0.631</td>
<td>0.300</td>
<td>2.105</td>
</tr>
<tr>
<td>Model 4*</td>
<td>(Constant)</td>
<td>0.298</td>
<td>0.043</td>
<td>6.931</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>0.009</td>
<td>0.019</td>
<td>0.469</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.897</td>
<td>0.311</td>
<td>-2.887</td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td>0.638</td>
<td>0.302</td>
<td>2.116</td>
</tr>
<tr>
<td>FinSystem</td>
<td></td>
<td>-0.006</td>
<td>0.027</td>
<td>-0.223</td>
</tr>
<tr>
<td>Model 5*</td>
<td>(Constant)</td>
<td>0.299</td>
<td>0.044</td>
<td>6.841</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>0.009</td>
<td>0.020</td>
<td>0.463</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.897</td>
<td>0.311</td>
<td>-2.881</td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td>0.644</td>
<td>0.347</td>
<td>1.857</td>
</tr>
<tr>
<td>FinSystem</td>
<td></td>
<td>-0.006</td>
<td>0.027</td>
<td>-0.220</td>
</tr>
<tr>
<td>FinCrisis</td>
<td></td>
<td>-0.001</td>
<td>0.022</td>
<td>-0.34</td>
</tr>
<tr>
<td>Model 6*</td>
<td>(Constant)</td>
<td>0.338</td>
<td>0.048</td>
<td>7.051</td>
</tr>
<tr>
<td>Rule of Law</td>
<td></td>
<td>-0.080</td>
<td>0.049</td>
<td>-1.633</td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td>-0.614</td>
<td>0.342</td>
<td>-1.792</td>
</tr>
<tr>
<td>GDP</td>
<td></td>
<td>0.739</td>
<td>0.350</td>
<td>2.110</td>
</tr>
<tr>
<td>FinSystem</td>
<td></td>
<td>-0.017</td>
<td>0.027</td>
<td>-0.632</td>
</tr>
<tr>
<td>FinCrisis</td>
<td></td>
<td>-0.001</td>
<td>0.022</td>
<td>-0.037</td>
</tr>
<tr>
<td>Location</td>
<td></td>
<td>0.111</td>
<td>0.056</td>
<td>1.980</td>
</tr>
</tbody>
</table>

a. Dependent Variable: tax avoidance proxy total
*\(r^2\) is 0.002 for each model

Even though removing the outliers has smoothened the sample closer to a normal distribution, the results are far from being significant. With an \(r^2\) close to zero, almost
no explanatory power is given by the independent variables. Computing the country means might erase the noise, however. The observations of all companies in each country per each year are summed up and the mean is calculated, so that now there is only one observation per country per year to use (which gives 64 in total). The average total ETR of those is then 16.45%, which makes more sense than before, and the $r^2$ provides with the information that at least 33% of the total ETR can be explained by the chosen independent variables. With this information it makes more sense to proceed in the statistical analysis. However, also here the cash ETR is, as assumed, less meaningful. It has a mean value of 38.62% and its $r^2$ is 0.153, and the Anova significance, meaning the probability that these results would have come up randomly by chance and not in relation to the independent variables, is 29.3%. A value closer to zero would have been better. Coherent with previously discussed literature, the cash ETR is not as valuable in explaining different levels of tax aggressiveness as is the total ETR. To compare the values of all observations with only 64 observations, table 9 sums up the descriptive statistics of both:

**Table 9. Comparison descriptive statistics, all data versus country-means.**

<table>
<thead>
<tr>
<th>Case</th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TaxAggr</td>
<td>all*</td>
<td>12841</td>
<td>0.2446</td>
<td>-0.257</td>
<td>1.438</td>
<td>1.0530</td>
</tr>
<tr>
<td>total</td>
<td>means**</td>
<td>64</td>
<td>-0.0356</td>
<td>-1.249</td>
<td>1.404</td>
<td>1.2011</td>
</tr>
</tbody>
</table>

*Winsorised at 5% at each end
**pure data

The skewness shows that there are, although now only 64 observations are tested and the means should have eased out the outliers, still some extremes, especially on the left side of the distribution. As seen before in the univariate analysis, this might be due to the fact that the most extreme values in the southern countries were not eased out by taking the means either, as they are so extreme that they pull the distribution to the left side. Therefore the extreme cases are Winsorised. However, as there are only 64 observations, 1% is not enough to find 1 case even. Thus, the 3 most extreme cases are Winsorised at each end. The significance given by the $r^2$ is now 31.8%, but interestingly the correlations have changed:
Table 10. Pearson correlation matrix for 64 observations (country-means).

<table>
<thead>
<tr>
<th></th>
<th>Corr</th>
<th>Control</th>
<th>Rule</th>
<th>System</th>
<th>Quality</th>
<th>Unemploy</th>
<th>GDP</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>TaxAggr total</td>
<td>-0.257</td>
<td>-0.089</td>
<td>-0.083</td>
<td>0.085</td>
<td>-0.020</td>
<td>-0.172</td>
<td>-0.105</td>
<td>-0.104</td>
</tr>
<tr>
<td>FinCrisis</td>
<td>0.062</td>
<td>0.009</td>
<td>0.000</td>
<td>0.48</td>
<td>-0.300</td>
<td>0.519</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Corruption</td>
<td>0.978</td>
<td>-0.561</td>
<td>0.935</td>
<td>-0.417</td>
<td>0.334</td>
<td>-0.891</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rule of Law</td>
<td>-0.546</td>
<td>0.930</td>
<td>-0.361</td>
<td>0.291</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FinSystem</td>
<td>-0.592</td>
<td>0.435</td>
<td>-0.164</td>
<td>0.577</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RegQuality</td>
<td>-0.504</td>
<td>0.323</td>
<td>-0.909</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>-0.400</td>
<td>0.477</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>-0.251</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Corruption Control, Rule of Law, RegQuality, GDP, Location and FinCrisis are now negatively correlated with the tax avoidance proxy. The unemployment rate keeps the same negative correlation, which brings it into a contradictory context with what the GDP indicator explains. Also FinSystem changed the sign, from a negative correlation to a positive one. As the control variables did not change anything they will be left out in this simplified version. Nonetheless, the regression run with only 64 cases is rather interesting for comparing the results for possible error-findings than meaningful, as the whole distribution of each country with all its extreme values is narrowed down to one mean. According to the beta coefficients the new equation is

\[
\text{TaxAggr}_{it} (64) = \beta_0 - \beta_1 \text{Location}_{it} - \beta_2 \text{FinCrisis}_{it} - \beta_3 \text{Corruption}_{it} - \beta_4 \text{Rule of Law}_{it} + \beta_5 \text{FinSystem}_{it} - \beta_6 \text{RegQuality}_{it} - \beta_7 \text{Unemployment}_{it} + \beta_8 \text{GDP}_{it} + \epsilon_{it}
\]

Well-governed countries seem to have companies which tend to avoid taxes less aggressively than poorly governed countries. Unemployment rate and growth of GDP, which distinguish between a weak and a stable economy, have contradictory
coefficients. As in the other regression model with the indicator *Rule of Law*, here the indicator *GDP* changed the direction of the correlation from the Pearson matrix to the beta coefficients. As it could be interpreted the other way round now, as if the hypotheses are rejected, these results remain too questionable to make sense or to be taken seriously. Although the $r^2$ is over 30%, this is only due to the fact that the number of observations has been reduced drastically. The explanatory power of the model cannot be seen as improved, as the individual distribution of observations in each country is forced to fit in the mean of the company observations. Therefore, although the pattern that is observable among the 12,838 observations is very lightly weighted, it still contains much more information about the behavior of the companies than in the second model with 64 observations.
6 CONCLUSION

A vast strain of previous literature deals with the concept of tax avoidance, the degree of tax avoidance aggressiveness, and the possible reasons and causes for the level of this aggressiveness. A different strain of literature deals with government indicators, governance and its influences on the company level and companies’ behavior. This thesis tries to combine those two strains in order to examine the influence and impact of country governance and other economic factors on the degree of tax avoidance aggressiveness.

Therefore, the main contributions of this thesis are combining those two literature strains and applying their models in order to give insights on tax avoidance aggressiveness in a new, not yet examined context. Furthermore, a cross-country comparison is applied – unlike in most of the previous research, European countries instead of the US are observed. Based on the findings of previous research, the effective tax rates of each company across eight European countries (four of them located in the north, four in the south) over eight years are calculated in order to compare the tax avoidance aggressiveness. The findings are statistically weak, but point to the expected direction. Companies located in countries with strong governance and a stable economy seem to be more tax aggressive than in the other countries, as shareholder rights are better protected and therefore, these shareholders would benefit from tax aggressiveness more than in countries where their rights are not protected. Also the financial system seems to play a role, as in market-based countries the shareholders are the ones who benefit from the bottom-line earnings, and are therefore more likely to wish for higher tax aggressiveness. It is interesting that companies in the south seem to have been more tax aggressive prior to the financial crisis than afterwards. However, the evidence is far too weak in order to derive a theory concerning this from the results.

It has to be said, however, that the initial assumptions concerning the different levels of tax aggressiveness in northern versus southern countries were assuming a reverse effect – countries with an unstable economy and a bad government were compared with companies with a weak governance and bad performance, trying to make up for low value creation with cost savings at the tax spending end. The derived assumption
was that weaker countries have more tax avoidance aggressiveness among their companies than stronger countries. An overall dishonest approach that might be reflected in bad governance indicators was thought to be transferred on the business level as well. A study by Leuz et al. (2003) examining the economic impact on earnings management behavior was referred to, assuming that tax aggressiveness might behave similarly. One problem with this assumption might be that tax avoidance aggressiveness, unlike earnings management, does not fool the shareholders but the government. Government indicators that determine shareholder protection, and also the fact that shareholders might have much more power over companies than the government (tax authorities can naturally not detect every fraud, while shareholders certainly react negative to rent extraction sooner or later) indicate that as long as the shareholders wish for and not against tax aggressiveness, it will occur. Even though legal enforcement is stronger in those countries that protect shareholders better, it might not be strong enough to make each and everybody pay their taxes honestly.

Another problem with this assumption is that until recently, studies have found evidence for companies with a strong corporate governance engaging in less tax avoidance – therefore, deriving a theory from these studies might have led to the initial assumptions that seem to be proven wrong. Armstrong et al. (2013) have found evidence for companies with strong corporate governance actually engaging more aggressively in tax avoidance, and this goes coherent with the conclusions and findings from this thesis. Therefore, the initial assumption had to be re-defined in the process and reversed – a stable economy with good shareholder protection actually offers more ground for tax avoidance activities than an unstable one.

Of course this does not necessarily mean that companies in countries with a weak economy do not avoid taxes. The smaller book-tax-gap that was detected in the results could for instance also hint at more manipulation per se, or more conforming tax avoidance that the shareholders would not detect and therefore could be abused by management for opportunistic behavior. Also the drastic change in tax avoidance behavior after the financial crisis in southern countries alludes to odd activities going on, which might deserve further examination in future research. Especially the problem that the data available (due to the late IFRS adoption obligation) before the
crisis covers three years only might contribute to the unexpected effect and is one of the limitations of this thesis. At a later point, when IFRS has been used by the countries for a longer time period, it might be worth considering a new cross-country comparison.

The weak evidence is another limitation of this thesis. It might however be related to the other constraints. For instance, this study does not go into detail of the respective underlying tax systems of each country. It generalizes and deals with numbers more than with qualitative information, also in determining the book-tax differences there are mainly numbers used. To expand it and eventually also improve the results, future work could go into further detail by investigating each specific taxing system, also in order to determine an eventual need for a unique taxation system for all Europe, which has been in the discussion recently. Taking the very distinct study of Dyreng et al. (2010) into consideration, it might also be interesting to extend the research on the executives in each company and examining their origin, as they might not be all from the country the company is located in. It might be interesting to find out whether the location and overall economy, or the origin and behavior of the top management has more influence on tax avoidance aggressiveness. For future research, it might also be considerable examining the governance indicators to a further extent. In this thesis, the figures were taken from the World Bank and should be reliable as they consider rules and regulations and their implementation when being calculated. Investigating the countries’ extent of legal enforcement by for example comparing the magnitude of regulations available per country might be a next step to deepen and support the basis of those indicators. This might help erasing the odd sign-change in the rule of law indicator as well, eventually.

Last but not least, one limitation that should be mentioned is the use of financial statement data solely and the limited ability to detect tax avoidance given by the model used. As prior research suggests, for instance Dyreng et al. (2008) or Lisowsky (2010), there are many more ways for a company to engage in tax avoidance activities than those being reflected on financial statements. Before deriving solid conclusions about northern companies being more tax aggressive than southern, these options would have to be examined or ruled out as well.
However, although the evidence is weak, the results point into a certain direction. Even if this might be reversed in future, namely found that southern countries are more tax aggressive than northern, it looks like cross-country comparisons reveal certain country-specific differences that could have an influence on tax avoidance activities. Therefore it might be worth considering further, more detailed research on this topic. With more distinct methods and greater resources more significant results might be obtained.
REFERENCES


### Appendix 1: Table A1. Values of independent variables

#### Table A1. Values of independent variables for multivariate analysis.

<table>
<thead>
<tr>
<th>year</th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Greece</th>
<th>Italy</th>
<th>Netherlands</th>
<th>Portugal</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1.87</td>
<td>1.29</td>
<td>2.35</td>
<td>0.37</td>
<td>0.21</td>
<td>1.97</td>
<td>1.06</td>
<td>2.01</td>
</tr>
<tr>
<td>2006</td>
<td>1.79</td>
<td>1.12</td>
<td>2.56</td>
<td>0.35</td>
<td>0.31</td>
<td>2.08</td>
<td>0.97</td>
<td>2.20</td>
</tr>
<tr>
<td>2007</td>
<td>1.70</td>
<td>0.99</td>
<td>2.47</td>
<td>0.25</td>
<td>0.21</td>
<td>2.22</td>
<td>0.96</td>
<td>2.24</td>
</tr>
<tr>
<td>2008</td>
<td>1.73</td>
<td>1.10</td>
<td>2.41</td>
<td>0.10</td>
<td>0.18</td>
<td>2.16</td>
<td>1.00</td>
<td>2.23</td>
</tr>
<tr>
<td>2009</td>
<td>1.70</td>
<td>1.01</td>
<td>2.27</td>
<td>0.05</td>
<td>-0.01</td>
<td>2.14</td>
<td>1.06</td>
<td>2.27</td>
</tr>
<tr>
<td>2010</td>
<td>1.70</td>
<td>1.02</td>
<td>2.15</td>
<td>-0.12</td>
<td>-0.05</td>
<td>2.15</td>
<td>1.03</td>
<td>2.29</td>
</tr>
<tr>
<td>2011</td>
<td>1.68</td>
<td>1.06</td>
<td>2.19</td>
<td>-0.15</td>
<td>-0.01</td>
<td>2.17</td>
<td>1.09</td>
<td>2.22</td>
</tr>
<tr>
<td>2012</td>
<td>1.78</td>
<td>1.05</td>
<td>2.22</td>
<td>-0.25</td>
<td>-0.03</td>
<td>2.13</td>
<td>0.93</td>
<td>2.31</td>
</tr>
</tbody>
</table>

- **Corruption Control**: Data taken from World Bank, Worldwide Governance Indicators research project
- **Rule of Law**: Data taken from Demirgüç-Kunt and Levine (1999)
- **Fin System**: *D* indicates a developed financial system, *U* indicates an underdeveloped financial system
<table>
<thead>
<tr>
<th>year</th>
<th>Germany</th>
<th>Spain</th>
<th>Finland</th>
<th>Greece</th>
<th>Italy</th>
<th>Netherlands</th>
<th>Portugal</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>10.7</td>
<td>7.7</td>
<td>6.8</td>
<td>8.4</td>
<td>6.2</td>
<td>4.5</td>
<td>7.1</td>
<td>5.7</td>
</tr>
<tr>
<td>2006</td>
<td>9.8</td>
<td>7.3</td>
<td>6.2</td>
<td>7.5</td>
<td>5.5</td>
<td>3.8</td>
<td>7.2</td>
<td>5</td>
</tr>
<tr>
<td>2007</td>
<td>8.2</td>
<td>7</td>
<td>5.4</td>
<td>7.1</td>
<td>4.9</td>
<td>2.9</td>
<td>7.6</td>
<td>4.3</td>
</tr>
<tr>
<td>2008</td>
<td>7.1</td>
<td>9.8</td>
<td>4.9</td>
<td>6.6</td>
<td>5.6</td>
<td>2.4</td>
<td>7.2</td>
<td>4.1</td>
</tr>
<tr>
<td>2009</td>
<td>7.3</td>
<td>15.9</td>
<td>6.4</td>
<td>8.3</td>
<td>6.4</td>
<td>3</td>
<td>9.2</td>
<td>5.9</td>
</tr>
<tr>
<td>2010</td>
<td>6.7</td>
<td>18</td>
<td>6.6</td>
<td>11.1</td>
<td>7</td>
<td>3.7</td>
<td>1.6</td>
<td>6.2</td>
</tr>
<tr>
<td>2011</td>
<td>5.6</td>
<td>19.4</td>
<td>6.1</td>
<td>15.9</td>
<td>6.9</td>
<td>3.8</td>
<td>11.4</td>
<td>5.5</td>
</tr>
<tr>
<td>2012</td>
<td>5.2</td>
<td>22.7</td>
<td>6.1</td>
<td>22.2</td>
<td>8.9</td>
<td>4.5</td>
<td>14</td>
<td>5.7</td>
</tr>
</tbody>
</table>

| GDP*** | 2005 | 0.7 | 3.6 | 2.9 | 2.3 | 0.9 | 2 | 0.8 | 3.2 |
|        | 2006 | 3.7 | 4.1 | 4.4 | 5.5 | 2.2 | 3.4 | 1.4 | 4.3 |
|        | 2007 | 3.3 | 3.5 | 5.3 | 3.5 | 1.7 | 3.9 | 2.4 | 3.3 |
|        | 2008 | 1.1 | 0.9 | 0.3 | -0.2 | -1.2 | 1.8 | 0 | -0.6 |
|        | 2009 | -5.1 | -3.7 | -8.5 | -3.1 | -5.5 | -3.7 | -2.9 | -5 |
|        | 2010 | 4 | -0.3 | 3.4 | -4.9 | 1.7 | 1.5 | 1.9 | 6.6 |
|        | 2011 | 3.3 | 0.4 | 2.7 | -7.1 | 0.4 | 0.9 | -1.6 | 3.7 |
|        | 2012 | 0.7 | -1.4 | -0.8 | -6.4 | -2.4 | -1.2 | -3.2 | 0.7 |

Location

| 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |

***Data taken from Eurostat statistics