MASTER IN
FINANCE

MASTER´S FINAL WORK
DISSERTATION

CORPORATE TAX AVOIDANCE FOLLOWED BY MERGERS AND ACQUISITIONS

DANIEL JOSÉ DA SILVA DUARTE

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SUPERVISOR:

VICTOR MAURÍLIO SILVA BARROS

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Abstract

This paper aims to understand the change in corporate tax avoidance following a M&A deal. Several M&A features were tested in a sample which covers 707 European deals. Overall, results suggest that there is no statistical evidence of changes in corporate tax avoidance following M&A deals. However, we found some evidence of higher level of corporate tax avoidance when the deal is horizontal and when the target company had operating losses the year before deal. Our results suggest a decrease in ETR of about 3% for horizontal mergers and a reduction of effective taxes paid between 6.2% and 8.6% if target had negative pre-tax income pre-deal. This reduction in ETR increases to 9% for horizontal deals, in which the target had a negative pre-tax income one-year before the deal. Our findings support the view that tax motives may not trigger M&A deals, although significant tax savings appear to occur for certain M&A characteristics.

Resumo

Este trabalho tem como objetivo perceber as alterações ao planeamento fiscal da empresa após uma operação de F&A. Várias características de F&A foram testadas numa amostra que abrange 707 operações Europeias. No geral, os resultados sugerem que não há evidência estatística de alterações no planeamento fiscal da empresa adquirente após uma operação de F&A. No entanto, encontrámos evidência de um maior nível de planeamento fiscal quando as operações são horizontais e quando a empresa-alvo tem resultados operacionais negativos no ano anterior à operação. Os nossos resultados sugerem uma diminuição de cerca de 3% na taxa efetiva de imposto quando a operação é horizontal e uma redução dos impostos pagos, entre 6.2% e 8.6%, se a empresa-alvo apresentou resultados operacionais negativos no ano anterior à operação. Esta redução na taxa efetiva de imposto aumenta para 9% se a operação for simultaneamente horizontal e a empresa-alvo tenha resultados operacionais negativos no ano anterior à operação. Os nossos resultados suportam a perspetiva de que motivos fiscais podem não despoletar uma operação de F&A, no entanto uma significativa poupança fiscal parece verificar-se para determinadas características das F&As.

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1   Introduction

Over the last years, mergers and acquisitions have increased significantly both in value and number of transactions, increasing its importance as form of business investment. According to Thomson Reuters M&A Review (2015), in 2015 was announced $4,7 trillion in worldwide M&A operations, more 40% than in 2014, being set as the biggest M&A year ever, until then, beating the previous record of $4,4 trillion in 2007. Another interesting fact in 2015, was the significant number of mega-deals (more than $5 billion) in 2015. The 137 mega-deals planned last year, represented 52% of total M&A value in 2015. Over the last decades M&A activity has been represented by several waves. Knox and Harik (2015) argued that, 2015 could be the start of a new wave for M&A. The authors refer that the increasingly number of deals is related with stock market conditions.

M&A´s can generate synergetic gains through reduction of doing business costs (economies of scale) and consolidation, leading to a greater market share and consequently to an increase in revenues (Devos et al., 2008). Besides operational synergies, there are also potential tax synergies arising from M&A operations. Prior literature argues that tax attributes (e.g. net operating losses) can play an important role on M&A activity (See Auberbach and Reishus, 1986;1987;1988; Hayn, 1989), and that usually, these attributes are reflected in higher premiums paid by the companies in M&A deals (See Kaplan, 1989). Additionally, the literature suggests an increase of tax avoidance strategies, especially from multinational firms, which arise mainly from the tax rate-gap between countries (See Schwarz, 2009; Huizinga and Laeven, 2008; Clausing, 2009). Parent companies from high tax juridisctions engage in more tax avoidance strategies (via income shifting) with their affiliates, from lower tax juridisctions, in order to reduce their tax burden (See Klassen and Laplante, 2012; Clausing, 2003). Some studies have presented tax avoidance motives as a driver for

M&A, especially for cross-border deals (Belz et al., 2013; Huizinga & Voget, 2009). A recent and much criticized case was the announced $160 billion deal between Pfizer and Allergan. With the M&A, Pfizer would strategically move its headquarters to Ireland in order to reduce its actual corporate tax burden. According to Fortune (2015), the operation would reduce (approximately 25%) Pfizer´s current effective tax rate (ETR) to a combined effective tax rate of approximately 17% to 18% in the first year after this tax inversion deal. Besides all synergies related to the creation of the biggest drug maker company, this was a clear tax-motive merger as Ireland has low corporate income tax rates[1]. Another recent announced tax inversion deal, that was effectively concluded, was made between the American company Johnson Controls and an Irish company Tyco. As US companies are subjected to one of the highest tax rate in the world, cross-border deals are increasingly becoming more frequent.

This study aims to assess whether the level of corporate tax avoidance increase for the acquirer company following an M&A deal. The characteristics that may well shape the deal are also analysed. By using several tax avoidance measures, similar to Chen et al. (2010) study, we test if there is evidence of lower taxes paid by the acquirer after deal. Belz et al. (2013) found a decrease of target´s ETR by 3% following M&A deal, however, the authors have only documented this result graphically.

We use data from Thomson Reuters Eikon database, which covers 10 years of European M&A deals. Our sample comprises 359 completed M&A deals from 34 different European countries, which were announced between 2005 and 2014. In addition to the main aim of this thesis, several hypotheses are added, regarding the type of deal (horizontal vs non-horizontal and domestic vs cross-border), existence of operating losses

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[1] The smaller company, Irish-based Allergan would buy the larger company, American-based Pfizer, maintaining the well-known Pfizer brand as the name.

by the target and tax rate differences between both acquirer and target company. Overall, our findings suggest that there is no evidence of higher level of corporate tax avoidance following an M&A. However, this overall result may be shaped by several characteristics. Firstly, if both firms operate in the same industry, there is a statistically significant evidence of a reduction in acquirer´s book effective tax rate of 3%, following deal. Secondly, if the target company presented negative pre-tax income the year before deal, we found that acquirer´s tax burden is reduced between 6.2% and 8.6%, depending on the tax avoidance measure. This reduction increases by about 9% for book ETR, if the deal is horizontal and the target had negative pre-tax income one year before the deal, simultaneously. Lastly, ambiguous results were found regarding the deal be domestic rather than cross-border. Additional tests were performed to assess the robustness of our findings. The rest of the research is structure as following: Section 2 presents previous literature regarding M&A tax issues and tax avoidance strategies of multinational firms; Section 3 describes the data and the methodology applied; Section 4 presents and discusses the results and Section 5 concludes the study.

2   Literature Review

Over the last years, mergers and acquisitions have increased significantly both in value and number of transactions, increasing its importance as form of business investment. There are several reasons for a company to acquire another company, or for two or more companies to merge. The overall reason pointed for a company to acquire other company is that the acquiring firm considers the operation profitable in terms of investment (Pautler, 2001). Synergy gains, reduction of the costs of doing business, better organizational activity, the increase of market power or a better management efficiency are other, but not less important reasons for M&As. Ngueyn et al. (2012), by using a sample of domestic US acquisitions, found *ex-post* evidence that M&As were motivated by market timing, agency or hubris reasons as a response to economic, and or industry shocks. Martynova and Renneboog (2008) have analysed the determinants of the five M&A waves and found that are some common reasons for all waves. The authors pointed managerial self-interest and hubris as motives for M&A activity.

With an increased globalization of business and the lack of opportunities in local markets, companies had to rapidly adjust to those changes via foreign investment. Cross-border M&A represent the largest share of FDI, for developed countries[2]. It allows firms to diversify their production overseas, leading to a higher economic integration among countries all over the world (di Giovanni, 2005). Having access to different customers, suppliers and capital markets, cross-border deals are an important driver for a greater competitiveness in a dynamic economy. There are several determinants for a cross-border deal to take place. Erel et al. (2012) found that the geography is relevant for a deal to take place, arguing that, it is more likely for a company to acquire another if that company

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[2] In comparison to greenfield investment, in 1999, cross-border M&A represented 80% of total FDI (See Nocke and Yeaple, 2007).

operates in a nearby country. The authors also pointed that currency movements between countries could increase the likelihood of the acquirer firm being from the country with the appreciating currency, while the target was more likely to be from the country with the depreciating currency. The authors add that economically developed countries, with higher accounting standards and higher stock market performance are more likely to be the buyer. Rossi and Volpin (2004) analysed the main differences in laws and enforcement between countries and concluded that, besides better accounting standards, the volume of M&A in a country is also explained by a stronger shareholder protection. The authors also found that higher investor protection the probability of a cross-border operation to occur. The authors argue that, usually, target companies are related to countries with lower investor protection and acquirers to countries with better investor protection, suggesting the importance of cross-border deals as a driver for a global convergence in corporate governance standards.[3] Manchin (2004) found similar conclusions, arguing that target firms can improve corporate governance by adopting some "inside rules" of the acquirer, improving its efficiency and investor protection. Besides the previously presented determinants of cross-border M&As, there are also significant tax factors that might affect the volume of M&As[4].

2.1   Tax issues as determinants of M&A

There is an extent literature about the impact that taxation can take in M&A operations and in multinational companies´ activity in general. The first tax issue is the corporate combination form that the transaction can take. A transaction can take the form of a taxable or tax-free operation and the choice may have a significant impact on the potential corporate tax benefits (Gilson et al., 1988). If the transaction is considered taxable,

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[3] Similar findings were obtained in Monteiro (2012) study.
[4] The authors also concluded that M&A waves are occur more often in periods of economic recovery and crisis, and that are influenced by industrial and technological shocks.

shareholders from target company have to pay taxes from the capital gains obtained from the sale of target company shares. However, if the transaction is tax-free, target shareholders do not have to pay any taxes until they decide to sell the shares received from the acquiring company. The second alternative can be beneficial for target shareholders of smaller companies, once they can obtain a more balanced and diversified portfolio by exchanging their stocks for stocks of a larger and more diversified company[5]. Bierman (1980) presents, in a very simple way, the tax incentive of a company to acquire the shares of another firm. The author argues that a company may have a tax advantage to acquire the shares of other company initially, if decides to pay dividends[6]. In the case of a cash transaction, target shareholders are immediately taxed due to the gain resultant from the deal. Sullivan (1993) found that target shareholders request higher premiums to compensate the immediate liability they are subject to after the deal. Erickson (1998) have analysed the impact of tax and non-tax characteristics of a target company in the deal´s structure. The author found similar conclusions: in taxable transactions the average premium demanded is higher than in tax-free transactions. The author adds that the probability of non-taxable (stock) transaction taking place, increases with the market-to--book (M/B) ratio of the acquiring company. Similarly, Carleton et al. (1983) found that the probability of a cash takeover is a decrease function of dividend pay-out ratios and M/B ratios, adding that, a company with low dividend pay-out ratios and M/B ratios is more likely to be acquired through a cash takeover rather than through a securities exchange.

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[5] Although this option might be preferable in the perspective of individual taxation, can limit the potential corporate tax benefits (See Auberbach & Reishus (1987)).

[6] The amount of dividends paid to the investors will be greater if the acquirer retains its earnings initially to buy the shares of the target company, and then pay the dividends arising from target 'earnings.

Besides shareholders´ tax factors, there are also potential tax benefits, at a corporate level, that may trigger M&A operations. Firstly, an acquiring company may have unused tax credits and tax losses (NOLs) that can be transferred to the target company to offset its taxable income, or vice-versa. A company that presents a tax loss or have unused tax credits can carryforwards these tax benefits to be used when the company has enough taxable income to be reduced (Cooper & Knittel, 2006)[7]. Secondly, a company might step-up asset basis for tax purposes. Before an acquisition, a company can readjust the value of their assets by increasing the tax basis of those assets (Brown & Ryngaert, 1991). Increasing the tax basis of the assets lead to higher deductions, which are treated as tax expenses, reducing the combined company´s tax liabilities. However, this potential benefit can be partially offset by the recapture tax[8]. Thirdly, companies can increase the amount of debt to benefit from the tax deductibility of interest[9]. Financing operations with debt rather than equity may be advantageous from a tax point of view. By financing its operations with debt, the merged firm can reduce its tax burden through deductions of interest expenses. Several studies were conducted to analyse the impact and influence of tax benefits in M&A activity. Auberbach and Reishus (1986) evaluate the potential tax benefits companies could obtain through this type of operation. The authors found that potential tax benefits could play an important role only for a small sample of M&A, however estimated gains from step-up and leverage increase were not relevant[10]. Similarly, Auberbach and Reishus (1987) concluded that the most significant tax benefit were the unused tax credits and losses, especially when used by the acquiring company

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[7] If the taxable income is not enough to offset the current year´s loss, the company can carryforwards the rest of unused tax credits for the next year, under certain rules.

[8] In USA, when a company deducts asset´s depreciation to the taxable income, tax payer is obliged to report the gains obtained from transfer of the asset. These gains are treated as ordinary income and subjected to capital gain tax.

[9] See Modigliani and Miller (1963)

[10] Only 1/3 of the total sample presented gains higher than 10% of the target´s market value.

to shelter income from the target company. Again, increasing leverage and step-up were not relevant tax factors. By comparing a sample of mergers with pseudomergers, to analyse M&A activity, Auberbach and Reishus (1988) found little evidence of gain from interest deductions, step-up and unused tax credits and losses.[11] Hayn (1989) found a positive relationship between tax attributes of the acquired company (NOLs, unused tax credits or step-up asset basis) and abnormal returns obtained from both-side shareholders following the announcement period, suggesting that tax attributes could be a motivation for acquisitions.

Potential gains arising from tax attributes can represent an increase in value of the combined firm, in the form of higher premiums paid by the acquired company[12]. Moore and Pruitt (1987) conclude that higher merger premiums at the announcement date are not due to tax motivation[13], arguing that NOLs are priced in capital markets and are partially reflected in the shares price of loss firms. Kaplan (1989) have estimated the importance of tax benefits in premiums paid of 76 Management Buyouts (MBO) and concluded that these tax benefits were a significant source of wealth for MBO operations. The value of tax benefits (mostly from interest deductions) represented between 21% and 142,6% of the premium paid to pre-buyout shareholders, which is a wide and surprising range[14]. Erickson and Wang (2007) found that target´s organizational form influences the premium paid by the acquirer. By comparing two different organizational forms (S and C), they concluded that S corporations have higher premiums comparing to C corporations, once the sale can generate future tax deductions for the acquirer.[15] Sherman

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[11] Previous studies presented by Auberbach and Reishus were subjected to many restrictions.
[12] See Gaugan (2015).
[13] With anti-merger tax-credit transfer provisions (TRA 1986), incentives for profitable firms to merge with loss firms were reduced due the probability of unused NOLs to expire.
[14] Moreover, the capital gains tax liability from the shares sold by pre-BO shareholders, represented 15% of the premium.
[15] These benefits represented 12% to 17% of deal´s value, mainly related to step-up in target asset basis.

(1972) pointed important tax advantages arising from conglomerate mergers, associated with the use of debt and better growth opportunities[16].

Potential tax benefits associated with unused tax losses and credits, increasing leverage, organizational structures can motivate merger and acquisitions activity and can usually be reflected in higher premiums paid by the acquirers. More recently tax avoidance has been studied as a consequence of M&A, rather than a determinant of such operations.

2.2   Tax avoidance following M&A

There is extent literature about multinationals tax avoidance activity around the world, mainly from US-based companies. Corporate tax avoidance can be defined as all tax planning transactions that clearly reduce the tax burden of a company. Usually, multinational firms are structured by a parent in a country with a specific tax jurisdiction and foreign affiliates with a different tax jurisdiction. Typically, these foreign affiliates are located in countries with lower statutory tax rates (tax havens) that can be very attractive for the parent to incur in some tax planning schemes to reduce its combined tax burden. As previously mentioned, US is one of developed countries with higher statutory tax rate (35%) and one of the few with a worldwide taxation system[17]. Contrary to most of the developed countries, where foreign income is only taxed in the foreign country, US multinationals pay additional taxes from the income of their foreign subsidiaries when the income is repatriated to the US.[18] Clearly, this system makes US companies less competitive when compared with countries with an exemption tax system[19]. Hence, US multinational firms are increasingly becoming more tax aggressive and entering in tax

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[16] Conglomerates offer better growth and expansion opportunities, using its earnings instead of paying dividends, subjected to high capital gains tax rate.
[17] According to EY (2015) report, only 6 out of 34 OECD countries have a worldwide taxation system.
[18] The additional tax paid from foreign income is called repatriation tax rate.
[19] Dividends from foreign business activities usually are not taxed under tax exemption system (See ICC Policy Statement (2003)).

schemes and tax planning to avoid taxes[20]. Cross-border M&As might offer an opportunity for corporate tax avoidance. Huizinga and Voget (2009) have studied the effect of international tax system on the structure of cross-border M&A operations. They found that international double tax liabilities[21] affect the organizational structure of multinationals after cross-border M&A. Moreover, concluded that countries with low level of double taxation are more likely to attract parent firms. Barrios et al. (2012) found surprising conclusions about the importance of taxes on foreign subsidiaries location. The authors conclude that the combination of foreign income taxation and supplementary parent income taxation are independent and may disincentive the foreign subsidiary location choice[22]. Huizinga et al. (2012) evaluate the impact of additional international taxation on the target company. The authors concluded that target shareholders bear the total additional international taxation resulting from the cross-border transaction. Total tax costs of the operation are fully supported by target shareholders, not affecting acquiring shareholders. Becker and Fuest (2010) found that in M&A operations, tax credit system[23] possibly is not optimal and that exemption system can take parent companies to overinvest in low tax countries.

As previously defined, corporate tax avoidance is referred as all tax planning transactions that explicitly reduce the amount of taxes paid by a company. Concepts such as tax shelter, tax aggressiveness, tax planning and tax evasion are strongly associated with the notion of tax avoidance (Hanlon & Heitzman, 2010). There are several measures of tax avoidance present in the literature. The most widely measure used in the literature to test

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[20] See Klassen and Laplante (2012).

[21] These international tax liabilities represent non-resident withholding taxes.

[22] This result is explained by the option of parent company to defer taxes paid on foreign income until being repatriated.

[23] Tax credit system allow companies to receive a tax credit from taxes paid on foreign income. Tax credit system allow companies to receive a tax credit from taxes paid on foreign income. This tax credit can then be deducted, with some limitations, to parent´s domestic taxes

evidence of changes in corporate tax avoidance is the effective tax rate (ETR). Rego (2003) have studied if economies of scale for international operations result in more tax avoidance opportunities. The author found evidence of economies of scale for tax planning. The author adds that while larger firms have higher ETRs[24], multinational firms with greater pre-tax income and more extensive foreign operations exhibit lower ETRs. Mills et al. (1998) have analyzed how much firms invest in tax planning. Similarly, the authors concluded that larger firms invest less in tax planning than smaller firms. Moreover, firms with foreign operations also spend more in tax planning than firms with no foreign activity. Dyreng et al. (2010) found that the levels of corporate tax avoidance can be highly influenced by executives. The authors observed that corporate tax avoidance is more pronounced with the entry of the executive and that, ends after the executive leaves the company. Arguing that top executives can effectively manage firm tax expenses reducing ETR ratios.

There is no accordance in the literature as to whether leverage increases following an M&A. Ghosh and Jain (2000) empirically found strong evidence of higher financial leverage levels following mergers. The authors have observed an average (permanent) increase of 17% comparing to leverage levels of the combined firm before the merge[25]. Nevertheless, Graham and Tucker (2006) concluded that firms that engage in tax shelters have less debt ratios. The authors add that interest tax deductibility benefit is much lower than the tax savings generated by tax shelters, being seen as substitutes for tax purposes.

Multinational tax avoidance activities are strictly associated with advantages that different tax jurisdictions countries typically offer (Schwarz, 2009). Multinationals firms (MNFs) have the advantage to shift generated income between countries with different

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[24] Larger firms have higher ETRs due to political costs.
[25] Levels of increased leverage remain for 5 years after the merge.

tax jurisdiction[26]. Income shifting can be made by setting intra-firm transfer prices on parent-affiliate operations, by choosing intellectual property location or by planning the moment when foreign income received is repatriated[27]. MNFs can shift income by increasing (decreasing) export prices to high-tax regions (tax havens)[28]. Clausing (2003) found that country´s tax rate affects significantly the intra-firm trade prices. Intangible assets transfer offers a unique opportunity for income shifting strategies (Karkinsky & Riedel, 2012). Since intellectual property, like patents, are not a homogeneous good, it is more difficult to have a comparable market price for such transaction, according to arms-length principle. Governments are extremely concerned with MNFs´ tax aggressiveness to reduce, at any cost, their tax burden. Klassen and Laplante (2012) found evidence that firms in US with lower average foreign tax rates are more aggressive income shifters due to changes in US tax policy[29]. They estimated that, between 2005 and 2009, companies with lower average foreign tax rates have shifted more $10 billion per year out of United States[30]. The high statutory tax rate imposed by US government can be the origin of increasingly tax avoidance activity of US firms. Clausing (2009) found evidence of the tax rate-gap between US and foreign countries being the responsible of increasing tax avoidance incentives and revenue lost, pointing formulary apportionment of international income as a solution for income shifting. EY (2015) report estimated the impact of a reduction in US statutory corporate tax rate on cross-border M&A. A reduction of 10 ppt in statutory corporate tax rate would avoid that 1,300 US companies and affiliates left to OECD foreign acquirers: "…Unites States would have shifted from a $179 billion deficit with OECD countries to a $590 billion surplus, a $769 billion shift".

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[26] See Huizinga and Laeven (2008) and Bartelsman and Beetsma (2003)
[27] (e.g. United States)
[28] High-tax affiliates decrease pre-tax profit while tax heaven affiliates increase their profitability.
[29] Decrease of regulatory costs, less IRS audit intensity and increase in transfer-pricing enforcement activities out of US.
[30] By comparing with period from 1988 to 1992.

In the last years, it has been observed an increasingly pattern of cross-border M&A tax inversion deals. A cross-border M&A tax inversion occurs when parent firm moves its headquarters to a foreign country, so that the foreign firm becomes the "parent". Clearly, these agreements have emerged for tax purposes (Marples & Gravelle, 2014). By changing its headquarters to a low-tax country, the combined tax rate of the merged company reduces significantly. Desai and Hines (2002) have investigated the determinants of corporate inversions. They concluded that larger and more leveraged firms are more likely to invert. Countries such as Cayman Islands, Bermuda, Panama or British Virgin Islands have no corporate income tax rates, being considered pure tax havens[31]. However, other countries in Europe, like Ireland, Netherlands or Liechtenstein, though not being considered pure tax havens, have very low corporate income tax rates[32]. Desai et al. (2006) have studied the reasons for transactions in tax havens. The authors found that the affiliates were allocated in large tax haven countries with the purpose of transferring taxable income.

Although there is extent literature showing evidence of tax avoidance strategies of multinational companies among countries, few studies present tax avoidance strategies as consequence of M&A activity. Belz et al. (2013) have studied changes in tax avoidance of targets of European M&A. They have observed a 3% decrease in target´s ETR following M&A and even, an 8% decrease for tax aggressive acquirers. However, this result was obtained graphically, so there is no empirical proof that, effectively, exist tax avoidance following M&A deal.

To sum up, there are several potential tax benefits that companies can acquire through a M&A agreement. Empirical studies show that multinational firms engage in tax

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[31] See Kudrle (2016).
[32] For the full list of OECD tax heaven list (See Gravelle; 2015).

avoidance activities to reduce its tax burden. Although it is claimed that these operations are done with tax motivation in mind, there exist still lack of evidence on the literature proving it.

2.3   Research Hypotheses

The purpose of this research is to search for evidence as to whether the level of corporate tax avoidance increases following an M&A operation. Is this evidence more pronounced for cross-border M&As operations? Can M&A deals between companies from the same sector provide tax synergies? Do some companies provide better tax conditions for M&A (e.g. lower tax rates, net operating losses)?

A concurrent paper by Belz et al. (2013) analysed the change in target´s ETR before and after deal, and found evidence of a 3% reduction following the deal. Nevertheless, their paper only documents such change graphically and such effect is only found for the target, thus it is relevant to perform a deeper analysis. The first research hyphotesis is as follows:

H1: *There is a decrease in acquirer´s effective tax rate following a M&A deal.*

Companies from same industry may have potential gains arising from M&A operation as reducing competition, economies of scale or increasing market power. Ciobanu et al. (2014) concluded that companies being from similar industry increases the probability of a success takeover. Devos et al. (2008) have estimated synergy gains arising from M&A. The authors found that tax savings represented 1.64% of additional gain, while operating synergies represented the remaining 8.38%. Thus, companies from the same industry, can also save higher amounts of taxes, which motives our second research hyphotesis:

H2: *There is a decrease in acquirer´s effective tax rate following the M&A deal if both acquirer and target belong to the same industry sector.*

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International tax rate differences among countries can influence the location of FDI and M&A flows. Erel et al. (2012) concluded that international tax differences were an increasing function of attractiveness of FDI. Hence, companies with lower tax rates can be seen as more desirable targets to engage in tax avoidance strategies. This suggests the following hypothesis:

H3: *There is a decrease in acquirer´s effective tax rate following the M&A deal if, in the year before the M&A deal, the acquirer´s level of the tax avoidance is higher than the target´s level of corporate tax avoidance.*

The literature relates frequently the impact of potential tax attributes that companies have, on M&A operation. If a target firm has operating tax losses, these losses can be transferred to the acquirer, or vice-versa, in order to reduce its earnings (e.g. Auberbach & Reishus, 1987). By offsetting the taxable income of the acquirer firm, it allows the acquirer to reduce the effective amount of taxes paid. Hence, the fourth hyphotesis is the following:

H4: *There is a decrease in acquirer´s effective tax rate following the M&A deal if target company presents losses the year before the M&A deal.*

Tracking the reasoning of H3, multinational firms can benefit from affiliates being located in low tax countries to engage in tax avoidance strategies via income shifting. Companies from certain industries can be strongly motivated to move their patents to low-tax countries and then charge a fee or royalty to high-tax country affiliates (See Dyreng et al. (2008)). As previously mentioned, it is difficult to establish the arm´s length principle for intangible assets, making it easier to shift income for companies in specific industries. Thus, the following hyphotesis is addressed:

H5: *There is a decrease in acquirer´s effective tax rate following cross-border M&A deals.*

3   Empirical Research

3.1.1   Data

The initial sample comprises all completed European M&A available on Thomson Reuters Eikon database occurred between 2005 and 2014. The period choice was based on implementation of International Accounting Standards for European companies[33], which increases comparability. By European M&A, we understand operations where both acquirer and target are European based. Several observations were excluded for the following reasons: European special member state territories were excluded due to restricted disclosure of financial data; we have also excluded deals where one or both companies had no identification code, which is essential to collect and match the financial data. All ownership percentages and forms of acquisition were considered in order to have a significant number of deals in our sample. After these steps, a sample of 1,031 deals was identified containing information about deal size, percentage acquired, transaction form, company´s nation, company industry, announcement date, form of transaction and company public status. The initial data covers 32 European countries, representing a total transaction value of 975€ billion, in which 334 M&As are cross-border deals, totalizing a transaction value of 404€ billion (41% of total transactions value). Figure 1 presents the total value of M&A transactions during 2005 and 2014, and the split value for cross-border and domestic deals. We can observe that 2006 was the year with higher value of total transaction, with 245€ billion spent in M&A. The lowest year in transactions value, was 2009, following the Global Financial Crisis. In Figure 2, it is observed that 2007 was

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[33] From 1 of January of 2005, European companies were obliged to prepare their consolidated financial statements according to IAS (See Regulation (EC) No 1606/2002 of the European Parliament and of the Council (2002)).

the year with more deals (167 deals) in the sample. After 2008, there is evidence of a clear divergence between the number of cross-border and domestic deals in Europe.

With the deals identified, we have collected financial statements data for both acquirer and target company for the same ten years, from 2005 to 2014, including headquarters location. The country base of a firm can be different from the headquarters location, so we deleted companies with headquarters out of Europe, in order to avoid possible misleading results. After collecting all the necessary data, the two data bases were merged, in order to associate the acquirer-target deal to its financial data. For the merger process, we have considered only one deal of each acquirer and target company. Once the merger was made by the identification code and by year, having more than one deal could imply an erroneous merger of both databases. A final sample of 10-years financial statement data was obtained for 707 deals, 226 of which are cross-border deals, from 27 different business sectors and 34 European countries. Because some variables used in this study are not available for all years and deals, the sample was further narrowed to 359 deals. Table 1 summarizes the process described above, as the number of acquirer firms per headquarters´ country.

3.2   Methodology

3.2.1   Measuring Corporate Tax Avoidance

In this research, to test our research hypotheses, three measures of tax avoidance were applied, in a similar approach to Chen et al. (2010) study. The authors applied two tax rate measures: Book ETR[34] and Cash ETR, and two other book-tax measures: MPBT[35] and DDBT[36]. Nonetheless, due to lack of available data, in this study only two of these

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[34] Also known as GAAP ETR in US context.
[35] Manzon-Plesko (2002) book-tax difference.
[36] Residual book-tax difference measure (See Desai and Dharmapala (2006)).

tax rate measures are used: Book ETR and Cash ETR. Book ETR (*BETR*) is defined as the ratio of income tax payable to EBT and was set as missing, when it assumed negative values or when higher than 1. This measure "reflects the aggregate proportion of the accounting income payable as taxes"[37]. The second measure, CASH ETR (*CETR*), is equal to cash taxes paid divided by EBT. Contrary to *BETR*, this measure captures tax deferral strategies[38]. These two measures of corporate tax avoidance only reflect non-conforming tax avoidance, so we add a third measure which could reflect the conforming tax avoidance: cash taxes paid divided by operating cash flow (*CONFTAX*). This measure was initially proposed by Hanlon and Heitzmann (2010) and later tested by Salihu et al. (2013). The authors found that this measure was statistically different from Book ETR and Cash ETR[39]. The reason to apply all these different measures is trying to capture the many features of tax avoidance from different companies, to get more consistent results. All the three variables were truncated to range between 0 and 1.

3.2.2   Econometric Approach

The econometric analysis is based on corporate tax avoidance valuation model present in literature but focused on M&A deals. This model is present in several studies such as Rego (2003), Mills et al. (1998), Dyreng et al. (2010) or Gupta and Newberry (1997) applied to different contexts. The standard model consists in explaining tax avoidance, through ETR, as a function of different firm characteristics that work as control variables. At first glance, to test the impact on acquirer's tax avoidance measures following the deal, we have created a dummy variable, *D_afterdeal*, which is equal to 1 from the year when the deal occurs until (2014) the end of the sample. By including this variable, in a

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[37] See Salihu et al. (2013).
[38] See Hanlon and Heitzmann (2010).
[39] In non-conforming tax avoidance is assumed that firms reduce simultaneously taxable income while increase book income. For conforming tax avoidance, if managers are not worried with market reactions to book income changes, they will reduce both book and taxable income (See Lee et al.;2015).

difference-in-differences model we expect to capture potential tax avoidance arising from the M&A operation itself and its effects during time.

To test our first hypothesis, the following difference-in-differences model was estimated (equation 1):

$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \beta_2 SIZE_{it} + \beta_3 CAPEX_{it} + \beta_4 INTANGIBLE_{it} +$

$\beta_5 INVENTORY_{it} + \beta_6 ACCRUALS_{it} + \beta_7 ROA_{it} + \beta_8 PPE_{it} + \beta_9 LEVERAGE_{it} +$

$\beta_{10} EQUITY_{it} + \beta_{11} TRUST_{ct} + \sum_{i=1}^{27} \varphi_z + \sum_{t=1}^{10} \delta_t + \sum_{c=1}^{34} \gamma_c + \mathcal{E}_{cizt}$,   (eq. 1)

where φ_z is industry fixed-effect specification for industry z; δ_t is the time fixed-effect variable for year t; γ_c represents country fixed-effect variable for country c and $\mathcal{E}_{cizt}$ is the error term. *TAXAVOID* is the corporate tax avoidance measure representing each one of the three measures explained above. To control firms´ characteristics, we have used the following variables as proxies: *LTOTALASSETS* is equal to the natural log of total assets of the firm and is used as a proxy for firm´s size, *CAPEX* is given by the ratio of capital expenditures to total assets, *INTANGIBLE* is defined as goodwill divided by total assets. *INVENTORY* represents inventory intensity measured as the ratio of inventory to total assets, *ROA* is a measure of firms´ profitability, equal to the ratio of net income to total assets, *PPE* represents capital intensity, defined as the ratio of property plant and equipment (PP&E) to total assets, *LEVERAGE* is defined as long-term debt divided by total assets. *EQUITY* is equal to equity of the company divided by total assets. *ACCRUALS* is a measure of earnings management, and is given by the ratio of EBT to operating cash flow, all divided by total assets lagged. This variable aims to control for corporate tax avoidance derived from earnings management.[40] Lastly, we have included, a country level variable, *TRUST* [41]. This variable, which reflects the trust in government,

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[40] See Desai and Dharmapala (2009)
[41] Variable *Trust* was found in The Global Competitiveness Reports of World Economic Forum.

is a proxy for the culture of a country. Robinson and Slemrod (2012) include several economic, political and culture measures to study the determinants of tax system variation among countries. The authors found that *TRUST* was the most reliable determinant of tax system variation.

To test the effect of M&A between companies from the same industry sector on acquirer´s tax avoidance, we have included, in equation (2), the variable *D_afterdeal_indust*[42] :

$$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{INDUST_{it}}} + CONTROLS + \varepsilon_{cizt}$$

(eq. 2)

in which the same controls from equation (1) are used for all the equations.

In Table 2, it is illustrated the industry sectors included in our sample, sorted by acquirer and target firm. We can observe that the higher number of firms belong to Banking & Investment Services (153), Software and Services (131) and Cyclical Consumer Services (87).

Equation (3) aims to test the relationship between acquirer's tax avoidance measures and *D_afterdeal_Taxavoid_{t-1}*, which is given by the interaction of *D_afterdeal* and target´s *Taxavoid* measure the year before M&A. This variable is equal to 1 when the target´s *Taxavoid* measure is lower than acquirer´s *Taxavoid* the year before the deal, and 0 otherwise. The economic reason for this hypothesis is that companies with lower tax rates can be seen as more desirable targets to engage in tax avoidance strategies. Each target´s *Taxavoid_{t-1}* measure corresponds to the same acquirer´s *Taxavoid* measure:

$$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{TAXAVOID_{it}}} + CONTROLS + \varepsilon_{cizt}$$

(eq. 3)

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[42] Given by the interaction of *D_afterdeal* and *indust*, in which *indust* is equal to 1 if both acquirer and target are from the same industry sector according to Thomas Reuters Business Classification (TRBC), and 0, otherwise

The fourth model assesses the potential benefit of target´s negative pre-tax income one year before deal in acquirer´s tax avoidance. Potential tax losses could be transfer from the target to the acquirer, or vice-versa, in order to reduce its earnings (e.g. Auerbach & Reishus, 1987). To achieve this result, it was included *D_afterdeal_loss*[43], where *loss* is equal to 1 when target´s pre-tax income one year before deal is negative and 0, otherwise. Equation (4) is the following:

$$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{LOSS_{it}}} + CONTROLS + \mathcal{E}_{cizt}$$

(eq. 4)

To evaluate the potential impact in tax avoidance after an international M&A operation, we have included an interaction variable, *D_afterdeal_domest*, where *domest* is equal to 1 if the operation is domestic and 0 if the operation is cross-border. The resultant equation (5) is presented below:

$$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{DOMEST_{it}}} + CONTROLS + \mathcal{E}_{cizt}$$

(eq. 5)

Lastly, we have extended our analysis, regarding the combined effect of both firms being from the same industry sector and the target company having operational losses one year before the deal. To test this effect, we have created an interaction variable, *D_afterdeal_indust_loss,* which represents the interaction between *D_afterdeal, D_indust* and *D_loss*[44]. Equation (6) is illustrated below:

$$TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{INDUST\_LOSS_{it}}} + CONTROLS + \mathcal{E}_{cizt}$$

(eq. 6)

Table 3 describes the variables applied in the econometric approach and the respective coefficient sign that is expected.

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[43] Interaction between *D_afterdeal* and *loss*.
[44] *D_indust* is a dummy variable, which is equal to 1, if both target and acquirer are from the same industry, and 0 otherwise. *D_loss* is equal to 1, if target´s pre-tax profit, in the year before deal is negative, and 0 otherwise.

3.2.3   Descriptive statistics

Table 4 summarizes statistics description of the variables used in the equations described above[45]. Regarding the three tax avoidance measures, acquirer´s *BETR* mean is equal to 16.5%, the lowest of three, with *CETR* and *CONFTAX* means being equal to 26.3% and 20.7%, respectively. The standard deviation of this 3 measures are significantly high with 0.165, 0.171 and 0.169, respectively. It should be noted that the value for *ROA* is equal to 0.061, which means that the average acquirer presents a positive net income. The average level of leverage ratio of acquirer is equal to 0.174, which means that 17.4% of total assets is long-term debt. Equity´s mean (median) ratio is equal to 0.415 (0.401), which mean that, on average, investors own 41.5% of total assets of the firm[46].

In Table 5, it is represented the coefficients of the pairwise Pearson correlation between the main variables. All tax avoidance measures seem to be statistically related with each other, expect *BETR* with *CONFTAX*. *ROA* and *TA* are negatively related with *BETR* and *CETR*. Regarding previous literature of the relation between *BETR* and firm level control variables, there seems to exist a consistent relationship. For example, *LTOTALASSETS* is positely correlated (correlation 0.05; p-value 0.00) with *BETR*, while *EQUITY* is negatively correlated (correlation -0.210; p-value 0.00) with *BETR*.

4   Results

Tables 6 to 10 present the initial results for our research hypotheses. The regression analysis is conducted using three different alternative proxies for corporate tax avoidance: *BETR*, *CETR* and *CONFTAX*[47]. In Table 6, three equations are performed, which

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[45] The descriptive statistics of control variables correspond to *BETR* as the tax avoidance measure applied.

[46] Although *LEVERAGE* and *EQUITY* are highly correlated, we find no evidence of multicollinearity.

[47] An additional measure for long-run cash tax avoidance was tested. However, it was not included because even after deal, this measure is capturing level of corporate the tax avoidance before the deal (See Dyreng et al. (2008)).

correspond to H1. From Table 7 to 10, interaction variables described above are added to the equations from Table 6, according to the remaining hypotheses. Additional tests were performed for a more reliable analysis of the results. To test the specification of the model, we have performed the Ramsey regression specification-error test (RESET) for omitted variables, and we concluded that all regressions had no omitted variables. For spurious regression diagnostic, we have performed a Durbin-Watson test for all regressions. No evidence of spurious regression was found. We have also tested for the multicollinearity, and no evidence of multicollinearity was found for all the regressions[48]. To control heteroskedasticity, we have used Huber-White estimator to obtain robust standard errors[49].

4.1   Hypotheses Results

4.1.1   Tax avoidance following M&A deal

Focusing on Table 6, we can observe a negative coefficient for *D_afterdeal* variable, in columns (1) and (2), when using *BETR* and *CETR*. Although the sign is consistent with our hypothesis, there is no statistical evidence of higher corporate tax avoidance for the acquirer following an M&A operation. Belz et al. (2013) found, graphically, a decrease of ETR after the deal but for the target company. Overall, although taxes might influence a M&A operation, it is inconclusive as to whether, the overall level of corporate tax avoidance is affected by an M&A deal.

Regarding the control variables, summarizing the impact of the control variables in our tax avoidance measures, it is observed that *Ltotalassets* is positive for all 3 measures, although it is statistically significant only when *CETR* and *CONFTAX* are applied. This

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[48] Applying the variance inflation factor (VIF), VIF values for coefficient were never higher than 3, except for equation (6), in which *D_afterdeal* presented a VIF approximately equal to 4.
[49] Robust standard errors are applied in all estimated equations.

result is consistent with the literature (e.g. Rego, 2003; Zimmerman, 1983) which suggests that larger firms support higher tax burdens. For *Capex*, there is statistical evidence of positive relationship with *BETR*, which is consistent with Dyreng et al. (2010). Acquirers with higher levels of capital expenditures seem to have higher book ETRs. However, with *CETR*, it has a negative and significant relationship. *Intangibles* as described above are given by the ratio of goodwill to total assets. We find evidence of a very significant and positive relationship with all tax avoidance measures. It seems that acquirers with high amounts of subscribed goodwill in their financial statements, face higher tax burdens. There is extent literature about goodwill, in the context of business combinations, regarding the valuation of these intangibles in purchase premiums. International Financial Reporting Standard 3 (IFRS 3) establishes the principles and requirements that acquirers should apply to measure goodwill. An accurate measurement of goodwill isn't simple once, first, it is difficult to assign a discrete value for these assets, and second, it is not easy to know how changes in value should be treated after their recognition in financial statements[50]. For *Inventories*, there is a positive and significant relationship with *BETR* and *CONFTAX*. This result is consistent with Gupta and Newberry (1997) contrary to Mills et al. (1998), who found no consistent relationship between inventory intensity and tax expenditures. For *ROA*, there is statistically evidence of a negative relationship with the three measures. This is consistent with Mills et al. (1998) that more profitable firms engage in more tax planning activities. *Accruals*, as measure of earnings management, it is significantly and positively related with *CASH ETR* and *CONFTAX*.

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[50] See Abeysekera (2012). Norbäck et al. (2009) also found that goodwill treatment had impact in foreign acquisitions pattern.

4.1.2 Tax avoidance following M&A deal in the same industry

The second research hypothesis is tested in Table 7, by adding an interaction variable between *D_afterdeal and D_industry*. We find statistical evidence of an inverse relationship between *D_afterdeal_indust* and *BETR*, in column (1). The result suggests that, *ceteris paribus*, acquirer´s *BETR* decreases by, approximately, 3% after deal, if both acquirer and target belong to the same industry sector. These results are consistent with Fee and Thomas (2004) findings, who found evidence of stronger operating performance the year after the merge, for a sample of horizontal mergers. Healy et al. (1992) found evidence of higher operating cash-flow after merger, for a sample of US firms. Although not tabulated, the average EBT for all the acquirers from horizontal M&As, in our sample, is equal to $3.06 billion. Thus, for horizontal M&A operations, a decrease in *BETR* of 3% would represent, on average, $0.09 billions of tax savings for the average acquirer.

4.1.3 Tax avoidance following M&A deal when target has lower ETR

Table 8 tests H3, which aims to test whether acquirer´s effective tax rate decreases if the target´s effective tax rate is lower one period before deal. The results suggest that there is no evidence of lower level of corporate tax avoidance following M&A operation when, the period before, acquirer´s *ETR* is higher than target´s *ETR*. The three tax avoidance measures exhibit a negative sign, however, none presents statistical significance. In order to better understand this ambiguous result, an untabulated analysis was performed by computing the mean of each tax avoidance measure, for both acquirer and target, one year before the deal. The mean difference among companies varies between 1% and 2%, in absolute terms, which is somehow consistent with our results in Table 8.

4.1.4 Tax avoidance following M&A deal when target has negative pre-tax profit

The fourth hypothesis, in Table 9, assesses whether the acquirer´s level of corporate tax avoidance increases if the target company presents negative pre-tax profit in the period pre-deal. We found statistical evidence of lower tax burden for the acquirer company if the target presents a negative pre-tax profit the period before deal. In all estimations, *D_afterdeal_loss* exhibit a negative sign, which is statistically significant when *BETR* and *CONFTAX* are applied. Based on the results, it is expected a decrease in ETR between 6% and 9% for the acquirer company following the M&A deal. Our results are consistent with previous findings, such as in Auberbach and Reishus (1986;1987;1988) studies, who found evidence of potential gains in merger activity arising from transference of tax attributes from one company to offset the losses of the other, and Hayn (1989), who argued that tax attributes could be an important driver for acquisitions. Consistent with this findings, is the idea that target NOLs carryforwards can be seen as an economic asset for the target company, in the sense that can reduce the amount of taxes paid in the future[51].

4.1.5 Tax avoidance following cross-border M&A deal

Table 10 presents our final hypothesis (H5), which assesses whether acquirer´s tax burden is lower when the deal is cross-border, in contrast with domestic ones. The results obtained evidence ambiguous conclusions for this hypothesis. On one hand, the results present a negative relation between *BERT* and *D_afterdeal_domest*, which means that acquirer´s *BETR* will decrease after deal, if the operation is made between companies operating in the same country. This result can possible be explained by the increase of market power in acquirer´s country, leading to a stronger operational performance post-

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[51] See Bottomlee et al. (2009)

deal. However, it is contrary to the theory that companies from high-tax jurisdiction enter in M&A deals with companies from low-tax countries, in order to reduce the amount of taxes paid via income shifting (e.g. transfer prices). Erel et al. (2012) found that taxes seem to influence cross-border mergers decision, once acquirer is usually from a higher-tax jurisdiction country than target. It is important to note that, the authors have included mergers from companies all over the world, while in this research, only European M&A were included. The average corporate tax rate difference between all acquirer´s and target firms for our sample, corresponds to 0.4%, which is quite low. On the other hand, when we use *CONFTAX,* in equation (3), a statistical evidence of a positive effect between *CONFTAX* and *D_afterdeal_domest* is found. This result suggests that, acquirer´s *CONFTAX* will decrease by 2% whether the deal is cross-border. Overall, the results obtained are inconclusive, once different tax avoidance measures give different conclusions, regarding the effect of the deal be cross-border or domestic.

4.1.6   Further analysis

Based on the results obtained in H2 and H4, a further analysis was performed. In Table 11, we tested jointly whether there is evidence of tax avoidance, when acquirer and target belong to the same industry sector and the target company presents operational losses the year before the deal. The results evidence a negative relationship between *D_afterdeal_indust_loss* and *BETR*. In column (1), this result suggests statistical evidence of a 9% decrease in acquirer's *BETR*, meaning that ETR decreases even further for deals in which both companies operate in the same industry and the target has losses in the year pre-deal.

4.2   Robustness Checks

To access the robustness of our results, we have performed several sensitivity analyses. Four country level variables that could be relevant to explain M&A activity and its

relationship with tax avoidance were introduced. The literature refers many times the relationship between horizontal mergers and anti-trust policy. Many large firms enter into anti-competitive horizontal mergers, in order to eliminate competition and increase its market power (Lee, 2013). These operations, made by monopolistic firms can seriously affect the efficiency of the market. Anti-trust laws play a relevant role by maintaining the basic rules of competition, in order to avoid these monopolistic practices[52]. Thus, a measure of effectiveness of anti-monopoly policy (*Anti-trust*), for each country was added as component of domestic competition. A proxy for the macroeconomic environment of a country (*Macroeconomic*) was introduced. Erel et al. (2012) found that macroeconomic performance could make cross-border M&A more attractive for acquiring firms. Choi and Jeon (2011) also found a long-run equilibrium relationship between some macroeconomic variables and merger activity. The variable *Macroeconomic* is a composition of several indicators of the country[53]. The quality and strength of accounting standards affects the volume of M&A activity, once it is fundamental, a good disclosure for the identification of potential targets (Rossi & Volpin (2004)[54]. Bris and Cabolis (2008) have built some measures of change in investor protection. The authors found a positive relationship between the quality of shareholders´ protection and accounting standards in acquirer´s country and the merger premium paid in cross-border deals, relatively to domestic deals. Thus, the variable *Accounting* was added as a measure of strength of auditing and accounting standards. Finally, we introduced the variable *R&D*, which reflects the level of R&D spending by companies in a country, relative to international peers. Bertrand and Zuniga (2006) found that international M&A operations

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[52] Anti-competitive practices such as predatory pricing and exclusive dealing (See Armstrong and Porter, 2007).
[53] This variable includes government budget balance, gross national savings, inflation, government debt and country credit ranking, all taken from Global Competitiveness Report.
[54] The authors used an index of the quality of accounting standards as a proxy for investors protection developed by La Porta et al. (1998).

can stimulate R&D expansion. Furthermore, several countries have tax incentive policies for companies to increasing their R&D expenditures[55]. Additionally, for this analysis, deals involving companies from the financial sector[56] were excluded, once this sector has to follow different regulations that non-financial firms. In Table 12, we test the robustness of H1, and it is observed that the inclusion of the new variables does not change the initial conclusions. Moreover, although not tabulated, all other hypotheses were tested and we found that all initial results are robust. Analyzing the effect of the new variables on tax avoidance measures, *Anti-trust* appears to be negatively related with *CETR* and *CONFTAX*. This result indicates that the higher the level of effectiveness of anti-monopoly policy in acquirer's country, the lower the amount of taxes paid by the acquirer firm. For *R&D*, there is statistical evidence of a positive relationship with *CONFTAX*, indicating that the higher the level of R&D spending in acquirer´s country, the lower the level of conforming tax avoidance.

In order to triangulate our results, a factor analysis was performed. It is based on a principal component analysis, in which the three tax avoidance measures were incorporated into a one single factor. Table 13 presents the results obtained in this analysis. The results suggest that *D_afterdeal_loss, D_afterdeal_domest* and D_*afterdeal_indust_loss* seem to be negative and statistically significant when all measures are combined, which is consistent with our initial findings. Nevertheless, the coefficient for *D_afterdeal_indust* does not appear to be statistically significant. The effect of this variable is dissipated, when the three tax measures are combined into one single factor.

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[55] European Commission set out investment in R&D as one of their 5 priorities to increase Europe´s competitiveness (See Straathof et al., 2014).
[56] Companies from Banking and Investments Services and Collective Investments industry sector.

5   Conclusions

This paper investigates the change in the level of corporate tax avoidance following an M&A deal. Five hypotheses were tested on a sample of 359 deals, involving 34 European countries, for a period of 10 years, between 2005 and 2014. Three measures of tax avoidance were used in order to capture the main features arising from tax avoidance. Regarding the main hypothesis, no evidence of tax avoidance following an M&A operation was found for all three measures. On one hand these findings are, in part, contrary to Belz et al. (2013), who found a decrease of ETR by 3% following M&A deal. On the other hand, the authors simply shown this reduction graphically. Additional analysis found that, if both acquirer and target operate in the same industry, acquirer´s book effective tax rate is reduced by about 3% following deal. A possible explanation is the increase of operational synergies arising from horizontal mergers, consistent with Fee and Thomas (2004) findings. No evidence of tax avoidance following M&A was found, when 1 year after deal target´s tax rate is lower than acquirer´s tax rate. The lower average tax rate difference between acquirers and targets in the sample, might explain this result. Further analysis on this is recommend, perhaps, including only deals where the tax rate difference between both companies is more relevant. We have also found evidence of tax avoidance following M&A, if the target had negative pre-tax income the year before deal. The acquirer´s tax burden is reduced between 6.2% and 8.6%. This reduction increases to about 9% for book ETR if the deal is horizontal and the target had negative pre-tax income one year before deal, simultaneously. This result is consistent with, e.g. Hayn (1989), regarding the potential transfer of tax attributes from acquirer to target, and vice-versa, in order to reduce the amount of taxes paid. Finally, regarding the effect of domestic vs cross-border deals in tax avoidance, we found ambiguous results. When book ETR is used there is evidence of lower taxes paid for the acquirer firm, if the deal is

domestic, rather than if it is cross-border. However, when *CONFTAX* is used, the contrary result is obtained. In part, this result is surprising, since it is contrary to the theory of cross-border deals as a way for MNEs to shift income for low-tax jurisdiction countries, in order to avoid taxes. It can possible be explained by the increase of market power in acquirer´s country, leading to a stronger operational performance post-deal. These findings add a small but relevant contribution to the literature of corporate tax avoidance and M&A. First, this research provides empirical research of corporate tax avoidance in the context of M&A, which until now, the literature has focused timidly on this. Second, several findings regarding some features of M&A operations, such as horizontal mergers or operating losses, were also introduced in the context of tax avoidance. Notwithstanding, the hypothesis of lower taxes paid by the acquirer if target presented lower tax avoidance measure the year before deal failed, due to low tax differences between both acquirer and target firm. Despite our findings, more research on this field is still required. Not only focusing on European mergers, the inclusion of other countries other than US and Europe could provide some interesting findings in this field. Taking advantage of the growing tax inversion activity, especially between US and European companies, could be also interesting to include.

6   References

Abeysekera, I. (2012). Measuring and recognizing the value of purchased goodwill: A note on market measurement method. *Academy of Taiwan Business Management Review*, *8(3)*, 57-65.

Auberbach, A., & Reishus, D. (1986). Taxes and the Merger Decision: empirical approach. *NBER Working Paper, Nr. 1855.*

Auerbach, A., & Reishus, D. (1987). The impact of taxation on mergers and acquisitions, Mergers and Acquisitions, Alan J. Auerbach, ed., *University of Chicago Press*, 69-86.

Auerbach, A. and Reishus, David (1988). The effects of taxation on the merger decision, in A. Auerbach, ed., Corporate takeovers: causes and consequences, *University of Chicago Press,* 157-190.

Barrios, S., Huizinga H., Laeven L., & Nicodeme G. (2008). International Taxation and Multinational Firm Location Decisions. *Center for Economic Policy Research Discussion Paper Nr. 7047.*

Bartelsman, E., & Beetsma, R. (2003). Why pay more? Corporate tax avoidance through transfer pricing in OECD countries. *Journal of Public Economics, 87*, 2225-2252.

Becker, J., & Fuest C. (2010). Taxing foreign profits with international mergers and acquisitions. *International Economic Review, 51(1)*, 171-186.

Belz, T., Robinson, L.; Ruf, M.; & Steffens, C. (2013). Tax avoidance as a driver of mergers and acquisitions. *Working paper*.

Bierman, H. (1980). A Neglected Tax Incentive for Merges. *Financial Management, 14*, 29-32.

Bottomlee, T., Bazar, J., & Walker, A. (2009). Don´t ignore a Target´s NOLs: the price and structure of your deal can depend on them. *The M&A Journal 7 (9)*, 1-5.

Bris, A., & Cabolis, C. (2008). Adopting better corporate governance: evidence from cross-border mergers. *Journal of Corporate Finance*, *14(3)*, 224-240.

Brown, D., & Ryngaert, M. (1991). The mode of acquisition in takeovers: Taxes and asymmetric information, *Journal of Finance, 46*, 653-669.

Carleton, W., Guilkey, D., Harris, R., & Stewart, J. (1983). An empirical analysis of the role of the medium of exchange in mergers. *Journal of Finance, 38*, 57-82.

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010). Are family firms more tax aggressive than non-family firms? *Journal of Financial Economics, 95*, 41-61.

Choi, S. H., & Jeon, B. N. (2011). The impact of the macroeconomic environment on merger activity: evidence from US time-series data. *Applied Financial Economics*, *21(4)*, 233-249.

Ciobanu, R., Brad, L., Dobre, F., & Braşoveanu, I. V. (2014). Similarities between the acquirer and the target company in successful takeover bid offers. *Procedia Economics and Finance, 15,* 815-821.

Clausing, K. A. (2003). Tax motivated transfer pricing and US intrafirm trade prices. *Journal of Public Economics, 87*, 2207-2223.

Clausing, K. A. (2009). Multinational Firm Tax Avoidance and Tax Policy. *National Tax Journal, 62*, 703-25.

Cooper, M., & Knittel, M. (2006). Partial loss refundability: How are corporate tax losses used? *National Tax Journal, 59*, 651-663.

Desai, M., Hines, J. (2002). Expectations and expatriations: tracing the causes and consequences of corporate inversions. *National Tax Journal, 55*, 409-440.

Desai, M. A., Foley, C. F., & Hines Jr., J. R. (2006). The demand for tax havens. *Journal of Public Economics 90*, 513-531.

Desai, M., & Dharmapala, D. (2006). Corporate tax avoidance and high-powered incentives. Journal of Financial Economics, 79, 145-179.

Desai, M., & Dharmapala, D. (2009). Corporate tax avoidance and firm value. *Review of Economics and Statistics 91*, 537-546.

Devos, E., Kadapakkam, P. R., & Krishnamurthy, S. (2008). How do mergers create value? A comparison of taxes, market power, and efficiency improvements as explanations for synergies. *Review of Financial Studies, 22(3)*, 1179-1211.

di Giovanni, J. (2005). What drives capital flows? The case of crossborder M&A activity and financial deepening. *Journal of International Economics 65*, 127-149.

Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2008). Long-run corporate tax avoidance. *Accounting Review, 83(1)*, 61-82.

Dyreng, S. D.; Hanlon M. and Maydew, E. L. (2010). The effects of executives on corporate tax avoidance. *Accounting Review, 85(4)*, 1163-1189.

Erel, I., Rose, C. L., & Weisbach M. (2012). Determinants of Cross-Border Mergers and Acquisitions. *The Journal of Finance, 67*, 1045-1082.

Erickson, M. (1998). The effect of taxes of the structure of corporate acquisitions. *Journal of Accounting Research, 36(2)*, 279-298.

Erickson, M., & Wang, S. (2007). Tax benefits as a source of merger premiums in acquisitions of private corporations. *The Accounting Review, 82*, 359-387.

EY (2015). Buying and Selling: Cross-border mergers and acquisitions and US corporate income tax, 1-27.

Fee, E.C., & Thomas, S., (2004). Sources of gains in horizontal takeovers: Evidence from customer, supplier, and rival firms. *Journal of Financial Economics 74*, 423-460.

Fortune (2015). Pfizer, Allergan Confirm $160 Billion Merger Deal. Available in: http://fortune.com/2015/11/23/pfizer-allergan-merger/ [Access: 2/09/2016].

Gaugan (2015). Mergers, Acquisitions, and Corporate Restructurings. Wiley & Sons, Sixth Edition, 614-616.

Gilson, R. J., Scholes, M. S., & Wolfson, M. A. (1988). Taxation and the dynamics of corporate control: the uncertain case for tax-motivated acquisitions. In: Coffee, J., Lowenstein, L., Rose-Ackerman, S. (Eds.), Knights, Raiders and Targets: The Impact of the Hostile Takeovers. Oxford Univ. Press, New York, NY.

Ghosh, A., & Jain, P. C. (2000). Financial leverage changes associated with corporate mergers. *Journal of Corporate Finance, 6 (2000)*, 277-402.

Graham, J., & Tucker, A. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics, 81*, 563–594.

Gravelle, J. G. (2015). Tax Havens: International Tax avoidance and Tax Evasion. *Congressional Research Service Report*, *7-5700*, 605-527

Gupta, S., Newberry, K., 1997. Determinants of the variability in corporate effective tax rates: evidence from longitudinal study. *Journal of Accounting and Public Policy, 16*, 1-34.

Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting & Economics, 50 (2-3)*, 127-178.

Hayn, C. (1989). Tax attributes as determinants of shareholder gains in corporate acquisitions. *Journal of Financial Economics, 23*, 121-153.

Healy, P., Palepu, K., Ruback, R., (1992). Does corporate performance improve after mergers? *Journal of Financial Economics, 31*, 135-176.

Huizinga, H., & Laeven, L. (2008). International Profit Shifting Within Multinationals: A Multi-Country Perspective. *Journal of Public Economics, 92(5-6)*, 1164-1182.

Huizinga, H., & Voget, J. (2009). International taxation and the direction and volume of cross-border M&As. *Journal of Finance, 64(3)*, 1217-1249.

Huizinga, H., Voget, J., & Wagner, W. (2012). Who bears the burden of international taxation? Evidence from cross-border M&As. *Journal of International Economics, 88(1),* 186-197.

ICC Policy Statement (2003). Tax exemption versus Tax Credit Systems for Foreign Dividends: Comparison and International Trends, 1-4.

Kaplan, S. (1989). Management buyouts: Evidence on taxes as a source of value. *Journal of Finance, 44(3)*, 611-632.

Karkinsky, T., & Riedel, N. (2012). Corporate Taxation and the Choice of Patent Location within Multinational Firms. *Journal of International Economics, 88*, 176-185.

Klassen, K. J., & LaPlante, S. K. (2012a). Are U.S. Multinational Corporations Becoming More Aggressive Income Shifters? *Journal of Accounting Research, 50*, 1245-1285.

Knox and Harik (2015). The new merger wave. *Global Competition Review, 18(8)*. Available in: http://globalcompetitionreview.com/features/article/39601/new-merger-wave/ [Access: 2/09/2016].

Kudrle, R. (2016). Tax Havens and the Transparency Wave of International Tax Legalization. *University of Pennsylvania Journal of International Law, 37(4)*, 1153-1182.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. (1998). Law and finance. *Journal of Political Economy, 106*, 1113-1155.

Lee (2013). An optimal incentive tax policy on horizontal mergers. *Seoul Journal of Economics, 26(2)*, 239-254.

Lee, B., Dobiyanski, A., & Minton, S. (2015). Theories and Empirical Proxies for Corporate Tax Avoidance. *Journal of Applied Business and Economics, 17 (3)*, 21-34.

Manchin, M. (2004). Determinants of European cross-border mergers and acquisitions. European Commission. *European Economy Economic Papers, Nr. 212*.

Manzon, G., & Plesko, G. (2002). The relation between financial and tax reporting measures of income. *Tax Law Review, 55 (2)*, 175-214.

Marples, D., & Gravelle, G. (2014). Corporate Expatriation, Inversions, and Mergers: Tax issues. *Congressional Research Service*, *7-5700*, 1-17.

Martynova, M., & Renneboog, L. (2008). A Century of Corporate Takeovers: What Have We Learned and Where Do We Stand? *Journal of Banking and Finance 32 (10)*, 2148-77.

Mills, L., Erickson, M., & Maydew, E. L. (1998). Investments in tax planning. *The Journal of the American Taxation Association 20(1)*, 1-20.

Modigliani, F., & Miller, M. H. (1963). Corporate Income Taxes and the Cost of Capital: A Correction. *American Economic Review*, *53*, 433-443.

Monteiro, B. (2012). Determinants of Cross-Border Mergers and Acquisitions: an econometric study of transactions in the Euro Zone. Tese de Mestrado, Faculdade de Economia do Porto - Universidade do Porto.

Moore, N. H., & Pruitt, S. (1987). The Market Pricing of Net Operating Loss Carryforwards: Implications of the Tax Motivations of Mergers. *Journal of Financial Research, 10(2)*, 153-160.

Nguyen, H. T., Yung, K., & Sun, Q. (2012). Motives for Mergers and Acquisitions: Ex-Post Market Evidence from the US. *Journal of Business Finance and Accounting, 39(9-10)*, 1357-1375.

Nocke, V., & Yeaple, S. R. (2007). Cross-border Mergers and Acquisitions versus Greenfield Foreign Direct Investment: The Role of Firm Heterogeneity. *Journal of International Economics, 72*, 336-65.

Norback, P., Persson, L., & Vlachos, J. (2009). Cross-border acquisitions and taxes: Efficiency and tax revenues. *Canadian Journal of Economics 42*, 1473-1500.

Pautler, P. (2001). Evidence on mergers and acquisitions. *Bureau of Economics*, Federal trade commission, Washington DC.

Rego, S. O. (2003). Tax avoidance activities of U.S multinational corporations. *Contemporary Accounting Research, 20(4)*, 805-855.

Robinson, L., & Slemrod, J. (2012). Understanding multidimensional tax systems. *International Tax and Public Finance, 19(2)*, 237-267.

Regulation (EC) No 1606/2002 of the European Parliament and of the Council of 19 July 2002. *Official Journal of European Communities, L 243*, 1-4.

Rogers, R. (2016). Mergers and Acquisitions Review, Financial Advisors, *Thomson Reuters report.*

Rossi, S., & Volpin, P. (2004). Cross-country determinants of mergers and acquisitions. *Journal of Financial Economics, 74*, 277-304.

Salihu, I. A., Sheikh Obid, S. N., & Annuar, H. A. (2013). Measures of corporate tax avoidance: empirical evidence from an emerging economy. *International Journal of Business and Society, 14(3)*, 412-427.

Sherman, R. (1972). How Tax Policy Induces Conglomerate Mergers. *National Tax Journal*, 25, 521-529.

Schwarz, P. (2009). Tax-Avoidance Strategies of American Multinationals: An Empirical Analysis. *Managerial and Decision Economics, 30*, 539-549.

Straathof, B., Ladinska E.G., Kox, H., & R Mocking (2014). A study on R&D tax incentives: Final Report. *CPB Netherlands Bureau for Economic Policy Analysis*, *Nr.* TAXUD/2010/CC/104.

Sullivan, M. J. (1993). The merger tax status decision. *Journal of Accounting, Auditing, and Finance, 8*, 77-90.

Whinston, M. D. (2007). Antitrust Policy towards Horizontal Mergers. *Handbook of Industrial Organization,* 3rd ed. Mark Armstrong and Robert Porter, 2369-2440.

Zimmerman, J. (1983). Taxes and firm size. *Journal of Accounting and Economics, 5*, 119

7   Appendix

Figure 1: Total M&A transaction value by sort of deal (2005 through to 2014)
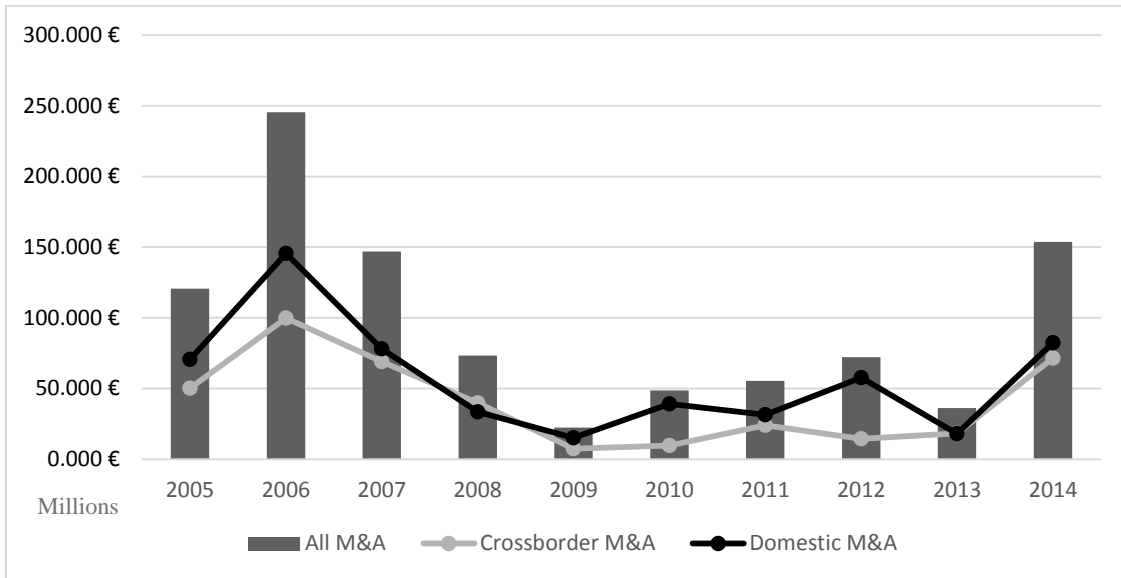
Notes: Figure 1 plots the total transaction value (in Millions €) of all M&A deals occurred between 2005 and 2014, taken from Thomson Reuters Eikon, sorted by deal (cross-border or domestic).

Figure 2: Total number of M&A deals by sort of deal (2005 through to 2014)
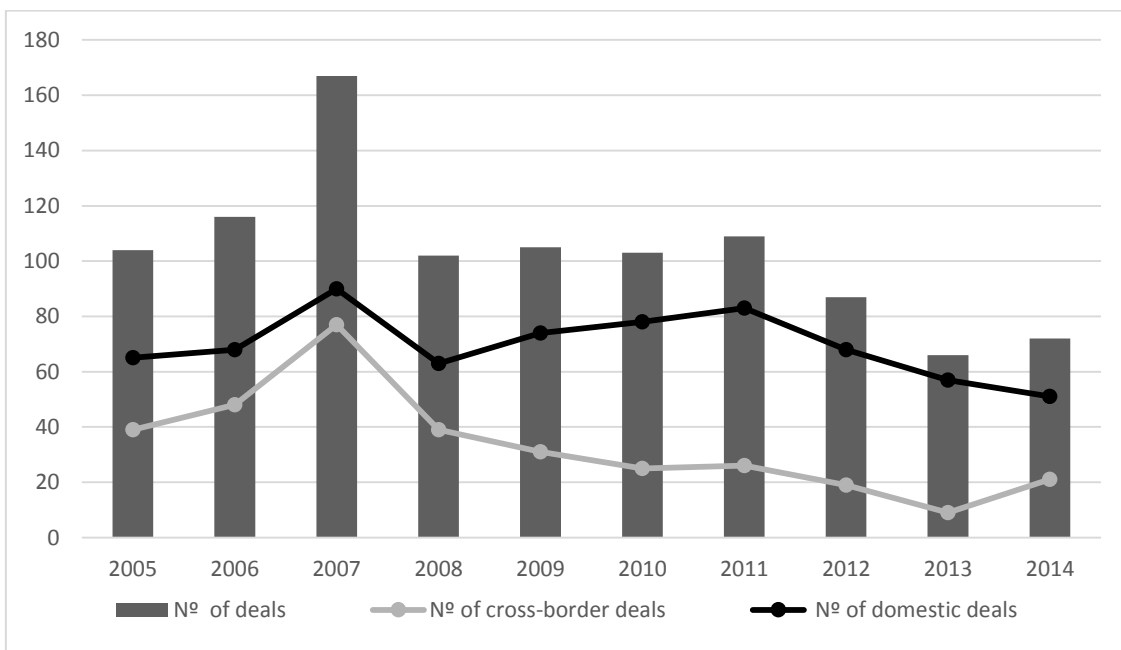
Notes: Figure 2 plots the total number of M&A deals occurred between 2005 and 2014 taken from Thomson Reuters Eikon, sorted by deal (cross-border or domestic).

Table 1: Headquarters statistics and database construction

Headquarters	Acquirers	Percentage	Database construction	
Austria	1	0.15	Initial sample (unbalanced)	
Belgium	27	4.01	M&A deals	1,031
Bosnia and Herzegovina	1	0.15	Financial Data	15,910
Bulgaria	1	0.15	Headquarters	41
Croatia	1	0.15	Non-European	6
Cyprus	9	1.34	Excluded:	
Czech Republic	2	0.30	Non-European	60
Denmark	35	5.20	Firms with not 10-years observations	1,140
Estonia	1	0.15	Financial Data (clean sample)	14,770
Finland	26	3.86	Merger of both databases	
France	158	23.48	Acquirer firms	707
Germany	99	14.71	Target firms	707
Greece	1	0.15	Final sample (balanced)	
Hungary	1	0.15	Acquirer financial data	7,070
Iceland	1	0.15	Target financial data	7,070
Ireland	12	1.78	Headquarters	34
Italy	1	0.15		
Kazakhstan	1	0.15		
Lithuania	1	0.15		
Luxembourg	4	0.59		
Netherlands	40	5.94		
Norway	44	6.54		
Poland	1	0.15		
Portugal	1	0.15		
Romania	8	1.19		
Russia	46	6.84		
Serbia	2	0.30		
Slovakia	1	0.15		
Slovenia	1	0.15		
Spain	1	0.15		
Sweden	77	11.44		
Switzerland	66	9.81		
Turkey	1	0.15		
Ukraine	1	0.15		
Total	673	100.00		

Notes: The excluded Non-European countries were: Bermuda, Cayman Island, Curacao, Singapore, New Zealand and United States of America. Some firms only presented data for the year of 2014.

Table 2: Industry descriptive statistics

Industry Sector (TRBC)	All Firms		Acquirer Firm		Target Firm	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Agriculture & Livestock	3	0.22	1	0.14	2	0.31
Applied Resources	17	1.26	9	1.28	8	1.24
Automobiles & Components	21	1.56	9	1.28	12	1.87
Banking & Investment Services	153	11.38	96	13.68	57	8.86
Chemicals	23	1.71	13	1.85	10	1.56
Collective Investments	11	0.82	7	1.00	4	0.62
Cyclical Consumer Products	56	4.16	26	3.70	30	4.67
Cyclical Consumer Services	87	6.47	47	6.70	40	6.22
Energy-Fossil Fuels	59	4.39	33	4.70	26	4.04
Food & Beverages	75	5.58	39	5.56	36	5.6
Healthcare Services	35	2.60	17	2.42	18	2.8
Industrial Commercial Services	84	6.25	44	6.27	40	6.22
Industrial Conglomerates	7	0.52	6	0.85	1	0.16
Industrial Goods	86	6.39	43	6.13	43	6.69
Insurance	31	2.30	17	2.42	14	2.18
Investment Holding Companies	24	1.78	16	2.28	8	1.24
Mineral Resources	69	5.13	36	5.13	33	5.13
Other Services	3	0.22	0	0.00	3	0.47
Pharmaceuticals & Medical Research	56	4.16	27	3.85	29	4.51
Real Estate	81	6.02	40	5.70	41	6.38
Renewable Energy	6	0.45	4	0.57	2	0.31
Retailers	51	3.79	26	3.70	25	3.89
Software & Services	131	9.74	64	9.12	67	10.42
Technology Equipment	42	3.12	16	2.28	26	4.04
Telecommunications Services	49	3.64	25	3.56	24	3.73
Transportation	51	3.79	24	3.42	27	4.2
Utilities	34	2.53	17	2.42	17	2.64
Total	1345	100.00	702	100	643	100.00

Notes: This table present all company industries included on this sample and describe the percentage of each industry for both acquirer and target company. The industry classification was made according to Thomson Reutures Business Classification (TRBC) terminology.

Table 3: Variables definition

Variable	Description (predicted sign)	Definition
Tax avoidance measures (*Taxavoid*)		
BETR	Book effective tax rate	Income tax payable divided by earnings before taxes. Book ETR is truncated to the range between 0 and 1.
CETR	Cash effective tax rate	Cash tax paid divided by earnings before taxes. *CETR* is truncated to the range between 0 and 1.
CONFTAX	Conforming tax avoidance	Difference between earnings before taxes and cash flow from operating activities *CONFTAX* is truncated to the range between 0 and 1.
Controls		
SIZE	Size of the firm (+)	Natural log of total assets.
CAPEX	Capital expenditures (-)	Capital expenditures scaled by total assets.
INTANGIBLE	Intangibles (?)	Goodwill scaled by total assets.
INVENTORY	Inventory intensity (+)	Inventory scaled by total assets.
ACCRUALS	Accruals (?)	Difference between earnings before taxes and operating cash flow divided by lagged total assets.
ROA	Return on assets (-)	Net income divided by total assets.
PPE	Capital intensity (-)	Property, plant and equipment (PP&E) scaled by total assets.
LEVERAGE	Leverage (-)	Long-term debt divided by total assets.
EQUITY	Equity value (-)	Equity value of the firm.
Country-level variables		
TRUST	Trust (?)	Cultural variable used by Robinson and Slemrod (2012), which measures trust in politicians. The survey question was: "Public trust in the financial honesty of politicians", 1 is very low and 7 is very high.
ANTITRUST	Anti-Trust (?)	Country-level variable, which measures the effectiveness of anti-monopoly policy. The survey question was: "In your country, to what extent does anti-monopoly policy promote competition?", 1 is does not promote competition and 7 effectively promotes competition.
MACROECONOMIC	Macroeconomic (?)	Country-level variable, which measures the quality of macroeconomic environment, in which, 1 worst and 7 best. This variable is a combination of other 5 variables: Government budget balance; Gross national savings; Inflation; Government debt; Country credit ranking.

ACCOUNTING	Accounting standards (?)	Country-level variable, which measures the strength of auditing and reporting standards. The survey question was: "In your country, how strong are financial auditing and reporting standards?", 1 is extremely weak and 7 extremely strong.
R&D	Research and Development (?)	Country-level variable, which measures company spending in R&D. The survey question was: "In your country, to what extent do companies spend on research and development (R&D)?", 1 is do not spend on R&D and 7 spend heavily on R&D.

Hypothesis Variables

D_afterdeal	(-)	Dummy variable equal to 1 from the year the deal occurs until the end of the sample period (2014), and 0, otherwise.
D_afterdeal_indust	(-)	Interaction between *D_afterdeal* and *indust*, in which, *indust* is equal to 1 if both acquirer and target belong to the same industry sector, and 0, otherwise.
D_afterdeal_taxavoid$_{t-1}$	(-)	Interaction between *D_afterdeal* and *taxavoid$_{t-1}$*, in which, *taxavoid$_{t-1}$* is equal to 1 if each corresponding tax avoidance measure is lower for target company than for acquirer the year before the deal, and 0 otherwise.
D_afterdeal_loss	(-)	Interaction between *D_afterdeal* and *loss*, in which, *loss* is equal to 1 if target´s earnings before tax is negative the year before the deal, and 0, otherwise.
D_afterdeal_domest	(-)	Interaction between *D_afterdeal* and *domest*, in which, *domest* is equal to 1 if the deal is domestic, and 0, otherwise.
D_afterdeal_indust_loss	(-)	Interaction between *D_afterdeal, indust* and *loss*, in which, *indust* is equal to 1 if both acquirer and target belong to the same industry sector, and 0, otherwise and *loss* is equal to 1 if target´s earnings before tax is negative the year before the deal, and 0, otherwise.
i		Firm
z		Industry sector where the firm is inserted according to TRBC.
c		Country from firm´s headquarters

Notes: (1) The Global Competitiveness Report (WEF – World Economic Forum).

Table 4: Descriptive Statistics

Variable	Obs	Mean	Std. Deviation	Min	Max	1st Quartile	Median	3rd Quartile
PANEL A: Tax avoidance measures								
BETR	2215	0.1650	0.1651	0.0000	1.0000	0.0610	0.1184	0.2092
CETR	2234	0.2632	0.1710	0.0000	1.0000	0.1482	0.2429	0.3418
CONFTAX	2440	0.2073	0.1690	0.0000	0.9990	0.0887	0.1722	0.2776
PANEL B: Controls								
Ltotalassets	2215	22.3314	2.2684	16.3665	30.4673	20.6082	22.2382	23.9522
Capex	2215	-0.0501	0.0413	-0.3219	0.0218	-0.0633	-0.0392	-0.0239
Intangible	2215	0.1546	0.1349	-0.1304	0.6011	0.0404	0.1209	0.2396
Inventories	2215	0.1063	0.0959	0.0000	0.7081	0.0218	0.0868	0.1663
Accruals	2215	-0.0108	0.0962	-1.2390	2.0373	-0.0480	-0.0172	0.0177
ROA	2215	0.0608	0.0508	-0.0528	0.5071	0.0277	0.0497	0.0788
PPE	2215	0.2246	0.1767	-0.1497	1.1588	0.0877	0.1877	0.3067
Leverage	2215	0.1741	0.1287	0.0000	0.7297	0.0745	0.1609	0.2509
Equity	2215	0.4126	0.1649	-0.2410	0.9781	0.2980	0.4014	0.5105
Trust	2215	4.5073	1.0421	1.5431	6.2076	3.6663	4.5484	5.4184

Notes: This table presents the descriptive statistics of variables applied in this research **Panel A** presents descriptive statistics for the five measures of tax avoidance. **Panel B** presents descriptive statistics for firm level control variables. Descriptive statistics for tax avoidance measures were based on the corresponding regression. Controls statistics were based on *BETR* regression.

Variable		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
BETR	(1)	1													
CETR	(2)	0.22*	1												
CONFTAX	(3)	-0.01	0.51*	1											
D_afterdeal	(4)	0.01	0.01	-0.01	1										
Ltotalassets	(5)	0.05*	0.08*	-0.01	-0.05*	1									
Capex	(6)	0.05*	0.03	0.07*	0.02	0.09*	1								
Intangible	(7)	0.08*	0.12*	0.09*	0.07*	-0.16*	0.12*	1							
Inventories	(8)	0.02	0.02	0.12*	0.02	-0.08*	0.12*	-0.26*	1						
Accruals	(9)	-0.14*	-0.11*	0.18*	0.01	0.04*	0.11*	-0.08*	0.08*	1					
ROA	(10)	-0.26*	-0.21*	0.11*	0.01	0.06*	0.00	0.01	0.02	0.28*	1				
PPE	(11)	-0.04*	-0.02	-0.08*	-0.02*	0.09*	-0.47*	-0.20*	-0.07*	-0.05*	0.02	1			
Leverage	(12)	0.00	-0.06*	-0.13*	0.04*	0.12*	-0.18*	0.04*	-0.16*	-0.02	-0.02	0.27*	1		
Equity	(13)	-0.21*	-0.09*	0.06*	0.01	-0.17*	-0.03*	0.18*	-0.03*	0.02	0.07*	0.04*	-0.45*	1	
Trust	(14)	-0.01	-0.11*	-0.05*	0.07*	-0.05*	0.06*	0.08*	0.10*	0.00	0.00	-0.11*	0.01	0.02	1

Notes: This matrix reports univariate analyses. The symbol * represents significant a level of 5%.

Table 6: Effect of D_afterdeal variable on tax avoidance measures (Hypothesis 1)

	(1) BETR	(2) CETR	(3) CONFTAX
D_afterdeal	-0.00687 (-0.94)	-0.00358 (-0.45)	0.00665 (0.94)
Ltotalassets	0.00152 (0.70)	0.00478** (2.10)	0.00592*** (2.85)
Capex	0.157* (1.73)	-0.326*** (-2.94)	-0.140 (-1.48)
Intangible	0.0879*** (3.04)	0.0914*** (2.73)	0.0520* (1.65)
Inventories	0.0796* (1.78)	0.0218 (0.46)	0.164*** (2.80)
Accruals	-0.0490 (-0.86)	0.115*** (2.78)	0.529*** (3.74)
ROA	-0.873*** (-9.08)	-0.971*** (-10.97)	-0.0976* (-1.66)
PPE	0.00132 (0.05)	-0.0370 (-1.05)	-0.0941*** (-3.45)
Leverage	-0.0957*** (-2.66)	0.0280 (0.74)	-0.0224 (-0.66)
Equity	-0.114*** (-3.64)	-0.00597 (-0.20)	-0.0108 (-0.34)
Trust	-0.00493 (-0.48)	-0.00879 (-0.75)	0.00206 (0.18)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.167*** (2.59)	0.162* (1.93)	-0.00103 (-0.01)
N	2215	2234	2440
Adj. R^2	0.164	0.176	0.184

Notes: $TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \beta_2 SIZE_{it} + \beta_3 CAPEX_{it} + \beta_4 INTANGIBLE_{it} + \beta_5 INVENTORY_{it} + \beta_6 ACCRUALS_{it} + \beta_7 ROA_{it} + \beta_8 PPE_{it} + \beta_9 LEVERAGE_{it} + \beta_{10} EQUITY_{it} + \beta_{11} TRUST_{ct} + \sum_{i=1}^{27} \varphi_z + \sum_{t=1}^{10} \delta_t + \sum_{c=1}^{33} \gamma_c + \mathcal{E}_{cizt}$

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 7: Effect of *D_afterdeal_indust* variable on tax avoidance measures ((Hypothesis 2)

	(1) BETR	(2) CETR	(3) CONFTAX
D_afterdeal	0.0126	-0.00898	0.00501
	(1.07)	(-0.73)	(0.46)
D_afterdeal_indust	-0.0282**	0.00801	0.00245
	(-2.21)	(0.61)	(0.20)
Ltotalassets	0.00120	0.00485**	0.00595***
	(0.55)	(2.13)	(2.85)
Capex	0.155*	-0.324***	-0.139
	(1.71)	(-2.93)	(-1.47)
Intangible	0.0892***	0.0905***	0.0517*
	(3.10)	(2.71)	(1.65)
Inventories	0.0701	0.0237	0.164***
	(1.56)	(0.50)	(2.79)
Accruals	-0.0502	0.114***	0.529***
	(-0.88)	(2.76)	(3.74)
ROA	-0.862***	-0.973***	-0.0980*
	(-8.98)	(-10.92)	(-1.66)
PPE	0.00418	-0.0375	-0.0941***
	(0.15)	(-1.07)	(-3.45)
Leverage	-0.0976***	0.0296	-0.0219
	(-2.73)	(0.77)	(-0.65)
Equity	-0.118***	-0.00480	-0.0104
	(-3.75)	(-0.16)	(-0.33)
Trust	-0.00448	-0.00896	0.00202
	(-0.44)	(-0.77)	(0.18)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.155**	0.166**	-0.000262
	(2.41)	(1.97)	(-0.00)
N	2215	2234	2440
Adj. R²	0.166	0.176	0.184

Notes: $TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{INDUST_{it}}} + CONTROLS + \mathcal{E}_{cizt}$, in which the same controls from equation (1) are used for all the equations.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 8: Effect of *D_afterdeal_taxavoid_{t-1}* variable on tax avoidance measures (Hypothesis 3)

	(1) BETR	(2) CETR	(3) CONFTAX
D_afterdeal	-0.00612	-0.00302	0.00748
	(-0.83)	(-0.38)	(1.04)
D_afterdeal_taxavoid_{t-1}	-0.0337	-0.0275	-0.0267
	(-1.20)	(-0.79)	(-0.99)
Ltotalassets	0.00144	0.00479**	0.00590***
	(0.66)	(2.10)	(2.84)
Capex	0.151*	-0.324***	-0.138
	(1.66)	(-2.92)	(-1.46)
Intangible	0.0878***	0.0912***	0.0515
	(3.04)	(2.73)	(1.64)
Inventories	0.0791*	0.0221	0.163***
	(1.77)	(0.47)	(2.79)
Accruals	-0.0476	0.115***	0.528***
	(-0.84)	(2.78)	(3.74)
ROA	-0.874***	-0.972***	-0.0973*
	(-9.08)	(-10.98)	(-1.65)
PPE	0.000328	-0.0367	-0.0941***
	(0.01)	(-1.04)	(-3.45)
Leverage	-0.0947***	0.0283	-0.0217
	(-2.63)	(0.74)	(-0.64)
Equity	-0.114***	-0.00586	-0.00986
	(-3.64)	(-0.20)	(-0.31)
Trust	-0.00521	-0.00877	0.00206
	(-0.51)	(-0.75)	(0.18)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.168***	0.162*	-0.000657
	(2.61)	(1.92)	(-0.01)
N	2215	2234	2440
Adj. R^2	0.164	0.176	0.184

Notes: $TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{TAXAVOID_{xit}}} + CONTROLS + \mathcal{E}_{cizt}$, in which the same controls from equation (1) are used for all the equations.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 9: Effect of *D_afterdeal_loss* variable on tax avoidance measures (Hypothesis 4)

	(1) *BETR*	(2) *CETR*	(3) *CONFTAX*
D_afterdeal	-0.00565	-0.00322	0.00769
	(-0.77)	(-0.41)	(1.08)
D_afterdeal_loss	-0.0864***	-0.0242	-0.0622*
	(-2.93)	(-0.57)	(-1.88)
Ltotalassets	0.00140	0.00474**	0.00581***
	(0.64)	(2.08)	(2.80)
Capex	0.156*	-0.326***	-0.135
	(1.73)	(-2.94)	(-1.43)
Intangible	0.0881***	0.0914***	0.0525*
	(3.05)	(2.73)	(1.67)
Inventories	0.0794*	0.0216	0.162***
	(1.77)	(0.46)	(2.78)
Accruals	-0.0494	0.115***	0.527***
	(-0.86)	(2.78)	(3.74)
ROA	-0.880***	-0.973***	-0.0985*
	(-9.12)	(-10.96)	(-1.67)
PPE	-0.00102	-0.0376	-0.0945***
	(-0.04)	(-1.07)	(-3.46)
Leverage	-0.0957***	0.0281	-0.0231
	(-2.66)	(0.74)	(-0.69)
Equity	-0.112***	-0.00524	-0.00925
	(-3.56)	(-0.18)	(-0.29)
Trust	-0.00479	-0.00871	0.00182
	(-0.47)	(-0.74)	(0.16)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.168***	0.163*	0.00125
	(2.62)	(1.93)	(0.02)
N	2215	2234	2440
Adj. R²	0.165	0.176	0.185

Notes: $TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{LOSS_{xit}}} + CONTROLS + \varepsilon_{cizt}$, in which the same controls from equation (1) are used for all the equations.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 10: Effect of *D_afterdeal_domest* variable on tax avoidance measures (Hypothesis 5)

	(1) BETR	(2) CETR	(3) CONFTAX
D_afterdeal	0.0287**	-0.00498	-0.00708
	(2.27)	(-0.44)	(-0.67)
D_afterdeal_domest	-0.0506***	0.00200	0.0199*
	(-3.80)	(0.16)	(1.66)
Ltotalassets	0.000359	0.00483**	0.00653***
	(0.16)	(2.10)	(3.07)
Capex	0.171*	-0.326***	-0.145
	(1.92)	(-2.94)	(-1.54)
Intangible	0.0713**	0.0920***	0.0570*
	(2.46)	(2.74)	(1.79)
Inventories	0.0640	0.0223	0.170***
	(1.41)	(0.47)	(2.89)
Accruals	-0.0520	0.115***	0.529***
	(-0.92)	(2.78)	(3.76)
ROA	-0.843***	-0.972***	-0.101*
	(-8.82)	(-10.90)	(-1.71)
PPE	-0.00271	-0.0368	-0.0922***
	(-0.09)	(-1.05)	(-3.40)
Leverage	-0.102***	0.0283	-0.0199
	(-2.81)	(0.74)	(-0.59)
Equity	-0.115***	-0.00605	-0.0116
	(-3.65)	(-0.21)	(-0.37)
Trust	-0.00437	-0.00880	0.00161
	(-0.43)	(-0.75)	(0.14)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.203***	0.161*	-0.0164
	(3.13)	(1.90)	(-0.21)
N	2215	2234	2440
Adj. R^2	0.170	0.176	0.185

Notes: $TAXAVOID_{it} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{DOMEST_{it}}} + CONTROLS + \mathcal{E}_{cizt}$, in which the same controls from equation (1) are used for all the equations.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 11: Effect of *D_afterdeal_indust_loss* variable on tax avoidance measures

	(1) BETR	(2) CETR	(3) CONFTAX
D_afterdeal	-0.00603 (-0.83)	-0.00334 (-0.42)	0.00727 (1.02)
D_afterdeal_indust_loss	-0.0901** (-2.32)	-0.0231 (-0.45)	-0.0531 (-1.34)
Ltotalassets	0.00147 (0.67)	0.00476** (2.09)	0.00588*** (2.83)
Capex	0.154* (1.71)	-0.327*** (-2.94)	-0.137 (-1.45)
Intangible	0.0884*** (3.06)	0.0915*** (2.73)	0.0527* (1.68)
Inventories	0.0805* (1.80)	0.0219 (0.46)	0.163*** (2.79)
Accruals	-0.0475 (-0.84)	0.115*** (2.79)	0.528*** (3.74)
ROA	-0.878*** (-9.11)	-0.972*** (-10.96)	-0.0987* (-1.67)
PPE	-0.0000940 (-0.00)	-0.0373 (-1.06)	-0.0942*** (-3.45)
Leverage	-0.0960*** (-2.67)	0.0279 (0.73)	-0.0232 (-0.69)
Equity	-0.113*** (-3.61)	-0.00561 (-0.19)	-0.0101 (-0.32)
Trust	-0.00480 (-0.47)	-0.00872 (-0.74)	0.00174 (0.15)
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.166*** (2.58)	0.162* (1.92)	0.000231 (0.00)
N	2215	2234	2440
Adj. R^2	SDSD	SDSD	SDS

Notes: $TAXAVOID_{xit} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \alpha_1 D_{AFTERDEAL_{INDUST\_LOSS_{xit}}} + CONTROLS + \varepsilon_{xizct}$, in which the same controls from equation (1) are used for all the equations.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 12: Effect of *D_afterdeal* on tax avoidance measures (H1) - Robustness analysis

	(1) *BETR*	(2) *CETR*	(3) *CONFTAX*
D_afterdeal	-0.00803	-0.00515	0.00658
	(-1.08)	(-0.65)	(0.92)
Country-level variables			
Trust	-0.00263	0.00616	0.0270*
	(-0.21)	(0.44)	(1.93)
Anti-trust	-0.0176	-0.0570**	-0.101***
	(-0.74)	(-2.44)	(-4.51)
Macroeconomic	0.00226	-0.00714	-0.00842
	(0.32)	(-0.91)	(-1.06)
Accounting	-0.000949	-0.0148	0.0189
	(-0.04)	(-0.62)	(0.82)
R&D	0.0345	0.0344	0.0600**
	(1.16)	(1.09)	(2.03)
Other Controls (output omitted)			
Time FE	YES	YES	YES
Country FE	YES	YES	YES
Industry FE	YES	YES	YES
Constant	0.1000	0.377**	0.103
	(0.58)	(2.03)	(0.57)
N	2167	2183	2383
Adj. R²	0.161	0.177	0.193

Notes: $TAXAVOID_{xit} = \beta_0 + \beta_1 D_{AFTERDEAL_{it}} + \text{CONTROLS} + \theta_1 ANTITRUST + \theta_2 MACROECONOMIC + \theta_3 ACCOUTING + \theta_4 R\&D + \sum_{i=1}^{27} \varphi_z + \sum_{t=1}^{10} \delta_t + \sum_{c=1}^{33} \gamma_c + \varepsilon_{xizct}$.

The dependent variables are the 3 measures of tax avoidance, from equation (1) to (3), in which: *BETR* represents the book effective tax rate, *CETR* is the cash effective tax rate and *CONFTAX* is a measure of conforming tax avoidance. Firm characteristic variables were included as control variables. Fixed effects for year, country and industry were included in all equations. Four country-level variables were added: *Anti-trust* measures the effectiveness of anti-monopoly policy; *Macroeconomic* measures the quality of macroeconomic environment; *Accounting* measures the strength of auditing and reporting standards; *R&D* measures the company spending in R&D. All country-level variables were taken from Global Competitiveness Report. No data for 2005 is available due to methodology changes (World Economic Forum). Control variables were omitted. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.

Table 13: Factorial analysis

	(1) Factor	(2) Factor	(3) Factor	(4) Factor	(5) Factor	(6) Factor
D_afterdeal	0.00545 (0.09)	0.108 (1.09)	0.0143 (0.22)	0.0149 (0.23)	0.132 (1.39)	0.0117 (0.18)
D_aftedeal_indust		-0.149 (-1.38)				
D_aftedeal_betr$_{t-1}$			-0.359 (-1.55)			
D_aftedeal_loss				-0.675** (-2.08)		
D_aftedeal_domest					-0.178* (-1.69)	
D_aftedeal_indust_loss						-0.764* (-1.95)
Controls (output omitted)						
Time FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Constant	-0.181 (-0.28)	-0.142 (-0.22)	-0.154 (-0.24)	-0.171 (-0.27)	-0.101 (-0.16)	-0.193 (-0.30)
N	1796	1796	1796	1796	1796	1796
Adj. R^2	0.174	0.175	0.175	0.176	0.175	0.175

Notes: The three measures of tax avoidance were incorporated (*BETR, CETR* and *CONFTAX*) into one single factor, from equation (1) to (6). *Factor* represents the combination of the three tax avoidance measures. Fixed effects for year, country and industry included in all equations. Control variables were omitted. Robust standard errors were used in all equations, with *t* statistics in parentheses, and the *, ** and *** symbols representing the significance levels of 10%, 5% and 1%, respectively.