

Do Finnish private equity portfolio companies engage in tax planning activities more than their peer companies?

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Ville Alahuhta
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Abstract

Purpose

This thesis charts whether portfolio companies tax resident in Finland owned by private equity operators engage more in tax planning activities than Finnish companies without PE backing. Based on intensive public debate and recent trends in tax regulation, PE portfolio companies would strongly engage in tax planning activities to yield profits to their owners with aggressive and barely legal tax planning measures. On the other hand, recent empirical research mostly made with U.S. data suggests that the decision makers of the portfolio companies weigh several factors against the tax savings emerged through tax planning. Badertscher et al. (2011) conduct a research concerning the matter of the topic for U.S. firms. I utilize the methods used by Badertscher et al. (2011) as well as certain other empirical studies as a basis for the development of totally new empirical methods which fit into the Finnish framework of taxation and accounting. In this study, the large data sample allows the accounting for branch-specific differences and more accurate view to actual tax planning measures.

Data

The dataset generated for the purposes of this thesis consists of 74991 firm-year samples of Finnish operative companies. The set includes 494 firm-year samples identified to relate to companies owned by either domestic or foreign-based private equity fund.

Results

Compared with the subsample formed with the propensity score matching method, companies owned by foreign-based PE funds report in their financial statements 2.4 percentage points and companies owned by domestic-based PE funds 3.4 percentage points less income tax per euro of operating income. The captured tax planning activities have a theoretical calculatory effect of 0.8 per cent to Finnish corporate income tax revenues. The major reason for differences relates to aggressive use of debt including intra-group leverage although also other differences concerning tax planning measures can clearly be identified. The results also show differences between tax planning activities of foreign and domestic PE firms.

The results provide several interesting implications for the existing taxation framework. Firstly, according to the results obtained and contrary to public discussion, most of the Finnish PE portfolio companies are in tax paying position subject to considerably higher tax burden than generally anticipated. Additionally, the anticipated modeled fiscal effects of observed tax planning measures are mostly small. Thus, the Finnish legislation process should focus more on increasing economic activity than limiting specific actions with casuistic provisions.

Keywords Private equity, tax planning, capital structure, corporate income taxation

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Tutkimuksen tarkoitus

Tutkimuksessa selvitetään harjoittavatko pääomasijoittajien operatiiviset suomalaiset kohdeyhtiöt enemmän verosuunnittelua kuin muut suomalaiset yhtiöt. Julkisessa keskustelussa ja lainsäädännön kehityksen valossa kohdeyhtiöt toteuttaisivat aggressiivisia ja laittomuutta lähellä olevia verosuunnittelujärjestelyitä maksimoidakseen omistajiensa voiton. Toisaalta viimeaikaisen, lähinnä yhdysvaltalaisella datalla tehdyssä tutkimuksen perusteella kohdeyhtiöiden verosuunnitteluun vaikuttavat verosäästöjen ohella useat muut seikat. Badertscher ym. (2011) tutkivat asiaa yhdysvaltalaisella datalla. Hyödynnän tässä tutkimuksessa heidän metodejaan sekä muuta aiempaa tutkimusta perustana, jolle kehitän Suomen vero- ja kirjanpitojärjestelmään soveltuvan empiirisen mallin. Tämän tutkimuksen laaja kohdeyhtiöaineisto mahdollistaa myös toimialakohtaisten erojen huomioinnin sekä antaa tarkemman kuvan siitä, miten verosuunnittelu käytännössä tapahtuu.

Aineisto

Tutkimusta varten muodostettu aineisto käsittää tilikausikohtaisen aineiston 74.991 suomalaisesta yhtiöstä. Näistä yhtiöistä 494 on identifioitu olevan kotimaisen tai ulkomaisen pääomasijoittajan omistuksessa.

Tulokset

Keskeisenä tuloksena kotimaisten pääomasijoittajien portfolioyhtiöt maksavat 3,4 prosenttiyksikköä ja ulkomaisten pääomasijoittajien portfolioyhtiöt 2,4 prosenttiyksikköä vähemmän veroa liiketoiminnasta ansaitusta eurosta verrattuna Propensity score matching -menetelmällä kerättyyn samanlaisten yhtiöiden aineistoon. Havaittujen verosuunnittelukeinojen laskennallinen yhteisverovaikutus on arviolta 0,8 prosenttia yhteisöveron tuotosta. Pääsyy eroihin liittyy verrokkiyhtiöitä aggressiivisempiin velkarakenteisiin sekä konserninsisäisten lainojen käyttöön, minkä ohella tutkimuksessa tunnistetaan myös muita merkittäviä verosuunnittelukeinoja. Tulokset osoittavat myös verosuunnittelueroja kotimaisten ja ulkomaisten pääomasijoitusyhtiöiden välillä.

Tuloksista seuraa useita nykyiseen verojärjestelmään liittyviä mielenkiintoisia huomioita. Tulosten perusteella pääomasijoittajien kohdeyhtiöt ovat julkisessa keskustelussa oletettua huomattavasti useammin veronmaksupositiossa ja maksavat Suomeen oletettua paljon enemmän välittömiä veroja. Kohdeyhtiöiden eri verosuunnittelukeinojen verovaikutus on tutkimuksen mallinnusten perusteella useimmiten vähäinen. Voidaan esittää, että verolainsäädännön tulisi tähdätä taloudellisen aktiviteetin lisäämiseen sen sijaan, että verosuunnittelua yritetään ehkäistä kasuistisella säännöstelyllä.

Avainsanat Pääomasijoittaminen, verosuunnittelu, yritysverotus, pääomarakenne

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1 Introduction

1.1 Background

The public discussion concerning the Finnish private equity (PE) industry has recently been very intensive and especially characterized by a moralistic approach concerning aggressive tax planning. Certain very widely discussed cases relating to PE portfolio companies (including Mehiläinen/Ambea, Suomen Lähikauppa and A-Katsastus) have all been subject to strong public criticism due to either considerably high profits or improved operative efficiency, which have been channeled through the use of complicated ownership structures to off-shore tax havens, resulting in decrease of the taxable income expensed in Finland. For instance, a Finnish major newspaper declared that *“tax avoidance and transfer pricing are not illegal when conducted in accordance with regulations, but they can be a huge image risk to a company”*. The article completed the statement by adding that *“This fact is known well in Mehiläinen”*. (Helsingin Sanomat 8 August 2012) Secondly, the lack of openness concerning the offshore backgrounds of PE investors has been widely discussed. As a well-known example, when Suomen Lähikauppa was initially acquired by Triton, the CEO of Suomen Lähikauppa was accused of intentionally leaving out the word “Jersey” from the press release concerning the background of Triton, the CEO answering that *“the press release was just shortened and added with the matters which we held essential”* (Taloussanomat 20 December 2012).

To extinguish the public discussion, both Mehiläinen (a portfolio company of Kohlberg Kravis Roberts and Triton) and Terveystalo (a portfolio company of EQT) have recently published their tax foot prints. According to CEO of Mehiläinen, *“public discussion concerning taxes paid by the company preserves active and transparent activities”* (Taloussanomat 6 September 2013).

The erosion of the Finnish tax base caused by aggressive tax planning even recently lead to the implementation of interest deduction limitation (Section 18a) to Finnish Business Income Tax Act (360/1968; BITA), based on which part of the interests paid for the intra-group liabilities may become non-deductible in taxation of the payer as of 2014. Based on

evaluation made by the Ministry of Finance of Finland, the direct fiscal effect of the new provisions could amount to roughly 70 million euro based on figures from 2010 (Government Bill HE 146/2012). In addition to that, according to Finland's Minister of Finance, Finnish municipalities should make a decision not to purchase services from companies that are linked with tax havens (Helsingin Sanomat 3 October 2012).

However, although aggressive tax planning may appear lucrative from layman's point of view in terms of assessing the PE industry, the view of PE firms is actually not that self-evident. Knuutinen (2013) acknowledges the often wrongful use of the term tax avoidance in public discussion and states that companies are not liable for paying tax more than they are required to do according to the tax legislation. Additionally, taxation is not the only factor to affect the form and location of PE fund structures. Also demand from investors, the stability of local regulatory and political environment, familiarity to stakeholders and even language barriers may create a need to locate the fund outside Finland.

As provided by Desai and Dharmapala (2009a), the corporate tax avoidance does not generally increase a firm's value. In PE context, the aggressive tax planning may be abandoned if it is deemed to make the exit from the portfolio company challenging, possible regulatory risks make it too uncertain or the PE firm does not want the media attention to focus on itself. In addition to that, the operational profits may be expensed to the tax domicile of the operative company in some other way, e.g. in form of taxable capital gains, dividends, the taxation of creditors or taxes generated by the more efficient use of the capital of the company (Jensen 1989).

1.2 Contribution to the existing research and main findings

In previous research, taxation and especially tax shields created through debt structures normally affect profits of the PE fund investments among other factors. On the other hand, in the research taxation is normally viewed either as a sole component of improving the financial performance of the target company (see e.g. Guo et al. 2011), or in some research papers as a justification for the positive effect of private equity industry on the surrounding society through the increased tax revenues (e.g. FVCA 2012). Further, even in research with a focus on taxation, the effects of taxation often stem solely from the use of leverage and tax shields generated therefrom (Bergström et al. 2007, Guo et al. 2011). However, the tax planning

activities available are definitely various and not limited only to use of debt (Badertscher et al. 2012). Interestingly, the research concerning actual means of value creation by PE firms executed through tax planning activities has not to my knowledge been subject to academic research in Europe. Combining these factors with the public discussion and current and anticipated legislative actions, the actual tax planning activities of PE firms deserve closer scrutiny.

Badertscher et al. (2011) conduct a research concerning tax planning activities executed by PE firms through their portfolio companies and claim to be the first authors to combine the concepts of tax planning and economic value creation in PE industry. Other tax planning related research relates e.g. to family owned companies Chen et al. (2010), dual tax classes (McGuire et al. 2011), the characters of top executives (Dyreg and Lindsey 2010), approach to the tax department of the firm (Robinson et al. 2010) and corporate social responsibility (Huseynov and Klamm 2012). Irrespective of the number of research made, I have not been acquainted with any empirical tax planning related research made with Nordic data as the research is dominantly U.S. centered. Notably, most of the existing research may be subject to selection bias due to the lack of access to data concerning other than listed firms or unlisted firms with publicly traded debt, where relevant (Kaplan & Strömberg 2009).

As an important conceptual matter, the concept of tax planning is not fully equal to tax avoidance. Tax planning refers to tendencies to minimize the effective tax rate of a certain tax subject through legal means, which can be aggressive or not. The possible illegality would stem e.g. from domestic legislation, double tax conventions or EU –level regulation. By contrast, tax avoidance in Finnish context refers to illegal measures. As Finnish Act on Tax Assessment (1558/1995) includes a relatively wide clause addressing tax avoidance, the separation between tax planning and tax avoidance is not always clear. Although most of the existing research addresses nominally tax avoidance (e.g. Badertscher et al. 2011), the referred activities are normally similar tax planning activities to the context of this research. However, to emphasize that this thesis focuses on purely legal tax planning activities, I use throughout the thesis the term tax planning instead of tax avoidance, unless the term specifically refers to illegal activities. The solution is similar to Frank, Lynch and Rego (2009) and Chen et al. (2010), for instance, who discuss about tax aggressiveness.

This thesis aims to contribute to the existing research in three main ways. First of all, the main focus of this study is to find out whether Finnish resident PE portfolio companies engage in tax planning activities more than their peer companies. The theoretical and methodological framework concerning this question follows the framework used by Badertscher et al. (2011) to a certain extent although due to the Finnish tax regulation basing on the Scandinavian tradition, the existing methods can be fully utilized to a very limited extent.

Secondly, I provide answers to the question how the Finnish PE portfolio companies actually exercise tax planning activities in the operative company level. Although the answers are most relevant in the Finnish tax system and the operational environment, they also shed light to the tax planning activities in other jurisdictions. Additionally, the thesis focuses on charting the possible differences between domestic and foreign PE portfolio companies, which is to my knowledge a totally new contribution to this area of research.

Thirdly, this research also addresses the public discussion concerning the regulation of PE companies and especially the tax regulation related to measures specifically attributable to the PE portfolio companies. The Finnish interest deduction limitation rules applicable as of the beginning of 2014 are evaluated in the context of the framework of this research. The aim is to assess whether the regulation would meet its aims and are there any other efficient ways of achieving the same.

The empirical results of the study indicate that PE portfolio companies engage in tax planning activities more than their peer companies as well as only such peer companies which are similar to the PE portfolio companies. The results are robust to major robustness checks conducted in earlier research. Based on empirical models, a foreign PE portfolio firm pays 1.8 percentage points and domestic PE portfolio firm 6.1 percentage points less tax in relation to each euro of operative income in comparison with a peer company without PE background. The same results are approximately 2.4 percentage points and 3.4 percentage points in relation to each euro of operative income when PE portfolio firms are compared against their matched pair companies. The results are on the same scale as in the research of Badertscher et al. (2011), who report the same difference of 4.8 percentage points with U.S. data. The tax revenue effect captured by the variable measuring taxes paid in relation to operative income was in 2010 approximately 24 million euro. The estimation is produced, similarly to e.g.

Cheng et al. 2012, by multiplying the difference between PE portfolio firms and peer firms in observed average effective tax rate by the total operating income of PE portfolio firms.

Most of the other measures similarly report statistically significant differences between PE portfolio companies and other companies. Based on the dependent variable measuring unexplained book-tax difference in relation to total assets, foreign PE portfolio companies have 2.9 percentage points and domestic PE portfolio companies 4.9 percentage points higher book-tax difference compared against all operative peer companies. Baderstcher et al. (2011) report somewhat smaller difference (only 2.1 percent) although the inclusion of group contributions to the same variable utilized in this research explains the difference to a large extent.

Regarding the proxy for tax planning which measures taxes in relation to profit before appropriations and taxes, I get less significant and smaller values than Badertscher et al. (2011). The indication of tax planning completely disappears in the regressions of foreign PE portfolio companies with matched pairs. The same streamline appears with the variable which shows permanent discretionary book-tax difference, as in my research it only seldom indicates significant signs of tax planning whereas Badertscher et al. (2011) detect statistically significant differences with the similar variable.

Additionally, the results of this research show a clear difference of use of leverage and intra-group leverage both between PE portfolio companies and peer companies as well as PE portfolio companies of foreign and domestic PE firms, as irrespective of control of leverage in PSM procedure, foreign PE portfolio companies still have over 11 percentage points and companies of domestic PE firms almost 10 percentage points more intra-group leverage in relation to their total assets. Furthermore, the interest deduction limitation regime to be applicable in Finland as of 2014 would have, based on the modeling described in this thesis, produced to PE portfolio firms a total excess tax cost of 24 million euro in 2010. The thesis also attributes in the differences of utilization of group contributions, tax losses and certain other tax planning measures. To the author's knowledge, the existing research does not shed light on these matters.

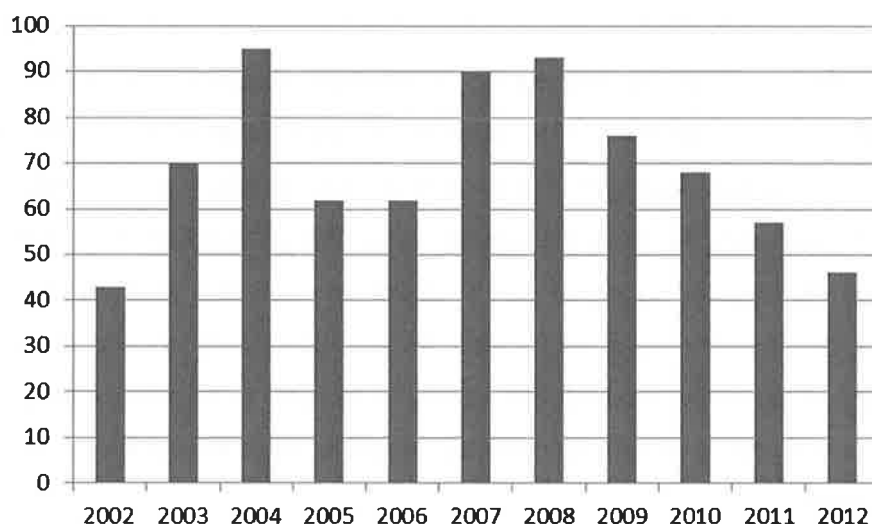
1.3 Key limitations

One major reason for the sparse PE related research in Finland is possibly the very limited availability of data. In terms of taxation, this mostly results from the fact that the Finnish tax authorities do not currently disclose any taxation related data on a single company level, on the other hand the access to the information is relatively similar to the access in earlier research (except for e.g. Lisowsky 2010). Therefore, naturally in addition to other regulatory differences, the tax planning strategies which can be evaluated easily with U.S. data and listed PE –originated companies, for instance, cannot be similarly evaluated in Finnish context. However, the public financial statement data available may cure this problem to a sufficient extent, although the reporting requirements made for accounting purposes may differ from the taxation. In light of the earlier research, the quality of the data as regards the purpose of the thesis will be on a similar level and the reporting of results takes inaccuracies in some of the proxies into account.

The second main source of limitation is the limited number of PE portfolio companies in Finland. PE industry in Finland is still relatively young and possibly not the most popular destination for foreign PE investments. Further, as this thesis focuses on buyouts because tax planning is not that significant for start-ups or other small companies subject to venture capital investments, the group of relevant portfolio companies becomes even narrower. Figure 1 visualizes the matter by showing the considerably low annual number of the first round investments made by PE funds to Finnish companies. Although the statistics only show first round investments for which the information has been made available to FVCA, the numbers still include e.g. a considerable number of start-up investments which are not in the scope of this research.

Figure 1: Initial PE investments made to Finnish portfolio companies

The figure presents the initial PE investments made to Finnish companies. The data is collected by FVCA and include both buyout and venture capital investments. The data are not exhaustive in terms of showing all the investments made.



Based on these reasons the dataset addresses only the fiscal year which ended last in 2010. Although using panel data would potentially enhance the reliability of the results, the received gain would diminish to a large extent through the noticeably reduced number of portfolio firms, the uncontrollable effect of the economic downturn to tax planning, changes in tax regulation as well as rapidly deteriorated external financing markets accessible to the Finnish companies (e.g. Euro & Talous 29 April 2013). Most importantly, the empirical part in Section 6 this thesis addressing more to ways the PE portfolio firms utilize in tax planning would be impossible to do properly, if the number of sample PE portfolio companies would be small. Nevertheless, the cross-sectional nature of the study does not affect its empirical findings, in addition to which I address more concern to checks mitigating possible endogeneity bias.

1.4 Structure of the thesis

First of all, I briefly discuss the PE industry from the point of view of value creation. This is to provide a framework for tax planning and to set it in the relevant context. This is also necessary to provide a robust and unbiased research design for the empirical part of the thesis and to link the thesis with the other PE related empirical research. Further, in the second section of this thesis I address the theory of tax planning as well as its key meanings and empirical implications.

In the third section, I develop the hypotheses, link them into earlier research as well as locate them in the framework of PE value creation to the relevant extent. The fourth main section of the thesis presents the data and methodology used. These sections provide, in accordance with Section 2, the empirical framework on which the research results of subsequent sections are based.

The fifth section evaluates the tax planning activities of PE portfolio companies in general, comparing the observed empirical evidence with both full sample of peer companies as well as similar peer companies. The sample of similar peer companies is generated through propensity score matching method. The sixth section takes a closer look to the tax planning activities in order to chart, what kind of tax planning activities PE portfolio companies actually are and are not utilizing. In both these sections I also observe the possible differences between domestic and foreign PE portfolio companies. The key implications of the results of this study to both politicians and PE firms are framed in the final section.

For the sake of simplicity, I refer to a Finnish company eventually held by a PE firm with Finnish origin with terms 'a Finnish PE portfolio company' and a portfolio company of a Finnish PE firm. Similarly, the term 'foreign PE portfolio company' refers to a Finnish company owned by a foreign PE firm. Thus, the domicile of the PE fund is not conclusive in the evaluation, i.e. a portfolio company of a Finnish limited partnership, the general partner of which is fully owned by a Swedish PE firm, would qualify as a foreign PE portfolio company. Additionally, non-Finnish operative companies are not discussed in this thesis unless explicitly acknowledged in the relevant section.

2 Literature Review

2.1 Different key forms of value creation

This section summarizes the most recent empirical evidence concerning key forms of value creation methods during the holding period of the portfolio firm. Due to the setup of this thesis, I do not address in this context the vast amount of research solely measuring the actual effects of the improvements caused by a PE firm to its portfolio firm. Further, the selection process of the target firms, possible macro-economic and industry influences as well as successful exit process are disregarded from the review.

According to the categorization of recent PE-related research, PE firms intend to create value to their portfolio investments during the portfolio phase through three different means, referred to as operational, financial and governance engineering (e.g. Berg and Gottschalg 2003, Kaplan and Strömberg 2009, Rizzi 2009 and Guo et al. 2011). Naturally, this categorization is rather a technical one than close to a reality, as the factors under each category often are intertwined with one or both of the other categories.

2.1.1 Operational engineering

First of all, operational engineering refers to the industrial and operational expertise the PE firms offer to their portfolio companies in the value creation phase. These may refer to the use of internal or external consultants and operational backgrounds of the private equity professionals hired, and reflects also the fact that PE firms nowadays tend to be organized around industries. (Kaplan and Strömberg 2009) In practice, operational engineering is a part of the value creation plan through cost-cutting, productivity improvements, changes in strategy, add-ins or divestments or changes in management (Acharya et al. 2013), or in more practical terms by eliminating unproductive assets, using remaining assets more efficiently or making acquisitions which increase the value of the investee company (Guo et al. 2011). On the other hand, according to Nikoskelainen and Wright (2007), the improvement in operating performance, although being a fundamental element of the firm's value, cannot act as a direct measure of the value, it possibly being either a short-term improvement or having even negative effects in the future.

The value creation through operational engineering has been shown in recent research for several times. For instance, Lerner, Sorensen and Stromberg (2008) find that PE portfolio companies apply more economically important patents, do not shift the key nature of their research activities and concentrate on the most important areas of their innovation portfolios. Guo et al. (2011) estimate the changes in operating performance to account for 20 per cent of the returns to pre-buyout capital. At a more general level, according to Acharya et al. (2013), PE firms generate higher abnormal performance from the deals where they actively interact with the management and the management is provided with external support to strengthen the weak spots in the organization, and by adopting an “encourage and challenge” approach to overcome the underlying principal-agent problem in the portfolio company level. Further, Achleitner et al. (2010) show with European data that roughly 2/3 of the value creation of the PE firms is derived from activities relating to operative improvements, and there are no statistically significant differences in this between large and small portfolio companies.

As a single but interesting line of operational engineering, also the effects of portfolio companies on the employment have been subject to research. For instance, Davis et al. (2011) study the effects of U.S.-based private equity firms to job losses and observe the employment decreasing by over six percent in five years as of the moment of investment, the net loss of employment being, however, considerably decreased through the active making of new add-ins as well as organic growth. Using Swedish data, Bergström et al. (2007) do not find evidence concerning the value transfer from employees to value creation.

Further, the operational engineering is possibly the most incoherent category of the three ways of value creation briefly discussed in this context, as its effects are naturally directly related both to the need for the operational improvements as well as its quality. Meuleman et al. (2009) show the experience of the PE firm not affecting the profitability of the portfolio firm, but instead having a significant effect to the growth of the PE firm, whereas Cressy et al. (2007) find a positive effect on the profitability of the investment and degree of specialization of a PE firm.

2.1.2 Governance engineering and incentives alignment

The role of the incentives of the management as well as the improved governance engineering as a source of value creation is already noticed by Jensen (1989) who acknowledges the role

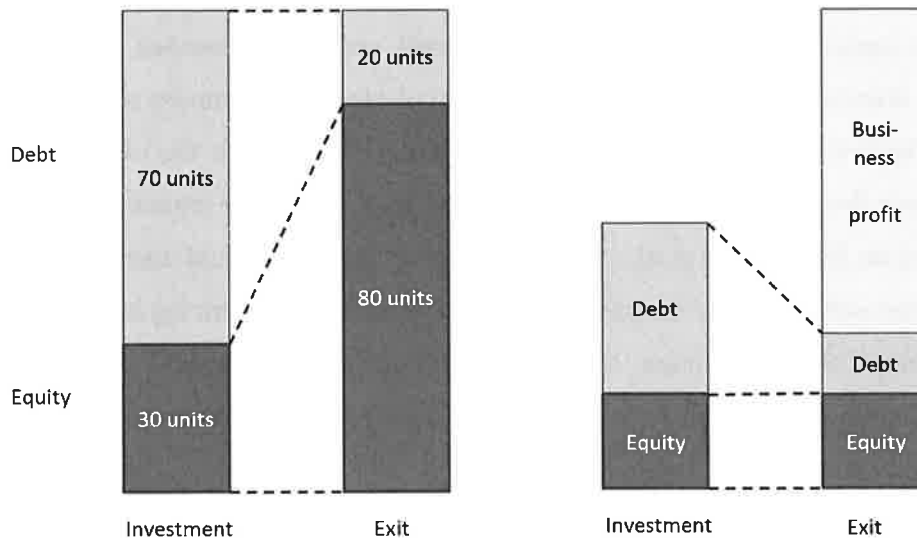
of stock ownership, incentive pay rewarding cash flow as well as other compensation techniques which would maximize the managers' value-enhancing tendency and result in lower agency costs. The need for governance engineering emerges through the separation of the managerial ownership and control. In practice, the agency problem is minimized with different action categories which include the provision of incentives to managers, requiring selling entrepreneurs to remain as employees in the company as well as increase of surveillance methods. In the light of the most recent research, the factors concerning governance have not been deemed as key drivers in the value creation (Valkama et al. 2013; by contrast Guo et al. (2011)).

In practice the optimal management incentive arrangements would tilt the managers' actions towards the owners' benefit to a sufficient extent, although the excess combination of interests would lead to the excess risk aversion of management (Knauer et al. 2013). Shares and options may create the effect, but on the other hand the said instruments may force the management to invest a significant amount of their wealth in often illiquid shares of the target company, as well as thereby create a great upside and downside potential. This also unifies the investment time horizon of the PE firms and management. (Kaplan and Strömberg 2009) Nikoskelainen and Wright (2007) find that increase in the equity stake of the management has a significant effect on the final return. Further, management incentives may also be specifically planned to reduce the agency problem, as referred to with ratcheting, although the tax regulation may also have a significant effect towards the lucrativity of the management incentive systems adopted (Cumming 2005).

As a practical example of tailored incentive structure and partially in relation to the concept of financial engineering and the use of debt tax shield as well as LBO model, the PE portfolio firms may utilize leverage both by optimizing the capital structure of the portfolio firm as well as a means of motivation of managers. The so called equity kickers refer to financing of an acquisition structure with leverage level deviating from general arm's length structure. Especially if the target company neither shows taxable profit nor distributes capital to its owners during the holding period, the so called equity kicker multiplies the value of the holding of the existing owners, which in practice means PE firms and managers. A graphical illustration of the equity kicker model, applied from the case study presented by Karppinen (2013) and following the idea of Achleitner et al. (2010), is presented in Figure 2.

Figure 2: Equity kicker model

The figure illustrates the effect of optimal capital structure in PE portfolio company scene. Left columns in both columns present the capital structure (consisting of debt denoted with grey and equity denoted with blue) situation at the moment of investment by a PE firm and the right column describes the capital structure at the moment of the exit. The part of the column labeled with yellow presents business profit, which the PE firms often leave in the company instead of distributing it.



The equity kicker model shows the business profit as a residual, which belongs to the equity holders in the company. The effect results from the fact that normally the operative company does not distribute profits to the PE fund which owns the operative entity. However, as the loan conditions may include convertible options, in practice the simplified graph may not provide an accurate picture.

Further, the close monitoring of a portfolio company through the board seats of the PE firm representatives also decreases the leverage of the portfolio company (Cumming 2005). As observed by Cotter and Peck (2001), the major element in governance engineering is not solely the outstanding amount of debt but instead the amount required to serve the debt per time period, and as the PE portfolio companies are normally actively managed, the aggressive use of tight debt terms is not as crucial in the light of agency theory. In addition, centralized ownership structure often resulting from an acquisition by PE firms emerging through strong representation in the board makes the replacement of underperforming managers easier, increases quality of reporting and increases the ability to negotiate better management incentive structures as well as other financial arrangements (Masulis and Thomas 2008).

As to the governance engineering through the supervision of board and agency problem, Acharya et al. (2013) observe the boards of PE portfolio companies to be smaller, include less corporate insiders and non-executive members independent of PE fund and the company, meet more often and be more focused on value creation instead of compliance matters. Interestingly, Cornelli and Karakas (2008) show that the number of board members nominated by PE firm varies as the function of the external governance needed. The governance engineering invested in one portfolio company also creates an opportunity cost to the PE firm due to the limited resources of PE firms. The idea is in line with the observation that in smaller boards the buyout professionals are represented to a larger extent (Cotter and Peck 2001). Based on Badertscher et al. (2012), the agency problem would emerge in practice in PE context through managers' incentives to pursue non value maximizing behavior including shirking, perquisite consumption and rent-extraction which refers to actions taken by decision-makers not maximizing the value of the ownership of the shareholders, but instead being for their own good.

2.1.3 Financial engineering

Originally, Berg and Gottschalg (2003) concise that the financial engineering refers to two main action categories; optimization of the capital structure and minimization of the after-tax cost of capital of the portfolio company of a PE firm. In a concise way, Rizzi (2009) defines the financial engineering from the general partners' point of view to equal to facilitating the compensation of high prices with increased leverage, which depends on the availability of underpriced debt. To simplify the idea, increase in leverage produces larger tax shields boosting the returns by increasing the cash flows available to the providers of capital, which constitutes financial engineering as a key factor in value creation process (Guo et al. 2011). Very interestingly, Bergström et al. (2007) are not able to show the link on a statistically significant level between increased leverage and value creation when using Swedish data.

The optimization of the capital structure can be seen as the aid provided to the portfolio company as the optimization often takes place by increasing the amount of debt through e.g. relationships and expertise of the PE firm (Berg and Gottschalg 2003). Nikoskelainen and Wright (2007) put this into context of corporate governance using free cash flow theory originally developed by Jensen (1989), as the agency costs of free cash flow arise if the cash flow is not used in a productive way. This is mitigated by the use of debt, as it creates

periodically incurring interest costs which shall be served and thus, through the threat of bankruptcy, motivates the management act efficiently. The decreased ownership leads to the relatively larger controlling power of PE investors which increases their monitoring motivation and ability.

Secondly, the tax planning constitutes an important part of the value creation process from the point of view of financial engineering. As stated by Berg and Gottschalg (2003), the importance of the financial engineering stems from its direct impact to the profit of the company, the potential being to a definite extent created at the moment of acquisition of the company, although new savings can be created through the whole holding period. In Kaplan's (1989) landmark research both the tax planning executed through interest deductions as well as increases in tax base of the portfolio company leading to larger tax-deductible depreciations form a significant part of the value creation process. However, Kaplan and Strömberg (2009) claim the significance of tax planning decreases as both the leverage itself and the corporate tax rates have decreased.

In relation to the sole use of leverage, Valkama et al. (2013) find the use of leverage to have an effect on equity returns through inflation but on the other hand it has no effect on value creation. Badertscher et al. (2011) explain this phenomenon generated through excess leverage in general yielding in lower need for other tax planning or use of other tax shields. Interestingly from PE industry's point of view, Norbäck et al. (2012) empirically show that the fully deductible acquisition price of a target company, which camouflages the utilization of a debt tax shield, positively affect the ownership efficiency and decrease the significance of tax shields.

2.2 Tax planning

The tendency of this section is to provide a sound basis for hypothesis development through the review of empirical tax planning related research. At least three different main reasons, which are partly overlapping, may motivate the tax planning activities conducted by PE firms aside the concept of tax planning as part of financial engineering. First of all, the separation between ownership and control, as Badertscher et al. (2012) describe, may affect the tax planning of PE firms due to the diverse profit risk sharing structure resulting from separation of the ownership and control in comparison with similar non-listed firms.

In addition to that, also the greater expertise and resources of the PE firms may facilitate the tax planning (Badertscher et al. 2011). Thirdly, the reputation-related concerns may also have an effect on the tax planning, the plausible effect being twofold. According to Chen et al. (2010), firms trade off between marginal benefits which consist of most importantly tax savings and marginal costs which include sanction risk, implementation costs and agency costs arising from tax planning, relating to possible masking of the rent-extraction through related party transactions, complex structures and earnings management, for instance. Thus, tax planning is not purely a means of transfer of value from state to shareholders (Desai and Dharmapala 2009b).

2.2.1 Overview of tax research relating to tax planning

According to Hanlon and Heitzman (2010), the existing tax related research can be divided into four main categories: 1. the informational role of income tax expenses, 2. corporate tax planning, 3. corporate decision-making and 4. taxes and asset pricing. The focus of this thesis is, naturally, on the second category. According to Hanlon and Heitzman (2010), the area is challenging due to e.g. yet undefined generally accepted empirical method of measuring the tax planning and both regulatory and conceptual differences among different tax jurisdictions. The recent advance steps of this young research area are attracted to agency theory as well as incorporation the effects of corporate governance. Some of the most recent empirical studies are referred to in the Table 1 below, whereas the implications of tax planning to the operations of PE firms are discussed thereafter.

In addition, the empirical research which concerns effects on national interest deduction limitation regulation form a separate entirety which has not yet developed an established methodological tradition. Blaufus and Lorenz (2007) show the German *Zinsschranke* – regulation to potentially affect companies which e.g. belong to a holding company structure, have relatively less fixed assets or are less profitable. As another example, Taylor and Richardson (2013) evaluate Australian thin capitalization regulation through the development of proxies for companies involved in structures fulfilling the concept of thin capitalization structures.

Table 1: Overview of prior empirical tax planning related research

Authors	Data	Key findings
Desai and Dharmapala (2006)	Compustat and Execucomp data for over 900 firms between 1993–2001.	<ul style="list-style-type: none"> High-powered incentives relate to low-level of tax planning The relation holds only for companies with weaker corporate governance (weaker shareholder rights and lower institutional ownership)
Dyreng, Hanlon and Maydew (2008)	Compustat data for 2,439 firms incorporated in the U.S.	<ul style="list-style-type: none"> The ability to avoid corporate income taxes sustains periods of time Most of the measured tax planning concentrate to a subset of firms
Chen, Cheng and Shevlin (2010)	Compustat, ExecuComp and IRRC data for 3,865 firm-years from 1,003 firms in S&P 1500 index between 1996–2000	<ul style="list-style-type: none"> Firms owned or run by founding family members engage less in tax aggressive behavior relative to their counterparts Family firms seem to emphasize non-tax costs of tax planning including their signaling effect especially to minority shareholders over the tangible benefits
Wilson (2009)	59 U.S. firms accused for or discussed in public press concerning tax sheltering or between 1975–2007	<ul style="list-style-type: none"> Large book-tax –differences signal tax sheltering Tax sheltering is positively associated with firm size Tax shelter firms with strong corporate governance create abnormal returns during tax shelter participation
Lisowsky (2010)	267 U.S. firms included in Compustat and OTSA (Office of Tax Shelter Analysis) tax shelter data base	<ul style="list-style-type: none"> Likelihood of a firm using tax shelters is positively related to subsidiaries in tax havens, foreign source income, inconsistent book-tax –treatment, litigation losses, use of certain external service providers, profitability, size and negatively related to leverage
McGuire, Wang and Wilson (2011)	Compustat data for 24,908 firm-year observations representing 5,932 firms between 1995–2002	<ul style="list-style-type: none"> The amount of non-conforming tax planning declines as the difference between voting rights and cash flow rights, represented by dual class shares, increases Dual class firms (and managers with excessive control rights) engage significantly less in tax planning
Badertscher, Katz and Rego (2011)	3,022 private firm-year observations between 1980–2010, including 371 firms that are majority owned by PE firms	<ul style="list-style-type: none"> PE-backed portfolio companies pay 4.7 percent less income tax per dollar of pre-tax income than other private firms after controlling for losses and leverage, and the effect persists after reduction of PE ownership PE firms view tax planning as an additional source of economic value
Cheng, Huang, Li and Stanfield (2012)	Compustat and Thomson 13F data for 2,981 hedge fund activist events between 1994–2008	<ul style="list-style-type: none"> Prior to hedge fund intervention, target firms exhibit significantly lower level of tax planning than their control firms, the tax avoidance significantly increasing following the activist funds' intervention
Badertscher, Katz and Rego (2012)	2,970 private firm-year observations between 1980–2010, including 350 firms that are PE-backed	<ul style="list-style-type: none"> Firms with less concentrated ownership and control avoid more income tax than firms with more concentrated ownership and control structure

2.2.2 Agency problem and separation of ownership and control

As discussed above, agency problems emerge through separation of firm ownership and control, and can be mitigated e.g. through incentive planning, other contracting or supervision. At a more detailed level, Fama and Jensen (1983) discuss the situations when firms either separate or combine decision management (decision initiation and implementation) and decision control (decision ratification and monitoring) with residual risk

sharing (the risk of difference between stochastic inflows of resources and promised payments to agents). They claim that the said features should be combined in smaller and less complex organizations, i.e. when the relevant information is concentrated on the small number of the agents and by contrast, decision management should be separated from residual risk sharing as well as from decision control in complex organizations where the relevant expertise is spread more widely throughout the organization. In addition, they find that when the residual claims are restricted to decision making agents, it is generally more rational for them to assign lower values to risky cash flows compared with the situation when residual claims would be unrestricted and risk-bearing freely diversified across organizations.

The key point of Badertscher et al. (2012) is that as tax planning is, based on Rego and Wilson (2012), a factor affected by the degree of risk-averseness of the managers of the company, the undiversified decision agents would abstain from engaging in corporate level tax planning. In PE portfolio companies the residual risk sharing is to a large extent separated from decision control which leads also to the separation of the decision management to decision control, as already discussed. By contrast, in private firms the residual claims are normally restricted to the individuals making the decisions as well which leads to more risk-averse behavior also affecting tax planning. Badertscher et al. (2012) test the idea empirically using data relating to U.S. firms owned being either PE portfolio companies or owned by employees or management and having publicly listed debt and find support for the assumption that separation of the ownership and control would increase the tax planning. Rego and Wilson (2012) support the idea and link the equity risk incentives provided to managers with corporate tax aggressiveness.

Further, according to the findings of Desai and Dharmapala (2009a), the valuation of tax planning discussed more accurately later is a function of firm's governance, the measured average effect on firm value being not significantly different from zero but positive for firms with a well-functioning governance system. This is caused by the fact that complex tax planning activities can be used in hiding managers' opportunistic behavior which is harder to be observed when the governance of the firm is on a weak level. The key role of well-functioning corporate governance connected with the value creation through tax planning is also evidenced by Wilson (2009).

Similar evidence is provided by McGuire et al. (2011) who investigate firms with dual class shares, finding that firms possessing large differences between cash flow rights and voting rights tend to engage less in tax planning activities. This is due to the fact that managers in dual class firms making decisions of engaging in tax planning are better sheltered from takeover risk, have lower monetary incentives to benefit received from tax planning, but retain all the benefits attributable to their lower effort level. On the other hand, Armstrong et al. (2012) utilize similar empirical measures as in this research and save for the effective tax rate are not able to detect a statistically significant connection between incentives provided to tax directors in the multinational U.S. domiciled listed firms and aggressive tax planning behavior of such firms.

The short investment horizon of a PE firm may also affect the scale tax planning activities. Khurana et al. (2009) show that institutional investors with short investment horizon influence firms to be more aggressive, whereas firms having long-term investors seem to lower the tax aggressiveness of the target company. They suggest the observations derive from the provision of incentives to management, supervision as well as the possibility of short term investors to benefit from positive market reactions caused by tax aggressiveness and making the exit before the tax risk realizes.

2.2.3 Expertise and resources

Similarly to the facts discussed above in relation to operational engineering, excessive tax planning activities could also yield from the availability of expertise and resources. Based on Badertscher et al. (2011), the expertise and resources required for implementing more tax effective strategies would be introduced in the PE portfolio company through the effect of PE firms, either due to the resources and expertise of the PE firms or impact of PE firm partners operating more intensively with the relevant PE portfolio company and having a tax related background. Masulis and Thomas (2008) find empirical evidence for this financial sophistication which becomes tangible e.g. in management incentive planning and more developed risk management strategies. Badertscher et al. (2011) empirically find that the PE-backed firms continue to engage more in tax planning activities even years after the observed firms are taken public compared with similar listed but not previously PE-owned firms. This would suggest the superior expertise and resources of the PE firm owners concerning tax planning are used in the PE portfolio companies even during the portfolio phase.

The idea is partly supported by Robinson et al. (2010), who find statistically significant evidence for firms evaluating their tax departments as profit centers, i.e. making a solid contribution to the firm's profit, to have lower effective tax rates through financial tax management activities¹ in comparison with firms viewing their tax departments as cost centers, i.e. emphasizing in minimizing the cost of tax compliance. Dyreng et al. (2010) evaluate the expertise and attitude of CEOs and CFOs who have switched firms and show that even after controlling firm-specific effects, the key individuals have a significant role in the level of tax planning. Dyreng et al. (2010) also find the executive-initiated effect on tax planning relatively non-persistent after the moment of leave of the relevant executive, whereas Badertscher et al. (2011) notice some persistence in the tax planning after the exit of a PE firm.

In addition, Lisowsky (2010) finds by using U.S. data that the companies having either litigation or insurance payouts engage in tax sheltering activities more than their peer firms which are not as aggressive from a legal stand point. Even more importantly, firms using Big five –auditors were noticed to use more tax sheltering activities. Both the empirical findings are statistically significant. Donohoe and Knechel (2013) empirically prove the idea of auditor-provided tax services being associated with knowledge spillovers from the tax team of the auditor to the auditing team of the auditor which would offset the audit fee premiums for firms being tax aggressive, unless the tax uncertainty that is reflected by disclosed tax reserves of the firm is high. The relevance from PE context comes from the fact that e.g. limited partnership agreements of the PE funds may set requirements to reporting duties, e.g. the use of a big four auditor.

2.2.4 Reputation effect

One matter which affects the tax planning activities of PE firms in the light of previous research is its potentially harmful effect of aggressive tax planning on the reputation of the PE firm. According to Cao and Lerner (2009), the performance of a reverse leveraged buyout is cross-sectionally associated with, among other things, the reputation of the buyout group. The practical implications for reputation emerge through actions on the capital markets, as in the

¹ Financial tax planning refers to financial accounting effects of tax planning or tax accrual planning, whereas cash tax planning refers to decrease in cash taxes paid. (Robinson et al. 2010).

role of frequent participants in both the debt and equity market, the PE firms would be able to harm their reputation through excessively risky activities. As provided by Badertscher et al. (2011), excessive tax planning could be reckoned a factor which could when owning, managing and/or governing a single portfolio firm affect not only the exits of the said portfolio firm but also other portfolio companies, as well as weaken the PE firm's ability to raise debt and equity capital and raise their cost of capital in general. More generally, Hanlon and Slemrod (2009) acknowledge the firm publicly deemed as a tax shelter purchaser may face reputational and political costs of being labeled as a poor corporate citizen².

Interestingly, as Badertscher et al. (2011) point out, the reputational concerns may actually suggest that the PE firms would engage less in tax planning compared with private companies and partly dilute the financial engineering effect. This is because of the fact that the alleged tax planning has recently been subject to increased public scrutiny due to favorable tax treatment. In other words, e.g. the capital market based reputational concerns of the PE owners would actually decrease the tax planning activities in the portfolio companies. However, Badertscher et al. (2011) measure other benefits from tax planning to outweigh the reputation effect possibly decreasing the tax planning.

The reputation effect in its wider sense has been empirically researched on a relatively wide scale. For instance, Chen et al. (2010) find family-owned firms engaging less in tax planning activities than their peer companies which thus highlights the non-tax costs incurred. Such costs would include especially costs arising from possible agency conflicts as well as risk for sanctions. The reputation effect would emerge through rent-extraction, as the investors would presume price discounts on the stock of the company using aggressive tax planning if aggressive tax planning would be utilized by the dominant owner managers to conceal rent extraction activities. The finding is coherent with the pivotal research of Desai and Dharmapala (2006) who, as discussed above, show the potential harmful effect of tax planning to company's value in companies having a lower level of corporate governance, indicating a possibility for managerial rent-extraction. Further, based on the findings of Hanlon and Slemrod (2009) with U.S. data, the stock price of a company on average declined when the company was publicly declared to involve in tax planning, the decline effect being greater for

² In U.S. tax research, tax shelters refer to arrangements or transactions generating tax losses without incurring economic losses or risks.

firms operating in the retail sector, which possibly indicates a consumer or taxpayer backlash. Further, the market reaction was less negative for companies having high effective tax rate which would indicate the markets appreciating tax planning activities to some extent.

2.3 Tax planning in Finnish company structures

To create a decent framework for the empirical modeling of the tax planning with Finnish data I briefly view some relevant aspects of Finnish tax planning scene. Similarly as in the research of Hanlon and Heitzman (2010), the tax planning refers to any and all activities which aim at the reduction of explicit taxes.

2.3.1 Tax planning through debt structures

One of the most efficient means of lowering the effective tax rate of a company is to utilize tax benefits created through debt tax shields. As stipulated in Section 18 of BITA, Finnish companies taxed according to BITA are allowed to deduct interest expenses paid for debt relating to business activities, i.e. the concept of tax-deductible interest is wide. The section also specifically allows the deductibility of said interest when it is determined based on the profit of the company and does not include any limitations concerning intra-group debts. In other words, every euro of interest paid, whether to a group company or an external party, decreases the payable corporate income tax with the current effect of 24.5 cents.

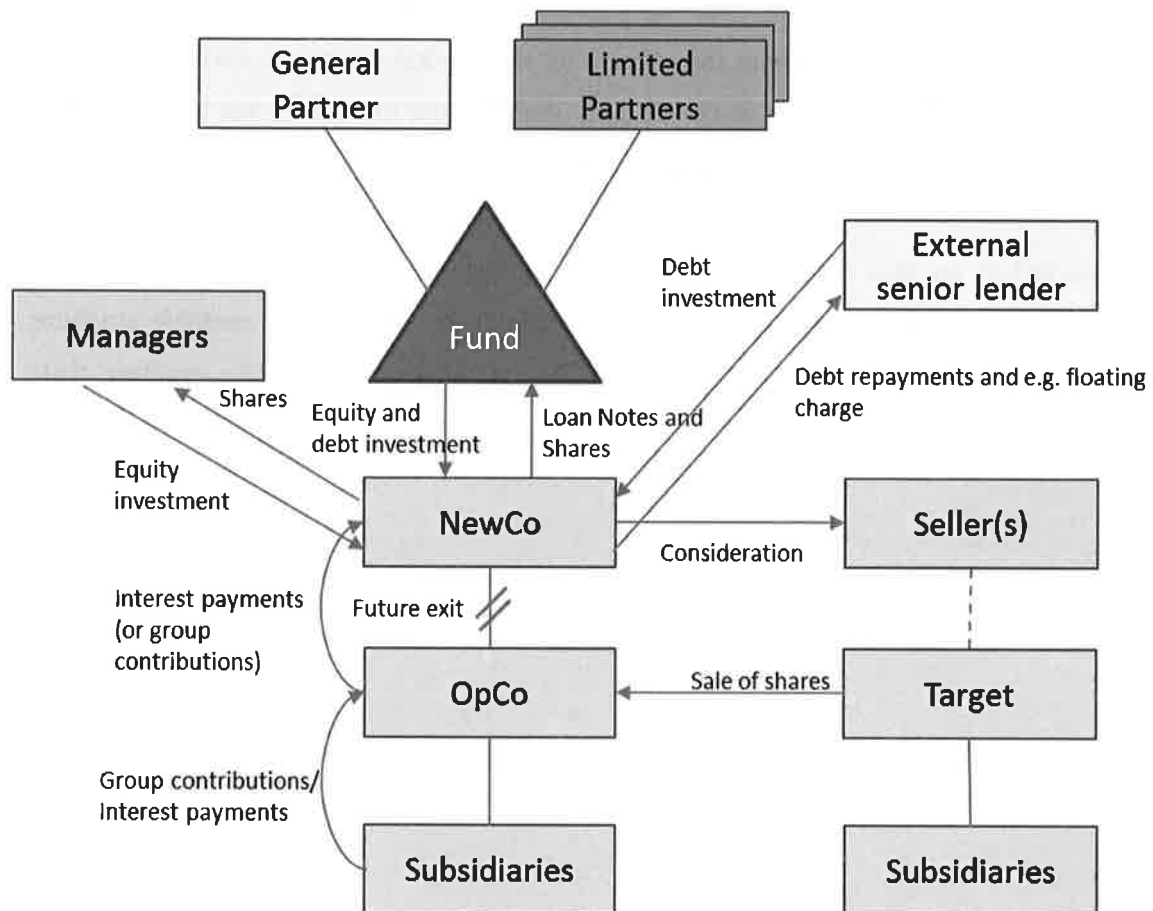
Hybrid debt instruments, which are treated as debt in the hands of a borrower and thereby carrying tax deductible interest and as an equity instrument in the hands of an issuer and thus yielding tax exempt dividends, may be utilized in optimization of tax benefits. (KPMG 2012). Secondly, acquirers in LBO structures may utilize debt instruments in the spirit that the acquired company should pay its own acquisition debt to the external lenders. In a common acquisition structure possibly utilized also for PE portfolio companies, the acquirer uses a Finnish limited liability company as a special purpose vehicle (“SPV”) and finances it with a loan from a foreign group company tax resident in the country where the corporate tax rate is much below the Finnish corporate tax rate. After the acquisition by the SPV, the profits of the target company are utilized against the losses of SPV incurred due to the intra-group interest deductions. (Taxand 2013) The end structure is graphically illustrated in Figure 3.

The tax planning of an acquisition structure of a PE portfolio company has at least three different limitations. When solely optimizing the tax benefits for the structure, it should minimize the taxes when setting up the structure, including but not limited to transfer tax and capital gains tax of the sellers. In operational phase both the corporate income taxes payable by the operative company and its direct or indirect owners should be minimized as well as possible withholding taxes resulting from the profit repatriation during the ownership period be eliminated, and finally the exit of the PE fund should cause any excess tax burden neither to the fund nor to its general partner and limited partners.

All those factors are thus crystallized in the planning stage of the investment structure. One possible solution of a tax structure has been illustrated, by adapting an example structure presented by Yates and Hinchliffe (2011) to the Finnish environment, in the structure chart below.

Figure 3: Possible acquisition structure of a Finnish PE portfolio firm

The figure models a possible acquisition and operational structure of a Finnish PE-owned company. NewCo refers to the company established to conduct the acquisition whereas OpCo refers to the operative company, i.e. previous target company.



As Yates and Hinchliffe (2011) discuss, in the example structure NewCo has three major tax issues; the deductibility of interest payments to external lenders and possibly to mezzanine funds involved, possible deduction of the acquisition fees incurred to it through the acquisition of OpCo and the recoverability of VAT regarding the acquisition expenses.

Currently Finland has no fixed limitations concerning accepted leverage levels although very high debt/equity –ratios are often interpreted as a deviation from the arm’s length principle. During the years evaluated in this research, the tax authorities could mainly challenge aggressive tax planning through interest tax shields by rules concerning either general anti-avoidance rule (Section 28 of Finnish Act on Tax Assessment), and provision concerning hidden profit distribution (Section 31 of Finnish Act on Tax Assessment) (Taxand 2013).

Theoretically, the structures could be challenged also based on classifying the paid interest by a Finnish entity to a foreign lender in the form of dividend (Subsection 2 of Section 9 of Finnish Income Tax Act, 1535/1992). This would in some cases result in Finnish withholding tax liability (Knuutinen 2005a).

To prevent the erosion of the Finnish tax base, the deductibility of interest payments will be limited starting from the fiscal year 2014. As Aalto and Viilo (2013) point out, although the regulation has now been implemented in the legislation, further amendments to it are to be expected, the amendments regarding mostly the scope of the regulation. According to the said rules incorporated in Section 18a of BITA, the net interest payments exceeding the safe haven of 500,000 euro will be possibly not deductible to the payer in case the net interest expenses (i.e. the interests paid less the interests received) exceed 30 per cent of the adjusted EBITDA of the interest paying entity. The adjusted EBITDA consists of the taxable business profits added with aggregate amount of the interest costs, depreciations, changes in the value and write-downs of financial assets and net group contributions. When determining the net interest expenses in relation to the safe haven of 500,000 euro, also the interest expenses paid to fully external parties are taken into account. Should the both limits be exceeded, the excess interests are not tax deductible to the extent 30 per cent adjusted EBITDA limit is exceeded, unless the interest payments are made based on a third party loan. Nevertheless, such interest payments do not include e.g. interests to loans for which a related party has issued a security or loans which actually relate to a back-to-back loan arrangement with a related party.

Even though the interests would become non-deductible based on the above discussed provisions, the interests may still be deducted if the company were able to show its debt to equity ratio to be lower than the average consolidated debt to equity ratio of its group, the test being called as the consolidated balance sheet test. However, as Aalto and Viilo (2013) point out, the consolidated balance sheet test treats PE portfolio companies asymmetrically as normally neither general partner nor investors in PE funds can be consolidated with the portfolio companies, thus the company subject to the duty of making the consolidated financial statement is unclear.

Interest payments that are non-deductible can be carried forward to infinity. Additionally, the limitations are not applied to financial, insurance and pension institutions. Also e.g. housing companies and mutual and normal real estate companies are not subject to the limitations.

Theoretically, the non-deductibility of interest payments would especially harm the OpCo and/or NewCo in Figure 3.

On the other hand, save for the transfer pricing rules requiring all the interest payments, as well as capital structures in general, to be at arm's length in intra-group transactions, as well as the general anti-avoidance rule, no other specific limitations are set for the deductibility of interest payments (Taxand 2013). Additionally, the concept of tax-deductible interest is wide (KPMG 2012). Hence, in theoretical terms the capital structure of NewCo and OpCo could be even fully levered, in case the company would be able to show the arm's length character of the loans, which would in that case be close to impossible. In Finnish tax literature (e.g. Viitala 2008), although no fixed debt to equity rule exists, conventionally a debt to equity ratio not exceeding 10/1 has been considered sound.

2.3.2 Tax planning through layered group structure

The maintenance of structure consisting of several holding companies creates administrative costs but can provide opportunities to tax benefits in the exit phase. In the exit phase, which generates the majority of profits to the PE fund during the whole holding period of a portfolio company, also transfers of shares may be tax exempt due to the Finnish participation exemption regime in Section 6B of BITA. According to the said section, capital gains derived from a sale of shares belonging to the fixed assets of a limited liability company, co-operative, savings bank or a mutual insurance company are exempt from capital gains tax, should the selling entity have owned at least for a year more than 10 per cent of the share capital of the sold firm and such time has not ended more than a year before the trade, the selling entity be taxed in accordance with BITA and the sold entity is not treated as a real estate company and to the extent no tax-deductible depreciation or accrual has been made from the shares in question. (KPMG 2012)

Thus, as illustrated above and the Finnish corporate income tax rate being currently 24.5 per cent, significant savings can be achieved by routing the actual ownership in an operative firm through another firm, provided that the relatively strict conditions are fulfilled. As the private equity funds operating in partnership form are treated in Finnish taxation as transparent entities, an intermediate holding company is in most cases required for upstream granted group contributions by operative companies. Notably, the abovementioned applies only to

sellers in Finland as the participation exemption regimes differ between countries and as discussed later, group contributions work only between Finnish entities.

Another opportunity connected with the layered holding company structure often observed in PE structures is the possibility to generate tax-deductible liquidation loss. As the main rule, the participation exemption regime described above (Section 6B of BITA) applies to the liquidations of operative companies, as the liquidation is in most cases treated as if the remaining acquisition cost of the shares was exchanged to the market value of assets of the liquidated entity (Taxand 2013). The deductibility of the liquidation loss to entities which are not subject to the Finnish participation exemption regime due to their classification as private equity firms was accepted in the published case of Finnish Supreme Administrative Court (SAC 2010:12). In practice the technique may facilitate e.g. the deduction of otherwise non-deductible goodwill in the taxation of the PE group.

2.3.3 Other tax planning

In addition to the use of debt shields, also certain other tax planning measures may be utilized by PE funds in the structuring phase as well as later. Basically, the aim of the described means is to generate costs that decrease the taxable profit of the operative company. Due to the naturally large number of the measures, only the most interesting ones are discussed thereafter.

As a background, the Finnish corporate income taxation system has no specific group taxation regime. In other words, the taxation is based on a single company principle. However, the companies taxed based on BITA and having a qualified level of mutual ownership make a group contribution, which is a tax-deductible item for the grantor and taxable at the hands of the seller. There are also certain other prerequisites regarding e.g. the operations of the companies as well as the duration of the companies' financial years and the ownership relation. A group contribution must be entered into the profit and loss statement as an extraordinary deductible expense for the grantor and extraordinary taxable income to the receiver. (KPMG 2012) Therefore, an indicator of making and receiving group contributions can be developed for the purposes of the empirical research part of this thesis.

Companies may also utilize depreciation regulation in tax planning. The Finnish tax system includes several different depreciation rates depending on the characteristics of the relevant asset. As stated by Hanlon and Heitzman (2010), the depreciation –based tax planning is used in postponing the payments of taxes and thus creating benefits through the time value of money. The difference is seen in Finland e.g. as regards certain intangible assets, especially costs regarding research and development, which in general can be depreciated more rapidly than other corresponding expenses having a longer effective period. Further, from a purchaser's point of view, transactions conducted as asset deals are more lucrative than transactions in a form of share deal, as in an asset deal the difference between book value of transferred assets and purchase price can be activated as goodwill in the purchaser's balance sheet and deducted in straight line depreciations during its economic impact (Taxand 2013).

2.3.4 Book-tax conforming tax planning

The activities concerning book-tax conforming tax planning, i.e. activities that reduce both taxable income and book income, are empirically harder to detect due to the lack of decent methodology (Hanlon and Heitzman 2010). Thus, in some very recent quantitative researches concerning tax planning (e.g. Chen et al. 2010), book-tax conforming tax planning measures have not been even specifically evaluated. In Finland, due to the limited amount of public data by contrast to the U.S., the conforming tax measures are even harder to detect. Notably, however, the interests of the management may be against conforming tax planning, should their incentives be measured based on book income (McGuire et al. 2011).

For instance, book-tax conforming tax planning measures may take place in the allocation of operations in low-tax countries facilitated through international group structures. More precisely, the reallocation of activities of an independent operative company so that it turns into a contract manufacturer, contract R&D operator, agent or commissionaire or that it delegates such activities to other group entities may generate tax savings on a group level. The tax savings derive from differences in tax rates, deduction and depreciation rules, capital gains taxation, withholding taxation as well as tax incentives. (KPMG 2012)

On the other hand, especially the Finnish transfer pricing regulation and increased attention of tax authorities should gather the measures being close to conforming tax planning and lacking sound business reasons. Additionally, corporate expatriations from U.S. to tax haven countries

provide only weak, if any, evidence for benefits to shareholders (Cloyd et al. 2003). Still, the existence of subsidiaries in low-tax or OECD black list countries may indicate the existence of conforming tax planning at least to some extent.

3 Hypothesis development

3.1 Do PE portfolio companies engage in tax planning?

Based on the recent intense public debate, Finnish PE portfolio companies would engage in tax planning activities significantly more than their peer companies. As discussed above, the PE portfolio companies face in the light of academic research pressures to maximize the profit of each investment during the relatively short holding periods. Thus, unnecessary tax payments can decrease the profits during both the holding period as well as the profits derived from the exit, in case e.g. the tax structure of the target company is not tax optimal and impossible to amend due to existing contractual liabilities. Khurana et al. (2011) conclude the question to be about transfer of wealth from the government to the shareholders of the company.

By contrast, the reputation risk may outweigh the gains derived from tax planning as a key item of financial engineering, which may lower the exit price of the target due to tax liabilities resulted through aggressive tax structure, make the seeking of external financing to the target harder or even make future fundraising activities more difficult to PE firms as the potential fund investors may also seek to protect their reputation. Additionally, actions which resemble tax planning, e.g. complex structures may be utilized in actually hiding managerial opportunism and possibility in masking rent-extraction activities (Katz et al. 2013).

The main purpose of the research is to chart, whether the Finnish PE funds outweigh the benefits over the disadvantages, i.e. do the Finnish PE portfolio companies engage in excessive tax planning. Vice versa, from the legislator's point of view it is important to know whether the amendments to taxation aimed at preventing excessive tax planning are even needed or not. Therefore, in accordance with Badertscher et al. (2011), the first main hypothesis of this thesis is the following:

H1: Finnish PE portfolio companies exhibit systematically different levels of tax planning compared to other Finnish companies.

More accurately, especially should the reputation effect as accounted by Badertscher et al. (2011) be of importance to the tax planning, PE portfolio companies owned by foreign PE firms would perhaps have lower reputational risks, as such foreign PE firms may have a better access to international financing markets than Finnish PE firms. Further, as domestic PE firms presumably have a relatively large fraction of their portfolio companies in Finland in comparison with foreign PE operators, they will be even more subject to reputational concerns which may affect not only one portfolio firm, but their other portfolio companies as well. In addition, the consumer and taxpayer backlash may have an increasing effect on the stock price declination after a tax sheltering activity has been exposed (Hanlon and Slemrod 2009). Domestic PE firms could avoid the presumed effect irrespective of being listed or not, whereas the foreign PE firms would not deem the effect that important.

As an alternative explanation possibly leading to the same result, Badertscher et al. (2012) observe that PE firms with more portfolio companies avoid more income tax than PE firms with fewer portfolio companies. It could be generalized that Finnish PE portfolio companies having the investment scope mainly in Finland have possibly smaller and likely less diversified portfolios than global PE firms. Thus, foreign PE firms could, in accordance with Badertscher et al. (2012), have a larger risk appetite in Finland related operations than their domestic and smaller competitors. Thirdly, Atwood et al. (2012) propose based on empirical findings that increasing the requirements for book-tax conformity may affect domestic firms more than to multinational entities which have various possibilities to engage in tax strategies elsewhere and thus not become subject to tightening regulation.

On the other hand, foreign PE firms allegedly have less experience and potential resources to operate in the Finnish market. As shown by Dyreng et al. (2010), individual executives play an important role in determining the tax planning activities of a firm. The effect could be multiplied through the effect observed by Fama and Jensen (1983), according to which the concentration of ownership and control to a small number of decision making agents decreases the risk appetite of the decision making assets. Taking the effects together, e.g. a foreign employee of a foreign PE firm acting as a board member of a Finnish PE portfolio company may be more reluctant to engage in tax planning activities suggested by a Finnish tax adviser unknown to her, whereas her Finnish colleague would be more familiar with the scene and thus engage in the said tax planning structure.

To chart whether the said effects would be relevant in this context, the second hypothesis will be formed as follows:

H2: Portfolio companies of foreign and domestic PE firms exhibit systematically different levels of tax planning.

3.2 What kind of tax planning differences exists?

Additionally, the type of tax planning is a matter of great interest and in my understanding not subject to earlier research. Based on the discussion in Section 2.2, the reputational effect of the tax planning could make the areas which are relatively easy to execute but still very efficient in lowering the effective tax rate of a company, more lucrative for the private equity operators. Especially, the use of group contributions and intra-group loans used in context of routing operative profits to the acquisition vehicle fulfill such criteria. The lowering effect on the effective tax rate is in such structures the most efficient when the said loans are executed in the form of hybrid instruments based on which the cash outflows are tax-deductible interest expense in the hands of the payer whereas cash inflows present tax-exempt profit for invested capital to the receiver. (Government Bill HE 146/2012) Therefore, the utilization of such tax planning measures needs to be tested. Based on existing understanding, very aggressive tax planning does not increase the value of firm in exits (Desai and Dharmapala 2009a).

Partly relating thereto, especially in the determination of the assumed acquisition cost by using EBIT or balance sheet multiples and peer company valuation common also to PE branch, PE operators would want to avoid the intentional use of measures generating skewness to the base figures of these measures. Hanlon (2005) also finds that investors view large positive book-tax differences as an indicator of low-quality of earnings and become thus possibly reluctant to invest in companies having the character. Conclusively, such tax planning activities can be considered the most aggressive means for tax planning. According to Mills (1998), audit adjustments by Internal Revenue Service increase when book-tax differences increase. On the other hand, Koester (2011) finds positive effect between contingent tax liabilities subject to financial reporting in the U.S. and firm value, and the effect is more apparent when the target firm is well-governed. More relevantly from the Finnish context, Balakrishnan et al. (2011) observe that managers tend to increase the volume of disclosure when tax planning increases the complexity of the organization and creates

opaqueness to the company. Katz (2009) finds similar mixed theoretical evidence concerning earnings management by PE firms, as increased monitoring, the separation of management and control as well as risk of loss of reputation would inhibit earnings management, whereas the tendency to act opportunistically, the provision of incentives to managers and concentration of ownership may increase earnings management activities.

Therefore and in context with the hypotheses *H1* and *H2*, I make the following hypotheses:

H3: Finnish PE portfolio companies utilize more group contributions and intra-group borrowing than other Finnish companies.

H4: Finnish PE portfolio companies of funds of a foreign PE firm utilize group contributions and intra-group borrowing differently than Finnish portfolio companies of Finnish PE firms.

H5: PE portfolio companies utilize less tax planning measures that generate differences between book income and taxable income than more visible tax planning measures.

4 Data and Methodology

In this section I will, first of all, briefly describe the data collection procedure used in my research, as well as the empirical research methods used. Secondly, the empirical methodology, on which the thesis will be based, is exhaustively presented. Finally, descriptive statistics concerning the dataset are discussed.

4.1 Sample selection and evaluation period

As the tendency of the research is to compare Finnish companies owned by PE fund, this research will naturally focus on Finnish companies. The sample of companies observed in this research initially consists of all Finnish limited liability companies, public limited liability companies and branches of a foreign limited liability company. The companies operating in a form of partnership, limited partnership or cooperative are carved out of the scope of the research due to their different treatment in the Finnish tax system, i.e. only companies that are taxed in Finland similarly like a single taxable unit are evaluated in this context³.

The data used in the empirical research consist of all the data concerning said companies available in Voitto+ -database provided by Asiakastieto as well as in Bureau van Dijk's Orbis database. Voitto+ -database contains all the financial statements provided for the Finnish Board of Patents and Registration. All the said three company forms are, based on Finnish Act on Bookkeeping (1336/1997), subject to the duty of provision of the financial statements to the Board of Patents and Registration normally during two months after the moment of the approval of the financial statements for the financial year. Nevertheless, up to date financial statements may not be available for all the companies. Hence, due to the delay in updating the database and to maximize the availability of data concerning both the peer companies as well as PE portfolio companies, I use the financial statements for last financial year ending on 2010 for each company. As the only exception, for the purposes of endogeneity check set out in Section 4.5 I utilize financial statements from financial year 2011, as well as from the financial years preceding 2010 if such financial statements are available.

³ There are certain differences concerning the tax treatment of branches and limited liability companies relating e.g. to loan arrangements which are, however, not relevant in the context of this research.

The other existing research (e.g. Badertscher et al. 2011 and Chen et al. 2010) utilize Compustat database, which contains also taxation related information. The database includes also U.S. model cash flow statements. By contrast, in Finland all the taxation related data attributable to the companies is confidential and the access to the data is limited to tax authorities, save for the taxable value of the shares of each company and the amount of income taxes paid by the company, the latter being also reflected in Voitto+ -database. The cash flow statements are neither available in Voitto+.

When sorted by the financial year ending during 2010, Voitto+ -database contains financial statements to almost 200,000 companies, which form the starting sample for this empirical research. As some of the variables are based on lagged data, the information is also collected, when available, from financial year ending during 2009. Should the relevant company have no data available for financial year 2009 due to the fact that the company has been established during the year 2009 or 2010, the data from 2010 has been utilized for both notification years, unless mentioned otherwise. Further, as a financial year, based on Finnish Companies Act (2006/624), lasts from one day to 18 months, the values in the profit and loss statements of the companies having a financial year deviating from 12 months' length are scaled to respond the financial year lasting 12 months. The definite majority of Finnish limited liability companies have a financial year lasting one calendar year.

To execute the analysis based on relatively similar setup as in the earlier research the companies belonging to the sample are divided into PE portfolio companies and other companies. The PE portfolio companies are determined based on Orbis database, which provides both the ownership information of most of the companies as well as indicates, whether the beneficial owner of a company is PE fund. The companies not being included in both Voitto+ and Orbis databases were deleted. After the deletions the sample consisted of 133,093 companies, according to Orbis 504 of which were owned by a PE firm.

To correct any possible manual errors in the data provided by Orbis database, the PE portfolio company sample was manually screened and companies not being de facto owned by PE funds were deleted. Further, 111 PE portfolio companies identified as to have a PE owner but not included in the PE portfolio company sample were labeled as PE portfolio companies⁴. By

⁴ The identification was made based on the full member companies of FVCA exercising PE activities, and the status of each added company as a portfolio company was manually screened.

contrast to Badertscher et al. (2011), unfortunately, Orbis database provides only in a limited number of cases full information of the ownership stake of a PE fund in the relevant portfolio company. This is caused by the fact that in Finland the ownership information of a limited liability company is not available in a single public source. Thus, the idea of Badertscher et al. (2012) concerning the majority and minority stakes of PE companies is not tested in this research. To increase the reliability of the PE portfolio company sample, the manual screening was also attributed to delete such firms from PE portfolio company sample which had only a very minor interest provided by a PE fund. Additionally, companies which were reported by FVCA, SDC Platinum or Orbis to be acquired by a PE firm at the end of the year 2010 or after that were excluded from the sample.

Furthermore, to evaluate possible reputation effect discussed in a way discussed in Section 3 of this thesis, the PE firms are classified to domestic and foreign PE firms. A PE firm is deemed to be domestic if both its and the group it belongs to, headquarters are in Finland. Consequently, the domicile of the PE fund is not relevant. Should a PE portfolio company be owned by both domestic and foreign funds e.g. through a syndication arrangement or an add-in, the portfolio company is classified as being owned by a fund of a foreign PE firm only if the ownership stake of fund(s) of the Finnish PE firm(s) is reliably identified to be less than 25 per cent and the fund(s) of the foreign PE firm hold more than half of the relevant portfolio firm.

The sample was further modified in order to eliminate both dormant companies as well as companies operating as pure holding vehicles. I conduct this by deleting all the companies from the sample which had turnover less than 80,000 euro based on the most recent financial statements. The solution is well-reasoned from the point of view of tax planning, as the company will naturally have less incentive to engage in tax planning activities which consume both time and effort, should the tax planning not even potentially yield any profits to it (e.g. Badertscher et al. 2011). As a result of this, 57 949 other companies are deleted from the sample companies. Further, the described steps lead to the exclusion of 121 PE portfolio companies from the sample.

After all the above discussed modifications, the final sample thus consisted of 74,992 companies, of which 494 were labeled to be owned either totally or partly by a PE fund in Orbis database. From the PE portfolio company sample, 247 firms were owned by a domestic

PE firm and 247 by a foreign PE firm. Further, I utilize the propensity score matching method in a way discussed later and form two additional groups of peer companies consisting of 247 firms (the peer company sample for portfolio companies of domestic PE firms) and 247 firms (the peer company sample for portfolio companies of foreign PE firms).

4.2 Empirical measurement of tax planning activities

4.2.1 Evaluation of tax planning activities

Tax planning has in empirical tax literature been divided into book-tax conforming and book-tax non-conforming tax avoidance, which in the context of this research refers to tax planning. Book-tax non-conforming tax planning reflects measures which aim at minimizing the income tax burden without affecting the accounting earnings of the company, whereas book-tax conforming tax planning refers to measures which decrease both accounting earnings and taxable income. (Hanlon & Heitzman 2010) In practice, book-tax non-conforming tax planning thus covers e.g. the location of operations in low tax countries, use of possible tax incentives provided to certain operational activities (e.g. R&D) and utilization of non-corporate entities to generate losses. By contrast, book-tax conforming tax planning activities may refer e.g. to sale of fixed assets (Badertscher et al. 2011). Badertscher et al. (2011) acknowledge that as private firms are less subject to financial reporting pressures than public firms they intend to adopt more book-tax conforming tax strategies, however, the effect being partly mitigated for PE portfolio firm. Due to the regular reporting of the performance of the portfolio companies to investors, the reasoning seems to be relevant in the Finnish context as well.

Conventionally, empirical corporate tax planning research based in majority on U.S. data relies on relatively similar measures in charting tax planning. In the research of Badertscher et al. (2011), the measures used as explanatory variables include total book-tax differences, discretionary permanent book-tax differences and three-year cash effective tax rate, as well as ratio of cash taxes paid to cash flow from operations and Graham's simulated marginal tax rates. The first four reflect only book-tax non-conforming tax planning and the last attracts also conforming tax planning. Further, Chen et al. (2010) use the effective tax rate, cash effective tax rate, total book-tax differences and abnormal total book tax differences as

proxies for tax planning. The research is criticized by Hanlon and Heitzman (2010) as it does not take the conforming tax planning into account.

The selection of the explanatory variables (*TAX*) for corporate income tax planning in Finnish context presents a major challenge to this research. As provided by Hanlon and Heitzman (2010), when using financial statement data different empirical methods reveal different aspects of tax planning. For instance, a company creating significant tax benefits through the excess use of a tax shield created through excess debt structures does not need to engage in depreciation and amortization planning, and thus a measure which captures only that kind of tax planning may indicate the company engaging in no tax planning at all. The same difference may be applicable to measures either postponing tax liability or eliminating it totally. Additionally, the conforming part of tax planning is very hard to detect with the measures available although certain pivotal areas of it are included in the proxies used.

4.2.2 Empirical measures for tax planning

4.2.2.1 Book-tax difference

As the first measure to detect nonconforming tax planning I employ the approach used by Badertscher et al. (2011) and model possible tax planning by measuring book-tax difference (*BTD*). Based on Frank, Lynch and Rego (2009), the book-tax difference introduced by them and applied also e.g. by Badertscher et al. (2011) are better predictors of tax sheltering than other measures introduced e.g. by Desai and Dharmapala (2006). Based on Hanlon and Heitzman (2010), the estimates for book-tax difference would provide estimates for book-tax non-conforming tax planning behavior although book-tax differences contain information about quality of accounting earnings. Hanlon (2005) also observes that investors reduce their expectations of future earnings as regards firms with large book-tax differences. Further, Armstrong et al. (2012) concise the book-tax gap to indicate the manipulation of the reported earnings, tax aggressiveness or a combination of these two activities. Atwood et al. (2012) find an average inverse effect between the levels of tax avoidance and required book-tax conformity when comparing different regulation approaches.

In my research, *BTD* is measured by subtracting the estimated taxable income i.e. the sum of income taxes and other direct taxes paid divided by the statutory tax rate in force in 2010 (26 per cent), from the profit before extraordinary items. The difference is scaled with non-lagged

total assets, as especially for PE sample companies the use of lagged total assets skews the results significantly due to e.g. add-ins made. The value is set at zero for companies making loss before extraordinary items as the existence of the possible deferred tax asset created through the loss is not compulsory to be expensed in the income statement in Finland and in most cases thus not mentioned in the financial statement (Kaisanlahti et al. 2010). As the existence of the deferred tax asset is not dependent thereto, an arbitrary difference would result from the use of any other solution.

Similarly like the proxy used by Badertscher et al. (2011), *BTD* detects e.g. tax planning through cumulative abnormal depreciations during the respective year, but in my research also through group contributions. Thus, e.g. tax planning through excess leverage is not captured by the variable (Wilson 2009). Further, the key differences here are that *BTD* is in this research unable to detect changes in tax loss carry forwards, as such items are in most cases not shown in the balance sheet, in addition to which *BTD* may receive even negative values, should the company have received group contributions. Conclusively, a bigger *BTD* value indicates more unexplained difference in book-tax gap and thus probably more tax planning. Notably, book-tax difference generally relates to effective tax rate measures (Hanlon and Heitzman 2010).

4.2.2.2 Cash effective tax rates

As the second measure for tax planning, I use the cash effective tax rate (*CASH_ETR*). According to Badertscher et al. (2011), Wilson (2009) and Frank, Lynch and Rego (2009) it captures a wide range of different tax planning measures and as provided by Lisowsky (2010), as based on the reported figures, can capture a key reporting incentive in managing tax expenses. The figures subject to interest in Finnish GAAP, namely income taxes and other direct taxes, should be entered to the income statement based on the accrual principle, and thus the items do not reflect tax prepayments (Kaisanlahti et al. 2010). Thus, it is arguable whether the concept *CASH_ETR* is correct as a measure of outbound tax cash flows. However, to place this research in the context of existing research, I utilize the term *CASH_ETR* when discussing effective tax rates evaluated.

As in earlier research, I calculate *CASH_ETR* by dividing the income and other direct taxes paid with income before appropriations and taxes deducted with extraordinary income and added with extraordinary expenses. Thus, the ratio actually tells not only the relative amount

of tax burden of the company's operations, but also a low variable highly indicates that the differences between income statement and tax return are relatively high. Similarly to Badertscher et al. (2011), I truncate *CASH_ETR* to the range 0 – 1 and set the value missing if the denominator is zero or negative.

Contrary e.g. to Badertscher et al. (2011) and Lisowsky (2010) but similarly to Chen et al. (2010), I do not use data from several years. Instead, I include to the evaluation only the values from the most recently ended financial year. This is due to the fact that Finnish company income taxation does not recognize the tax carry back system but only tax carry forwards; thus when using data from two or more years, companies making taxable loss in the first year and similar profit in second would presumably have a zero *CASH_ETR*, whereas should the profitable year come first, the *CASH_ETR* could be extremely high. On the other hand, based on Dyreng et al. (2008), the dependent variables concerning cash effective tax rates may now include a certain amount of year-to-year volatility.

The third proxy for tax planning is *CASH_ETR2*. In the research of Badertscher et al. (2011), the variable *CASH_ETR2* is determined based on dividing cash taxes paid by the sum of operational cash flow minus extraordinary income, discontinuing income and cash taxes paid. However, the data available does not contain cash flow statements, thus I develop a proxy following the idea of Badertscher et al. (2011) to a large extent and divide the income and other direct taxes paid by the company with the operational income of the company. Most importantly, the variable still includes the idea of Dyreng et al. (2008) to reveal also conforming tax planning by revealing tax planning reducing taxable income but not operational cash flow. Especially excess interest payments to group companies are attributable to this proxy.

Consequently, *CASH_ETR2* discloses the majority of book-tax non-conforming tax planning, a small variable value telling about low relative amount of taxes paid in contrast with the operational income. The variable was set missing, should the operational income of a company be negative. Following the idea of Badertscher et al. (2011), I windsorize the variable between 0 and 1.

4.2.2.3 Discretionary permanent book-tax difference

A dependent variable measuring discretionary permanent book-tax difference (*DTAX*) serves as the last proxy for tax planning. Similarly to the *BTD* variable, *DTAX* intends to reflect activities reducing taxable income in the sense of tax planning in both legal and illegal ways. (Frank, Lynch and Rego 2009) The *DTAX* variable is measured as the intercept of a regression model where the difference between pretax income and taxes paid divided by statutory tax rate is used as the dependent variable and independent variables are *INTANG*, *EQ_EARN*, *NOL*, and lagged permanent difference. The variables in italics refer to intangible assets scaled with total assets, sum of income from group undertakings, participating interests and other investments in non-current assets scaled with total assets, and a dummy variable being 1 if the relevant company accounts for losses from previous years in its balance sheet. Additionally, the regression accounts for taxes paid during the observed year (*CSTE*). The regressions are made and the intercepts thus detected to each of the sample companies, using only the companies with the same main industrial classification main code. Thus, the sample largely follows the variable *DTAX* utilized by Badertscher et al. (2011).

Most importantly and by contrast to US GAAP, as normally annual deferred taxes are not accounted for Finnish GAAP purposes, the measure utilized by Frank, Lynch and Rego (2009) is not usable in Finnish context. Additionally, in contrast with the measure of Frank, Lynch and Rego (2009) the variable *DTAX* used in this research does not capture tax sheltering activities through e.g. the allocation of operations, as the foreign tax expenses of related entities shall not be reported by Finnish companies in Finnish GAAP, thus possible reductions in total tax expense (including foreign tax expense) will not become visible.

The idea of the variable is to capture the difference between taxes and accounting to the extent the difference cannot be explained with the measures used in independent variables. Basically, the greater *DTAX* is, the greater is the unexplained difference between the actual tax payments of the company and the sum it should technically pay if determined based on the pretax income, taking into account the abovementioned factors which could explain the difference. I note that *DTAX* does not cover e.g. tax planning through group contribution or excess interest payments, thus it is more attributable to detecting of non-visible tax planning measures.

As regards the power of *DTAX* as a variable indicating tax planning, Hanlon and Heitzman (2010) state that the variable attempted to detect unexplained difference is as good as its underlying regression model which still does not capture book-tax conforming tax planning, and the unknown effects falling in residuals may not conceptually equal to intentional tax planning. On the other hand, clear and significant positive empirical results from tax planning activities measured with *DTAX* would provide strong support especially to hypothesis *H5* indicating that PE portfolio companies still engage more in tax-planning measures generating permanent differences between accounting and taxation.

Table 2: Definitions of variables describing tax planning

Variable	Definition
Book-tax difference (BTD)	(Profit before extraordinary items (t) - (income taxes (t) + other direct taxes (t)) / 0.26) / Total assets (t)
Cash effective tax rate 1 (CASH_ETR1)	-(Income taxes (t)+ other direct taxes (t)) / Profit before appropriations and taxes (t); variable truncated between 0 and 0.26
Cash effective tax rate 2 (CASH_ETR2)	(Income taxes + other direct taxes) / Operating profit; variable truncated between 0 and 0.26
Discretionary permanent book-tax difference (DTAX)	Intercept in regressions made separately for each industry sector classification main groups where $PERMDIFF = \beta_0 + \beta_1INTANG(t) + \beta_2EQ_EARN(t) + \beta_3CSTE(t) + \beta_4NOL + \beta_5PERMDIFF(t-1)$, where $PERMDIFF = \text{profit before extraordinary items}(t) - (\text{income taxes}(t) + \text{other direct taxes}(t)) / 0.26) / \text{Total assets}(t)$; $CSTE(t) = -(\text{income taxes}(t) + \text{other direct taxes}(t)) / \text{total assets}(t)$ and $PERMDIFF(t-1)$ is the same relation for items (t-1). Other variables in the regression are defined in Table 3.

4.2.3 Independent variables for measurement of tax planning

The selection of the independent variables follows the existing research (e.g. Badertscher et al. 2011 and Chen et al. 2010) to the large extent. The dummy variable *PE_BACKED* equals one for a firm identified as owned by one or more private equity fund as discussed above and zero otherwise. Further, the dummy variable *FGNPE* equals one if the relevant portfolio company is labeled to be owned by a non-Finnish private equity fund in Orbis and zero otherwise, the same principle being reflected for domestic funds in *DOMPE*. Similarly to earlier research, the coefficient and statistical significance of *PE_BACKED* and both dummy variables describing the effect of nationality of PE firm should disclose the effect of PE firms to tax planning for different tax planning proxies.

4.2.3.1 Need for tax planning

Similarly to the earlier research, the firstly mentioned set of independent variables is intended to describe the need for tax planning of the firm. Firstly, return on net operating assets (*RNOA*) calculated by dividing income before extraordinary items added with interest

expense deducted with non-interest bearing debt and then scaling the outcome with total assets measures the profitability of the firm excluding leverage, a high value potentially increasing the need for tax planning.

Further, as to other independent variables, leverage (*LEV*) measured as the amount of all the debt (exclusive trade payables, received prepayments and accrued expenses) diminishes the need for other tax planning through the creation of a tax shield. The said independent variable also contains mezzanine financing and other convertible debt instruments presented as liabilities, which based on Lisowsky (2010) have a negative relation with tax sheltering activities, which is explained through substitution effect. In relation thereto, the variable *INTRAGROUP_LEV* includes all the long and short term loans from related entities as well as loans presented in the balance sheet as capital loans although the last mentioned loans can be issued also by other entities than direct or indirect shareholders of the target company. However, as excluding such loans would possibly leave a major amount of intra-group lending uncovered in this context and especially as certain profit participation loans normally treated as capital loans in the balance sheet are used as a tool for effective tax planning, including the capital loans under *INTRAGROUP_LEV* is a justifiable decision. Both the variables are scaled with total assets.

I also include dummy variables which capture net operative losses from previous years (*NOL*) and negative net income of the firm prior to extraordinary items at the last ended financial year (*LOSS*). The variables should reflect the fact that the company has a smaller need for tax planning due to either existing tax assets or negative income from operational business. However, I highlight that in the Finnish tax system the losses from previous year in accounting may not correlate with taxation at all e.g. as a qualified change in direct or indirect ownership may lead to the forfeiture of tax losses from ongoing and previous tax years. Further, the losses can be carried forward in taxation only for ten years which the variable *NOL* does not take into account. However, as the deferred tax assets generated through tax losses are only seldom entered into balance sheet, the variables *NOL* and *LOSS* describe the decreased need for tax planning due to previous loss-making years to a sufficient extent.

Other independent variables include relative sales growth between last full financial year ended in 2010 and 2009 (*SALES_GR*), which allegedly increases investments in depreciable assets, and firm size reflected by the logarithm of non-lagged assets (*ASSETS*) which

facilitates the firm's capability and motivation in tax planning. Dyreng et al. (2008) empirically show that small firms are more likely to have higher effective tax rates in terms of long-term tax planning.

4.2.3.2 Tax planning through deviations in taxation from accounting

The second main group of the independent variables is designed to control the differences between accounting and taxation and covers also depreciation based tax planning. Firstly, *INTANG* represents the amount of intangible assets scaled with total assets which should capture the effect of use of more rapid amortization methods as well as the potential ability of the firm of engaging in conforming tax planning through transferring the intangible assets to low-tax jurisdiction (Badertscher et al. 2011). Income in earnings (*EQ_EARN*) presents the received income from participations in group companies, related entities or other fixed assets. Such items affect to profit but may create difference with regard to taxation, as almost all dividends received by Finnish limited liability companies are currently taxed less than ordinary business income. As my data consists of unconsolidated financial statements, the contents of the proxy differ from earlier studies made with U.S. data.

Thirdly, as a proxy for timely loss recognition and earnings management, the variable introduced by Ball and Shivakumar (2006) cannot be utilized as by Badertscher et al. (2011), as Finnish firms can either use IFRS or Finnish GAAP which differ from each other based on gain and loss recognition principles, in addition to which the Finnish tax regulation imposes very accurate and heterogeneous rules for the expensing of different gains and losses. However, as in Finnish taxation the possibility of shelving depreciations and expensing them later is possible, I use the variable *AB_DEPR* which is calculated by scaling the sum of the change in depreciation difference and reservations entered into P&L statement with total assets. Notably, in some research (e.g. Chen et al. 2010), the abnormal accruals are not notified as an independent variable. Based on Chen et al. (2010), the sum of property, plant and equipment scaled with total assets (*PPE*) shall be used as more capital intensive companies have more alternatives in tax planning through depreciations.

4.2.3.3 Tax planning through ownership structure

Further, to control the possibilities of tax planning through transfer pricing I include in the regression model a variable attributing to multinational factors (*MNC*) which equals 1 in case

the company has either foreign subsidiaries or foreign parent company based on Orbis and is 0 otherwise. As stated by Desai and Dharmapala (2006), related operations located in different tax systems may provide very significant tax savings, especially when the savings emerge from the conversion of originally domestic operations to a structure where a new holding company situated in a tax haven becomes the new parent company of the created group structure. In Finnish context, according to Government Bill HE 146/2012 the cross-border group structures may be used in facilitating access to tax benefits which may provide unfair competition advantage in relation to domestic peer companies which do not have an international connection. In other words, the variable includes the concept of book-tax conforming tax planning to a certain extent although the tax planning measures fitting under book-tax conforming tax planning are not fully captured with the dependent variables.

Finally, an independent variable concerning the group contributions either given or received (*GROUPC*) is included in the regression models as the group contributions are in the Finnish tax system an effective means in channeling profits from qualifying operative entities to entities having either unused tax assets or taxable deductions. Similarly to earlier research, I utilize mostly untabulated industry dummies (*INDUS*) based on two-digit NACE codes to mitigate industry-based effects.

As regards other independent variables which are commonly used in earlier research, the publicly available Finnish data does not facilitate the formation of the inverse Mills ratio (Badertscher et al. 2011) nor the foreign income variable used by Chen et al. (2010). This is due to the fact that Finnish GAAP and other relevant regulation do not require the companies to separately report foreign source income or taxes paid abroad, or to draft a public cash flow statement.

Table 3: Definitions of variables used as independent variables in the empirical models

Variable	Definition
<u>Private equity ownership</u>	
Private equity ownership (PE_BACKED)	1 if the company is owned by a PE firm, 0 otherwise
Foreign private equity ownership (FGNPE)	1 if the company is labeled in Orbis database or identified otherwise to be owned by a non-Finnish PE firm, 0 otherwise
Domestic private equity ownership (DOMPE)	1 if the company is labeled in Orbis database or identified otherwise to be owned by a Finnish PE firm, 0 otherwise
<u>Need for tax planning</u>	
Return on net operative assets (RNOA)	(Profit before extraordinary items(t) + Interest and other financial expense(t)) / (Total assets(t) - Trade creditors(t) - Prepayments and accrued income(t) - Advances received(t) - Accruals and deferred income(t))
Net loss (LOSS)	1 if the company has Profit before extraordinary items(t-1) < 0, 0 otherwise
Net operative losses from previous years (NOL)	1 if the company has Retained earnings(t) < 0, 0 otherwise
Leverage (LEV)	(Long term liabilities(t) + Short term liabilities(t) - Short term advances received(t) - Short term trade creditors(t) - Short term accruals and deferred income(t)) / Total assets (t)
Intra-group leverage (INTRAGROUPELV)	(Amounts owed to group undertakings(t) + Amounts owed to participating interest undertakings(t) + Capital loans(t)) / Total assets(t)
Sales Growth (SALESGR)	(Net turnover (t) - Net turnover (t-1)) / Net turnover(t-1)
Amount of assets (ASSETS)	Ln (Total assets)
<u>Tax planning through differences between taxation and accounting</u>	
Intangible assets (INTANG)	Intangible assets(t) / Total assets(t)
Abnormal depreciations (AB_DEPR)	(Change in cumulative accelerated depreciation(t) + Change in untaxed reserves(t)) / Total assets (t)
Equity in earnings (EQ_EARN)	(Income from group undertakings(t) + Income from participating interests(t) + Income from other investments held as non-current assets(t)) / Total assets(t)
Property, plant and equipment (PPE)	(Land and waters(t) + Buildings(t) + Machinery and equipment (t)) / Total assets(t)
<u>Tax planning through ownership structure</u>	
Multinational link (MNC)	1 if the company is labeled in Orbis database to have one or more non-Finnish parent companies or subsidiaries, 0 otherwise
Group contributions (GROUPE)	(Extraordinary income(t) + Extraordinary expenses (t)) / Total assets (t)
Received group contributions (RGROUPE)	Extraordinary income (t) / Total assets (t)
Granted group contributions (GGROUPE)	Extraordinary expenses (t) / Total assets (t)
<u>Other variables</u>	
Listing (LISTED)	1 if the shares in the company are publicly traded according to Orbis, 0 otherwise
Industry (INDUS)	1 for the relevant sector classification main group dummy variable where the company has reported to belong according to Orbis, 0 otherwise

4.3 Explanatory regression model for tax planning activities

I test the alleged tax planning activities of domestic and foreign PE portfolio companies with the following OLS regression model:

$$\begin{aligned}
 (1) \quad TAX_i = & \alpha_0 + \alpha_1 PE_BACKED_i + \alpha_2 RNOA_i + \alpha_3 LOSS_i + \alpha_4 NOL_i + \alpha_5 LEV_i \\
 & + \alpha_6 INTANG_i + \alpha_7 MNC_i + \alpha_8 AB_DEPR_i + \alpha_9 EQ_EARN_i \\
 & + \alpha_{10} SALES_GR_i + \alpha_{11} ASSETS_i + \alpha_{12} LISTED_i \\
 & + \alpha_{13} GROUPECONTRIBUTIONS_i + \alpha_{13} INDUS_i
 \end{aligned}$$

As discussed above, I make the regressions separately for each of the dependent variables depicting tax planning activities (denoted with *TAX*) covering book-tax difference (*BTD*), two differently measured cash effective tax rates (*CASH_ETR* and *CASH_ETR2*) and discretionary permanent book-tax difference (*DTAX*). Additionally, the dummy variable *PE_BACKED* is separated to portfolio companies with domestic PE ownership (*DOMPE*) and foreign PE ownership (*FGNPE*).

The dummy variables for each main groups of Finnish Industrial Classification system are denoted with *INDUS*. The values for industry dummies are not tabulated in the context of regressions unless specified otherwise.

4.4 Propensity score matching

In the most recent quantitative research especially concerning the value creation ability of private equity operators, alleged fundamental differences between PE portfolio companies and other companies are removed with propensity score matching method. The method attributes to the alleged endogeneity of the empirical results, as the PE operators choose investee companies after a careful selection process far from arbitrary selection. Therefore, in nonrandomized experiments the direct comparisons can lead to inherently misleading results, unless the treated and control units are modified e.g. with the propensity score matching method in a way that the direct comparisons become meaningful (Rosenbaum and Rubin 1983). Engel and Keilbach (2007) formulate the said average treatment effect as follows:

$$(2) \quad \hat{\theta}^{(1)} = E [\bar{Y}^{(1)} - \bar{Y}^{(0)} | PE = 1] = E [\bar{Y}^{(1)} | PE = 1] - E [\bar{Y}^{(0)} | PE = 1]$$

In the equation, the last term on the right models the counterfactual state, i.e. the situation where a company had not been owned by a PE firm. Term $\bar{Y}^{(1)}$ reflects the relevant outcome of firms being having received private equity funding, $\bar{Y}^{(0)}$ is the outcome of the same variable for firms not being subject to PE financing and $PE = 1$ refers to PE ownership. However, due to the selection process of PE firms when screening the potential investments, which may also apply to the tax planning activities and capabilities of such firms in their portfolio phase, the peer company sample can be adjusted to mitigate the possible biasness in the PE portfolio company samples.

In research concerning the value creation capacity of PE funds, as well as similarly to tax related empirical research of e.g. Badertscher et al. (2011), Armstrong et al. (2012) and Katz et al. (2013), I utilize the propensity score matching method in constructing a peer company sample which would be as similar as possible to their PE-owned peer companies. In other words, the plausible selection bias should be mitigated to the considerable extent. Similarly to Badertscher et al. (2011), I calculate propensity scores by utilizing a probit model where the dependent variable is a dummy variable indicating PE ownership and the utilized independent variables are the variables which were significantly different between PE portfolio companies and the full peer company sample. I evaluate the models separately for companies with domestic PE ownership and companies with foreign PE ownership. The utilized probit model is the following:

$$(3) \quad PE = \alpha_0 + \alpha_1 RNOA_i + \alpha_2 LOSS_i + \alpha_3 NOL_i + \alpha_4 LEV_i + \alpha_5 SALES_i \\ + \alpha_6 MNC + \alpha_7 ASSETS_i + \alpha_8 INTANG_i + \alpha_9 PPE_i$$

After conducting two probit regressions for all the companies, I utilize the nearest neighbor matching procedure, which can in mathematical terms be presented as defining the non-treated peer company (j) to match with a treated PE-owned company (i) so that for the distance $b(x)$; $\min_{i,j} [b(x)_i - b(x)_j]$. The method is superior in finding the closest matching company compared e.g. with caliper matching method which returns all companies at pre-defined distance. (Engel and Keilbach 2007)

By contrast to earlier research and due to my large sample size, I conduct the matching separately for each main branch classification class, thus none of the PE portfolio companies is matched with a company belonging to the different main class. Hereby I capture possible branch related differences which could affect tax planning, which do not become evident through the variables utilized in this research, including but not limited to state subsidies, possible difference between branches when it comes to attention of tax authorities and realities concerning obtaining external financing.

I restrict the firms having propensity scores within 0.10 of its matched pair. Should two PE-owned companies have the same closest match company, the PE-owned company having worse second best match company is matched with the firstly mentioned company. Further, the matching is done without replacement but inside the sample, meaning that portfolio

companies of Finnish PE firms and foreign PE firms may have same matching pair companies.

4.5 Tax planning before and after the investment

The propensity score matching method does not fully attribute all factors which could affect the endogeneity of the tax planning of PE portfolio firms, thus the potential endogeneity needs to be addressed with other tests as well. Chen et al. (2010) abandon the risk of endogeneity and claim that tax aggressiveness is not a factor affecting the behavior of their control group, which is probably at least partly true for the purposes of this research. On the other hand, Badertscher et al. (2011) utilize inverse Mills ratio as one independent variable to remove possible endogeneity in the results and end up in a similar result as Chen et al. (2010) as the said variable does not receive statistically significant values. The authors concise that the sample selection bias is not likely to be a problem in their empirical setup, which resembles my empirical framework.

The inverse Mills ratio is in practice a two-stage sample selection correction procedure which relies on Heckman estimation procedure (Badertscher et al. 2011). On the other hand, Heckman selection procedure may provide misleading results in correcting the selection bias especially in cases of high degree of censoring and high correlation between the error term of the selection and outcome regression (Puhani 2000). Further, the Finnish financial statement data does not facilitate the forming of most of the variables which Badertscher et al. (2011) use, thus I decide not to control the endogeneity through application of the said ratio.

By contrast, I assess the potential problem of endogeneity with the evaluation of behavior of PE portfolio entities before and after the moment of initial investment. Based on deal data from FVCA, SDC Platinum and Argentum⁵ I manage to identify 34 companies or groups of companies targets in a buyout deal during the years 2007–2010, where based on ownership data from Orbis, the press releases of the PE firms or news from financial newspapers the management, industrial owner or another entity not linked to PE firms have sold the company to a PE firm. I exclude eight companies from that sample, concerning which panel data is not available in Voitto+ or which have been subject to some kind of company restructuring prior

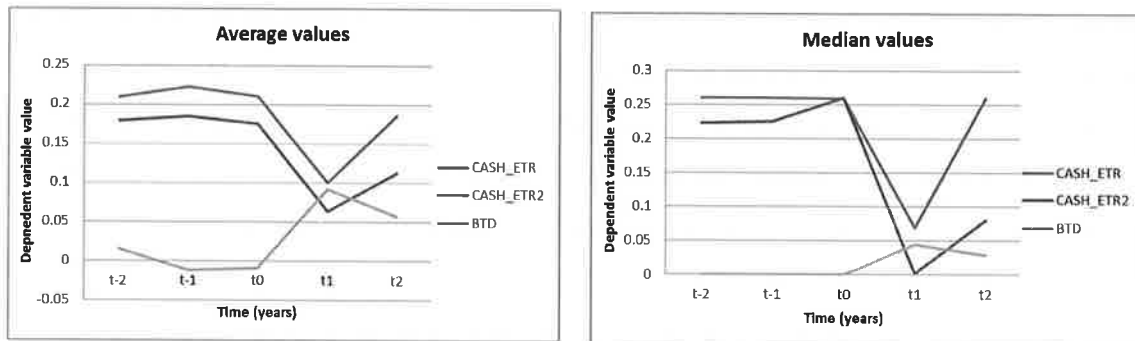
⁵ <http://www.argentum.no/en/Market-Database/>

to the investment or after it. To avoid the skewness created by the operations of single large PE portfolio groups, I include only one PE portfolio company in the evaluation per each PE portfolio company group.

Further, I label the financial year during which the PE investment took place for each company as t_0 , the 12-month financial year preceding that financial year as $t-1$ and the 12-month financial year preceding that financial year as $t-2$. The first full 12-month financial year after the year of investment is labeled as t_1 and the 12-month financial year after it as t_2 . Notably, especially due to the fact that Voitto+ provides financial statement data only for last five financial years, all the companies subject to evaluation in this section do not have data for $t-2$ or t_2 . I calculate three tax planning proxies (BTD , $CASH_ETR$ and $CASH_ETR2$) and present the results in Figure 4 below.

Figure 4: Tax planning before and after PE investment

The figure presents the average and median values of three tax planning measures for two financial years preceding the year of PE investment ($t-2$ and $t-1$), the financial year during which the PE investment take place (t_0) as well as two subsequent financial years. The target companies are identified as not PE-backed companies prior to the investment at t_0 . The contents of the three dependent variables ($CASH_ETR$, $CASH_ETR2$ and BTD) are described in Table 2. The table includes 20 companies belonging to different groups, which were acquired by a PE firm during years 2007–2010 and which did not have any PE owners prior to the transaction. The data consist of 26 company observations for years $t-1$ to t_1 , 18 observations for $t-2$ and 16 observations for t_2 .



Despite of the very small sample size subject to evaluation for the purposes of this test as well as possible selection bias attributable to the test concerning information available of the ownership of companies prior to PE investment, the graphical evidence clearly shows the change in tax planning activities as a result of PE investment as all the dependent variables indicate a lower degree of tax planning prior to investment than at the year of investment and after it. Although the results indicate less tax planning after the acquisition year, the differences in scale of tax planning activities in contrast with the initial situation still remain

except for the median of taxes paid in relation to income before appropriations and taxes paid. Low number of the observations in t2 may cause the said effect. Nevertheless, Figure 4 clearly indicates counterfactual evidence against the alleged endogeneity.

5 Do PE portfolio companies engage more in tax planning?

The purpose of this Section 5 is to find out, whether PE-owned companies engage more in tax planning activities than their peer companies, i.e. whether empirical findings support the hypotheses *H1* and *H2*. The possible existence of differences in tax planning activities is first empirically tested with various measures between portfolio companies of both domestic and foreign PE operators and all peer companies. I test the robustness of the results with empirical tests with the PE portfolio companies against matched sample companies. I also conduct other empirical tests to ensure the robustness of my results.

5.1 Differences in relation to peer company samples

Table 4 discusses the characteristics of dependent variables. The table reflects that the dependent variables measuring book-tax difference (*BTD*) as well as cash effective tax rate using operational income in the benchmark (*CASH_ETR2*) seem to yield indications of tax planning for both domestically and foreign owned PE portfolio companies on a statistically significant level when testing the samples with two-tailed t-test and Wilcoxon signed rank test. The results are robust for PSM sampling, except for book-tax differences in two-tailed t-test and foreign PE firm portfolio sample, in which case the result from two-tailed t-test remains barely outside 10 per cent confidence level. Otherwise, the results are significant mainly on 1 per cent confidence level. The variable *BTD* shows larger difference between the assumed tax burden based on profit before extraordinary items and the taxes company has actually reported to have paid throughout the samples. For instance, the gap is for foreign PE portfolio firms 4.2 percentage points and domestic PE portfolio firms 4.6 percentage points larger than full sample of other firms.

Based on the variable *CASH_ETR2* domestically held PE portfolio companies pay on average 8.4 percentage points and foreign held 4.9 percentage points less tax in relation to operating income than peer companies. The correlation matrix presented in Table 5 further indicates that the greatest correlation among different dependent variables and PE ownership variables would exist between *CASH_ETR2*. The result is important as the said dependent variable captures the largest variety of the tax planning measures.

Further, the variable *CASH_ETR*, which captures the ratio of profit before taxes and appropriations in relation to total assets, is smaller for domestic PE company samples in Panel A at 1 per cent confidence level in two-tailed t-test. Otherwise the values indicate more tax planning but the statistical significance of the results hardly remain outside the 10 per cent confidence level. However, the difference in *CASH_ETR* partially disappears against PSM peer company samples of domestic PE portfolio firms and in case of foreign PE portfolio firms, provides even counterfactual but insignificant evidence of tax planning.

Similarly, the variable *DTAX* indicates greater differences with regard to peer company firms based on average and median values although in most cases not on a statistically significant level. The only statistically significant indication of difference shown by variable *DTAX* is accomplished with Wilcoxon signed rank test and for foreign PE firm sample at 10 per cent confidence level. For foreign PE portfolio companies, the lower quartile boundary stays above 0.000, indicating that a smaller number foreign PE portfolio companies have discretionary permanent tax assets less than other firms at the same branch. Notably, the standard deviations for domestic PE portfolio company sample regarding *DTAX* are considerably large when compared against other samples. Unlike in the case of other dependent variables, the correlation matrix in Table 5 does not indicate significant correlation between *DTAX* and PE portfolio company dummy although the correlations between said variables are positive indicating more tax planning activity.

Conclusively, Table 4 and Table 5 provide support to hypothesis *H1*. Further, generally the values of domestic PE portfolio firms indicate more tax planning than values of foreign PE portfolio firms in accordance with hypothesis *H2*. The significance of the results partly disappears when evaluating them against PSM samples, however, certain evidence of tax planning still remains.

Table 4: Distribution of dependent variables between PE portfolio companies and peer companies

The table presents the lower (25%) median (50%) and upper (75%) quartile values as well as average values and standard deviations for each of the dependent variables. Formation of the variables evaluated in this table is presented in Table 2. All the said values for each of the variable are presented separately for portfolio firms of foreign and domestic PE funds, as well as peer companies. In Panel A the peer company sample consists of all peer companies, whereas in Panel B the peer company sample includes only the peer sample for portfolio firms with foreign PE ownership generated through propensity score matching, and in Panel C the peer companies are identified as matched companies for domestic PE portfolio firms. Notably, in Panels B and C the variable BTD has been truncated between -1 and 1 whereas in Panel A the variable BTD is not truncated. The columns next to average values for PE samples indicate the statistical significance of average values in relation to peer company sample in the same rows, the statistical significance being labeled with ***, **, * and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms. Significance of the variables in relation to the peer companies (depending on the row either full sample or the peer company samples generated through PSM) has also been measured with two-tailed Wilcoxon signed rank test, and the presentation of significance of results is similar. Average and median values for PE sample companies being smaller than the respective values for peer companies are presented in italics.

Dependent variables	Companies held by domestic PE firm				Companies held by foreign PE firm				Peer companies									
	#Obs	0.25 Median	0.75 Average	St dev	#Obs	0.25 Median	0.75 Average	St dev	#Obs	0.25 Median	0.75 Average	St dev						
Panel A: Full sample																		
Book-tax difference (BTD)	247	0.0000	0.0000 ***	0.0843	0.0707 ***	0.1460	247	0.0000	0.0000 ***	0.0620	0.0674 ***	0.1805	74497	-0.0021	0.0000	0.0111	0.0251	0.1817
Cash effective tax rate (CASH_ETR)	134	0.0000	0.2561	0.2600	0.1607 ***	0.1197	154	0.0518	0.2584	0.2600	0.1809	0.1111	55291	0.1494	0.2583	0.2600	0.1935	0.1030
Cash effective tax rate 2 (CASH_ETR2)	148	0.0000	0.0061 ***	0.2267	0.0918 ***	0.1127	186	0.0000	0.1184 **	0.2600	0.1275 ***	0.1199	57281	0.0588	0.2458	0.2600	0.1762	0.1072
Discretionary permanent book-tax difference (DTAX)	247	-0.0007	0.0304	0.0667	0.0195	0.6917	247	0.0124	0.0311 *	0.0625	0.0150	0.1465	74497	-0.0089	0.0263	0.0503	-0.0001	0.3310
Panel B: Foreign PE portfolio firms - sample generated through PSM																		
Book-tax difference (BTD)						247	0.0000	0.0000 ***	0.0620	0.0644		0.1579	247	-0.0005	0.0000	0.0354	0.0412	0.1591
Cash effective tax rate (CASH_ETR)						152	0.0518	0.2584	0.2600	0.1809		0.1111	181	0.0748	0.2564	0.2600	0.1799	0.1062
Cash effective tax rate 2 (CASH_ETR2)						185	0.0000	0.1184 **	0.2600	0.1275 ***		0.1199	183	0.0100	0.2349	0.2600	0.1639	0.1127
Discretionary permanent book-tax difference (DTAX)						247	0.0124	0.0311	0.0625	0.0150		0.1465	247	0.0031	0.0291	0.0571	-0.0152	0.3011
Panel C: Domestic PE portfolio firms - sample generated through PSM																		
Book-tax difference (BTD)	247	0.0000	0.0000 ***	0.0843	0.0707 ***	0.1459							247	0.0000	0.0000	0.0169	0.0306	0.0977
Cash effective tax rate (CASH_ETR)	134	0.0000	0.2561	0.2600	0.1607	0.1197							164	0.0216	0.2537	0.2600	0.1719	0.1107
Cash effective tax rate 2 (CASH_ETR2)	148	0.0000	0.0061 ***	0.2267	0.0918 ***	0.1127							167	0.0107	0.2287	0.2600	0.1569	0.1142
Discretionary permanent book-tax difference (DTAX)	247	-0.0007	0.0304	0.0667	0.0195	0.6917							247	-0.0103	0.0263	0.0526	-0.0209	0.4504

Table 5: Correlation matrix of independent variables

The table presents Pearson correlation coefficients of the dependent variables used as proxies for tax planning as well as dummy variables reflecting PE ownership, the correlation measured with PE portfolio companies and full set of peer companies used for the purposes of the empirical tests. The formation of the dependent variables variables (including truncation, when applicable) is exhaustively described in Table 2. The significance of each correlation is tested with two-tailed test, significant results being labeled with ** (significant at the level 0.01) and * (significant at the level 0.05).

	PE Ownership	Foreign PE ownership	Domestic PE Ownership	Book-tax difference (BTD)	Cash effective tax rate 1 (CASH_ETR1)	Cash effective tax rate 2 (CASH_ETR2)
PE ownership	1.000					
Foreign PE ownership	0.706 **	1.000				
Domestic PE Ownership	0.706 **	-0.003	1.000			
Book-tax difference (BTD)	0.020	0.013 **	0.014 **	1.000		
Cash effective taxrate 1 (CASH_ETR1)	-0.015 **	-0.006 **	-0.016 **	-0.321 **	1.000	
Cash effective taxrate 2 (CASH_ETR2)	-0.046 **	-0.026 **	-0.040 **	-0.295 **	0.925 **	1.000
Discretionary permanent book-tax difference (DTAX)	0.004	0.003	0.003	0.468 **	-0.321 **	-0.264 **

5.2 Regression models

5.2.1 Tax planning in relation to all peer companies

First of all, a multivariate OLS model, set out in section Explanatory regression model for tax planning activities of this thesis is utilized. The four tax planning measures are tested separately. I present the results in Table 6 below.

Table 6: Results of tax planning regressions based on samples of PE -owned and other companies

The table presents results for four different OLS multivariate regression models. Table 2 and Table 3 elaborate the contents of the independent and dependent variables. T-values for each independent variable are presented next to the variable, in addition to which statistical significance is indicated with ***/**/* at 1, 5 and 10 per cent confidence levels. I make the regressions and present the results separately with both PE dummy variables separating PE firm background and one PE dummy variable. The contents of each of the dependent variables are presented more accurately in Table 2. Symbols '+' and '-' indicate the predicted direction of the variable in the regression model. Except for DTAX, the regressions include also untabulated dummies for each main branch in Finnish classification system. Variables operative losses from previous years, intangibles, and equity in earnings are not included in the evaluation of DTAX as the variables are used in the forming of DTAX.

	<u>BTD</u>			<u>DTAX</u>			<u>CASH ETR</u>			<u>CASH ETR2</u>		
	+/-	Coeff	t-value	+/-	Coeff	t-value	+/-	Coeff	t-value	+/-	Coeff	t-value
PE ownership	+	0.039	4.88 ***	+	0.026	1.82 *	-	-0.005	-1.02	-	-0.037	-7.75 ***
Domestic PE ownership	+	0.049	4.42 ***	+	0.020	0.97	-	-0.017	-2.45 **	-	-0.061	-8.60 ***
Foreign PE ownership	+	0.029	2.56 **	+	0.034	1.63	-	0.006	0.92	-	-0.018	-2.76 ***
Profitability (RNOA)	+	0.011	33.69 ***	+	0.017	28.46 ***	-	0.006	12.54 ***	-	0.009	16.73 ***
Net loss	+	0.025	15.39 ***	+	0.044	15.91 ***	-	-0.896	-91.04 ***	-	-0.083	-82.92 ***
Operative losses from previous years	+	0.051	26.56 ***				-	-0.089	-75.08 ***	-	-0.077	-65.32 ***
Leverage	-	0.009	8.75 ***	-	-0.136	-76.17 ***	-	-0.023	-25.87 ***	-	-0.048	-54.07 ***
Intangibles	+	0.006	2.76 ***				-	-0.001	-0.74	-	-0.002	-2.00 **
Multinationality	+	0.009	2.58 **	-	-0.036	-5.52 ***	-	-0.004	-1.97 **	-	0.000	0.24
Abnormal depreciations	+	-0.184	-4.04 ***	-	-0.747	-8.98 ***	-	0.827	24.05 ***	-	0.630	17.34 ***
Equity in earnings	+	0.871	42.49 ***				-	-0.230	-23.32 ***	-	0.002	0.17
Group contributions	-	-0.230	-54.15 ***	-	0.257	33.07 ***	+	0.006	2.01 **	+	0.113	31.26 ***
Sales growth	-	0.000	1.76 *	-	0.000	0.68	+	0.000	0.42	+	0.000	0.94
Assets	+	-0.055	-12.23 ***	+	0.012	16.07 ***	+	0.001	3.07 ***	+	-0.002	-6.81 ***
Listed	-	-0.004	-0.21	-	-0.316	-9.14 ***	+	-0.033	-3.04 ***	+	0.002	0.13 ***
Intercept		0.261	-0.15 ***					0.237	40.17 ***		0.201	9.67 ***
R2		0.1001			0.1011			0.3659			0.3677	
Observations		74997			74997			55291			57281	

First of all, three PE dummy variables in the regression concerning dependent variable book-tax difference (*BTD*) indicate the PE portfolio companies to have significantly greater book-tax differences compared with other companies. The result is significant at 1 per cent confidence level for domestic PE portfolio company and full PE portfolio company samples, and 5 per cent confidence level for foreign PE portfolio company sample in addition to which the increasing effect is smaller with foreign PE portfolio companies. The directions of the controlling variables, most importantly losses from previous years and current year which both serve as tax assets, as well as dividends received which are in most cases non-taxable, as well as the statistical significance of all the said variables support the validity of the method. The variable measuring group contributions appears also statistically significant. As the group contributions are measured through net group contributions and *BTD* is set to zero for companies making loss before extraordinary items, e.g. group contributions received by

companies turning the profit before extraordinary items from negative to zero are not fully reflected by this proxy for tax planning.

The regressions measuring tax planning modeled through discretionary permanent book-tax difference (*DTAX*) show no statistically significant results for variables describing foreign or domestic PE backing, although the variable combining all PE portfolio firms implies slightly higher tax planning for PE companies and the result is significant at 10 per cent confidence level. The independent variables used in regressions in the formulation process of *DTAX* are not included in the regressions. The indicator variables support the validity of the proxy, for instance, as tax losses from the current year and large asset base have a statistically significant increasing effect on unexplained difference between accounting and taxation when compared with companies operating on the same main branch. On the other hand, abnormal depreciations during the current fiscal year (*AB_DEPR*) which have on average negative volume among all sample companies should technically decrease the observed difference between accounting and taxation, which is clearly apparent in the regression results. Additionally, observed very negative and statistically significant effect of leverage on *DTAX* is coherent with the idea that companies already diminishing their taxable profit close to zero with interest payments do not conduct any other tax planning measures.

As an interesting result, in an untabulated regression made with the absolute values of *DTAX* which intends to measure the sole deviation from the normal discretionary permanent book-tax level inside the branch, the independent variable for domestic PE ownership received positive significant value at 1 per cent confidence level. However, the result is probably very hard to interpret in economic terms, as the dependent variable would in that case basically show only the heterogeneity of the domestic PE portfolio companies.

Both the variables measuring cash effective tax rate yield interesting results concerning tax planning of PE portfolio companies. Based on the variable *CASH_ETR* which measures relative difference between taxes paid and profit before appropriations, the coefficient for the domestic PE portfolio company dummy is negative, whereas the corresponding sample of foreign PE portfolio companies has on average even higher ETR than their peer companies. The last mentioned result is not statistically significant. The results suggest that foreign PE portfolio companies would not incur in tax planning activities generating difference to their pretax income and actual taxes paid whereas domestic PE portfolio companies would pay 1.7

percentage points less tax in relation to income before appropriations and taxes. As expected, the losses from current and previous years and equity in earnings decrease the observed cash effective tax rate.

By contrast, the variable comparing taxes paid with operating income (*CASH_ETR2*) shows that domestic PE portfolio companies would exhibit significantly more tax planning activities by paying over 6 percentage points less corporate income tax relation to operating income than companies without PE backing. For foreign companies the same effect is approximately 2 percentage points. Thus, as the variable is in a way discussed above planned to capture less complicated tax planning activities, PE portfolio companies would, based on the observed result, prefer tax-efficient but more transparent measures in comparison with more complex measures captured by the dependent variable *CASH_ETR*.

All important indicator variables as leverage, losses from current and previous years as well as equity in earnings support to the model. As one of the most significant explanatory variables, group contributions increase the variable *CASH_ETR2* correctly by causing an increase in the corporate income tax base, as among all sample companies the sign for average net group contributions was positive which indicates that an average sample company receives more group contributions than grants which increases its taxable income. The effect may be even multiplied through sampling bias, as small companies are excluded from the sample used in the regression similarly to companies making loss from operations which are excluded due to the Finnish asymmetric tax treatment of losses. Based on Finnish GAAP, the activation of the calculative tax liabilities and receivables is voluntary to a single bookkeeping entity (e.g. Kaisanlahti et al. 2010). Therefore, as companies ended up in the sample may have enough external financing or existing losses as well as smaller subsidiaries, the companies may not even be in the position of granting group contributions.

To conclude the results, domestic and foreign PE portfolio companies coherently exhibit more tax planning activities based on two measures (difference between book income and taxable income and effective tax rate in relation to operative income) out of four, in addition to which empirical evidence supports domestic PE firms to engage more in tax planning activities based on the effective tax rate measured in relation to pretax income as well as permanent differences in relation to companies in the same branch. The results provide strong support to

my hypotheses *H1*, *H2* and *H5*. These results are also generally in line with the results measured by Badertscher et al. (2011).

5.2.2 Tax planning in relation to similar peer companies

To evaluate the tax planning activities more accurately and to eliminate the effects of possible selection bias created through the target selection process of PE firms, similar OLS regression models are conducted concerning the four proxies for tax planning separately to both samples, although only against the sample generated through the propensity score matching method. To remove the effect of a few outlier values, I truncate the dependent variable describing book-tax difference (*BTD*) between -1 and 1. The results of the models are presented in Table 7.

I acknowledge that the OLS regressions generated by using PSM may be skewed due to the forming procedure of PSM by using independent variables and probit model, as well as very small sample size used in regressions. However, although not being fully suitable, OLS regressions may still shed light to the observations, and in earlier similar research (most importantly Badertscher et al. 2011), the OLS regressions have been used for samples generated through PSM. Most importantly, evidence of tax planning measures robust to PSM would provide strong support either for or against the evaluated hypotheses.

First of all, similarly to the regression model conducted with full peer company sample, the model where the dependent variable is *CASH_ETR2* which measures the relation between taxes paid and income from operations, still shows difference concerning tax planning between peer companies and PE portfolio companies. As reflected in Table 7, portfolio companies of domestic PE firms still pay 3.4 percentage points and portfolio companies of foreign PE firms 2.4 percentage points less income tax in relation to operating income than similar peer companies without PE backing. Correct directions for the most important indicator variables (e.g. past and current losses and leverage) support the validity of the results.

Additionally, the observed statistically significant differences concerning relative book-tax differences (*BTD*) for both PE portfolio samples still appear statistically significant, although the scale of differences is smaller than in the full peer company sample regressions. Thus, irrespective of controlling several factors in the sampling phase, both foreign PE portfolio companies and domestic PE portfolio companies still have 2.7 percent points and 4.1 percent points greater unexplained book-tax differences in relation to total assets than similar peer companies. However, the truncation of the dependent variable *BTD* between -1 and 1 may have an effect on the reliability of the results.

In relation to full sample companies, domestic PE portfolio companies yield statistically significantly (on 5 per cent confidence level) greater discretionary permanent book-tax difference than the peer companies in PSM sample. Similar result does not appear with foreign PE portfolio companies and their peer companies in PSM sample. The possible contradiction with the variable *BTD*, which is technically relatively close to variable *DTAX* (Hanlon and Heitzman 2010) and which still indicates more tax planning activity on a statistically significant level, can partly be explained with weaknesses relating to the use of PSM in OLS regressions. Additionally, although generally book-tax differences between PE portfolio companies and other similar companies may exist, the reasons can be to a large extent attributable to emergent factors like dividends and group contributions which are directly reflected in the variable *BTD* but not directly in *DTAX*.

Thus, when controlling the peer company sample through propensity control matching, portfolio companies of PE firms still show more evidence of tax planning activities. The results of PSM procedure are on a large scale similar as received by Badertscher et al. (2011).

When the sample of companies is narrowed to resemble PE portfolio companies more, basically the same signals for tax planning still remain. The effect is even more drastic when it is taken into account the formation process of the propensity score matching sample which included also endogenic factors in relation to tax planning activities which are purely initiated by the companies or related entities itself as well, including the existence of non-Finnish subsidiaries and shareholders and D/E ratio.

5.2.3 Robustness of results to use of lagged assets

Certain other empirical studies (e.g. Badertscher et al. (2011), Chen et al. (2010) and Lisowsky et al. (2010)) utilize lagged assets in their empirical research and formation of variables. I conduct the empirical evaluation for the purposes of this research mostly with non-lagged assets mainly due to two reasons. First of all, as I utilize the financial statement data of companies that are considerably smaller than sample companies in most of the other existing research, even the small variations in the nominal values of balance sheet variables may cause relatively very abnormal changes to end variables. This is especially case with the add-ins to PE portfolio firms. Secondly, as the decisive moment in my determination whether a company is a PE portfolio company or not is the moment of end of financial year 2010, utilization of lagged assets would for some companies lead to a situation where e.g. a nominator of the variable would be affected by PE owner whereas the denominator stems prior to moment of investment of PE owner.

Nevertheless, I ensure that my results are also robust for the use of lagged assets in variables. For this purpose, I use the same regression models as I use in the generation of the results set out the Table 6 but replace the balance sheet values with lagged balance sheet values in variables concerning the logarithmic value of total assets (*ASSETS*), income from certain investments in group entities or shares in relation to total assets (*EQ_EARN*), change in abnormal depreciations and amortizations in relation to total assets (*AB_DEPR*) and net extraordinary items serving as a proxy for group contributions in relation to total assets (*GROUPE*). Further, I replace the variable *RNOA* acting as a proxy for profitability with a variable *ROA* which is measured by dividing profit before extraordinary items with lagged total assets and truncated between 1 and -1.

The results from the four regressions models are set out in the Table 8. Due to the avoidance of multicollinearity, the regressions are made separately for dummy variables indicating PE ownership without PE firm domicile dummies, and PE ownership variables which separate PE firms based on the domicile. Regressions do not include discretionary permanent book-tax difference as a dependent variable as its determination phase consciously utilizes certain lagged asset values.

Table 8: Results of tax planning regressions made with lagged balance sheet values

The table presents the results of three different OLS multivariate regression models. To avoid multicollinearity, the regressions are done separately for dummy variable PE ownership, and for dummy variables Domestic PE ownership and Foreign PE ownership. By contrast to empirical models presented earlier, in this model the variables equity in earnings, group contributions and abnormal depreciations are scaled with lagged total assets instead of total assets, the variable assets is calculated as a logarithm of lagged assets and the variable ROA is calculated as a relation of income before extraordinary items and lagged total assets and scaled between 1 and -1. Otherwise the formation of the variables is described in Table 2 for dependent variables and Table 3 for independent variables. T-values for each independent variables are presented next to the variable, in addition to which statistical significance is indicated with ***/**/* at 1, 5 and 10 per cent confidence levels. Save for what is discussed herein, the rest of the contents of each of the dependent variables are presented more accurately in Table 3. The regressions include also untabulated dummies for each main branch in Finnish classification system.

	BTD		CASH ETR		CASH ETR2		
	Coeff	t-value	Coeff	t-value	Coeff	t-value	
PE ownership	0.031	3.79 ***	-0.008	-1.55	-0.054	-11.48 ***	
Domestic PE ownership	0.040	3.55 ***	-0.017	-2.31 **	-0.081	-11.37 ***	
Foreign PE ownership	0.021	1.86 ***	0.000	0.04	-0.032	-5.00 ***	
Profitability (ROA) (lag)	0.052	47.37 ***	0.048	34.69 ***	0.077	65.49 ***	
Net loss	0.037	21.84 ***	-0.087	-87.52 ***	-0.078	-79.45 ***	
Operative losses from previous years	0.049	25.35 ***	-0.091	-76.41 ***	-0.076	-65.73 ***	
Leverage	0.017	16.43 ***	-0.019	-21.04 ***	-0.039	-44.76 ***	
Intangibles	0.007	3.39 ***	-0.001	-0.54	-0.002	-1.74	
Multinationality	0.002	0.60	-0.005	-2.38 **	-0.005	-2.66 ***	
Abnormal depreciations (lag)	-0.005	1.84 **	0.003	2.82 ***	0.002	2.01 ***	
Equity in earnings (lag)	0.004	1.06	0.000	-2.59 **	0.000	0.81	
Group contributions (lag)	-0.001	-3.88 ***	0.000	1.24	0.000	3.88 ***	
Sales growth	0.000	1.17	0.000	-1.12	0.000	-1.28	
Assets (lag)	-0.002	-5.05 ***	0.002	7.98 ***	0.002	6.73 ***	
Listed	0.002	0.10	-0.034	-3.07 ***	-0.001	-0.06	
Intercept	0.025	0.14	0.220	37.03 ***	0.165	8.12 ***	
R2	0.0621		0.3611		0.3978		
Observations	74997		55291		57281		

According to the Table 8 above, t-values indicate that the utilization of lagged assets weakens the observed results. Models using book-tax difference and taxes paid in relation to income before appropriations and taxes have lower R2-values, whereas the use of lagged assets would make the third model (*CASH_ETR2*) more explanatory.

The results concerning PE ownership are coherent with the regression results set out in Table 6. Further, the direction of the most important control variables as well as their significance remains although the significance mostly weakens. Thus, I conclude my empirical results to be robust for the use of lagged assets.

5.3 Results

Hypothesis *H1* predicts that PE-backed portfolio companies would exhibit systematically different levels of tax planning in comparison with other Finnish firms. The theoretical justification of the hypothesis lies in the fact that Finnish PE portfolio companies would outweigh savings generated through taxes paid over disadvantages emerging from the tax planning including the deteriorating reputation, effects potential tax risks cause to exit process and agency theory implications. The regression models generally support the assumption as clear differences emerge on a statistically significant level. Most of the observed indications remain on a significant level when the regressions are made by using the company sample generated through PSM procedure as peer companies as well as when lagged assets are used. Although all the variables do not fully support the assumption, the variables which capture the largest variety of the tax planning activities strongly support the assumption. Thus, the hypothesis *H1* can be confirmed.

Further, based on hypothesis *H2* portfolio companies of foreign and domestic PE firms would exhibit different levels of tax planning. Based on the empirical results discussed in this section, the tax planning behavior of domestic and foreign PE portfolio companies clearly differs from each other. The empirical results clearly show that portfolio companies of domestic PE firms constantly engage more in tax planning activities decreasing taxes paid in relation to operating income as well as activities increasing book-tax difference. Further, the dependent variable measuring taxes paid in relation to profit before appropriations and taxes (*CASH_ETR*) yields statistically significantly indication for tax planning only in case of PE portfolio company sample of domestic PE firms. Thus, the theoretical idea of expertise in domestic tax planning would override alleged ignorance of reputation effects. The results provide support to hypothesis *H2* although I require more information on the accurate tax planning means prior to be able to either confirm or reject the hypothesis.

6 What kinds of tax planning differences exist?

6.1 Industrial differences

The evaluation of the determinants of tax planning of PE companies is started by evaluating the distribution of PE portfolio companies to different branches. The distribution is evaluated more accurately in Table 9.

Table 9: Distribution of the companies by industry

The table illustrates the division of both PE portfolio companies and other sample companies grouped based on Finnish industry sections. The statistically significant differences in numbers of companies in each branch in both PE portfolio company samples in relation to peer company sample are tested with two-tailed t-test and denoted with ***, ** and * at 1, 5 and 10 per cent confidence levels. The number of firms in each row of both the PE columns is presented in italics, should the number of firms in the branch in the sample be relatively smaller than in peer company sample.

Industry	Domestic PE portfolio	Foreign PE portfolio	Peer
	firms	firms	companies
	# firms	# firms	# firms
Agriculture, forestry and fishing	<i>0</i> ***	<i>0</i> ***	1825
Mining and quarrying	<i>0</i> ***	<i>0</i> ***	267
Manufacturing	<i>45</i> ***	<i>61</i> ***	8064
Electricity, gas, steam and air conditioning	<i>0</i> ***	<i>0</i> ***	431
Water supply; sewerage, waste management and remediation activities	<i>0</i> ***	<i>0</i> ***	377
Construction	<i>7</i> ***	<i>16</i> ***	11560
Wholesale and retail trade; repair of motor vehicles and motorcycles	<i>49</i>	<i>25</i> ***	15526
Transportation and storage	<i>16</i>	<i>4</i> ***	5574
Accommodation and food service activities	<i>1</i> ***	<i>3</i> ***	3281
Information and communication	<i>26</i> ***	<i>14</i>	3333
Financial and insurance activities	<i>9</i>	<i>14</i> *	2198
Real estate activities	<i>1</i> ***	<i>6</i> **	3453
Professional, scientific and technical activities	<i>37</i>	<i>51</i> ***	9668
Administrative and support service activities	<i>25</i> ***	<i>20</i> **	3198
Public administration and defence; compulsory social security	<i>0</i> ***	<i>0</i> ***	24
Education	<i>1</i>	<i>0</i> ***	670
Human health and social work activities	<i>29</i> ***	<i>33</i> ***	3029
Arts, entertainment and recreation	<i>1</i> ***	<i>0</i> ***	1172
Other service activities	<i>0</i> ***	<i>0</i> ***	847
Total	247	247	74497

Especially companies operating in human health and manufacturing (which includes e.g. the production of various goods from life sciences and biochemistry to conventional metal industry) as well as administrative and support service industries are popular targets to PE

firms, whereas PE portfolio companies are statistically significantly underrepresented e.g. in construction, art and entertainment and accommodation and food service industries. Further, in relation to domestic PE firms, foreign PE firms are keener on investing companies in the branches of construction and professional, scientific and technical activities whereas companies operating in information and communication, wholesale and retail trade as well as transportation and storage attract more domestic than foreign PE investments.

Naturally, the observed branch concentration of the PE portfolio companies is not unexpected and can be explained e.g. with the idea of industry potential, as Guo et al. (2011) determine the improving market or industry sector to be one of the three main value creation sources in leveraged buyout investments, in addition to which e.g. Valkama et al. (2013) show the significant impact of industry growth rates to buyout returns. Naturally the industrial specification also affects the observed distribution (see e.g. Cressy et al. 2007).

On the other hand, the industrial selection may sometimes be driven by tax related factors. For instance, certain tax benefits, including the increased deductibility of certain R&D costs, are more easily utilized by companies already operating in an R&D intensive branch than companies naturally not investing in R&D. In the international level, several countries (most importantly the Netherlands, Luxembourg, Belgium and the UK) provide companies engaging in innovations with lower effective tax rates for profits attributable to qualified income derived from patents or other intellectual property rights (Maxwell and Benesch 2011). The Finnish double depreciation facility concerning certain R&D expenses was not yet implemented at the moment of the evaluation period of this thesis.

As another potential tax related matter affecting popularity of the branches among foreign investors, countries may have branch-specific tax regimes, the purpose of which may be e.g. to attract investments, facilitate continuing of business operations or amend the possibly unfavorable general tax rules to apply better to the specific characteristics of the branch. A good example from this is Finnish tonnage tax. As set out in the Act on Tonnage Tax (476/2002), in a nutshell, a Finnish limited liability company or qualifying Finnish branch of a foreign limited liability company which is engaged in international sea transport activities may elect to use the Finnish tonnage tax regime. Such a company may under certain preconditions elect to apply to become taxed based on the size, number and use of ships

possessed by the company instead of normal corporate income tax, which may lead to lower effective tax burden.

Conclusively, PE portfolio firms seem to engage more on asset intensive and high technology related branches, whereas service companies (except for healthcare) seem not to be as popular. Although the result is certainly not fully tax driven, large asset bases, state subsidies as well as beneficial depreciation regulation may drive the investment decisions of PE firms at least to some extent.

6.2 Finland-specific differences

I evaluate the plausible differences between the accurate means for tax planning activities conducted by PE portfolio companies of foreign and domestic PE firms as well as peer companies by utilizing the statistics of the independent variables as well as certain other variables. Table 10 describes the distribution of the independent variables in relation to the full peer company sample. Further, the mutual correlation of the independent variables is reported in Table 13.

To ensure the robustness of the results, I also utilize the independent variable values of domestic and foreign PE firm portfolio company samples generated through the propensity score matching procedure in this context. The Table 11 and Table 12, respectively, present values of PE portfolio companies and their PSM samples.

Table 10: Distribution of independent variables between PE portfolio companies and peer companies

The table presents the lower (25%) median (50%) and upper (75%) quartile values as well as average values and standard deviations of each of the independent variables and certain other variables. The formation of the variables is exhaustively described in Table 3. Values received from the balance sheets are scaled with non-lagged total assets. All the said values for each of the variables are presented separately for portfolio firms of foreign and domestic PE funds, as well as all peer companies. Statistical significance of each PE sample average value in relation to corresponding full peer sample company value has been tested with two-tailed t-test, the result of which is labeled with ***, **, * and * at 1, 5 and 10 per cent confidence levels. Significance of differences in each variables measured for PE firms against peer company sample is also tested with two-tailed Wilcoxon signed rank test, where ***, **, * and * next to median value denote significant difference from zero at 1, 5 and 10 per cent confidence levels. Average and median values of PE sample companies being smaller than the respective values for the peer companies are presented in italics. Observaton sizes are 247 for companies held by foreign PE firms, 247 for companies held by domestic PE firms and 74497 for other companies

Independent variables	Companies held by domestic PE firm				Companies held by foreign PE firm				Peer companies			
	0.25	Median	0.75	Average	0.25	Median	0.75	Average	0.25	Median	0.75	Average
Profitability (RNOA)	-0.0281	0.0772 **	0.2553	-0.0024 ***	0.0040	0.1102	0.2881	0.1060	0.0166	0.1220	0.2895	0.1333
Net loss	0.0000	0.0000	1.0000	0.4089 ***	0.0000	0.0000	1.0000	0.3360 ***	0.0000	0.0000	0.0000	0.2488
Operative losses from previous years	0.0000	0.0000 **	1.0000	0.2874 ***	0.0000	0.0000	1.0000	0.3117 ***	0.0000	0.0000	0.0000	0.1818
Leverage	0.2873	0.4907	0.7292	0.6739 **	0.2291	0.4412	0.7656	0.5888 ***	0.1089	0.3128	0.6186	0.4367
Intragroup leverage	0.0000	0.0212 ***	0.3288	0.1810 ***	0.0000	0.0275 ***	0.3017	0.2191 ***	0.0000	0.0000	0.0000	0.0258
Intangibles	0.0000	0.0095 ***	0.0857	0.1806 *	0.0000	0.0020 **	0.0503	0.3873	0.0000	0.0000	0.0025	0.0227
Multinationality	0.0000	0.0000 ***	0.0000	0.2186 ***	1.0000	1.0000 ***	1.0000	0.7530 ***	0.0000	0.0000	0.0000	0.0352
Abnormal depreciations	0.0000	0.0000	0.0000	-0.0002	0.0000	0.0000	0.0000	-0.0002	0.0000	0.0000	0.0000	-0.0001
Equity in earnings	0.0000	0.0000 ***	0.0000	0.0061 *	0.0000	0.0000 ***	0.0000	0.0043	0.0000	0.0000	0.0000	0.0024
Property, land and equipment	0.0048	0.0278 ***	0.1051	0.0979 ***	0.0000	0.0095 ***	0.0685	0.0814 ***	0.0132	0.1062	0.3636	0.2229
Group contributions	-0.0364	0.0000 ***	0.0000	0.0295	-0.0001	0.0000 ***	0.0000	-0.0350 ***	0.0000	0.0000	0.0000	0.0007
Received group contributions	0.0000	0.0000 ***	0.0000	0.0275 ***	0.0000	0.0000 ***	0.0000	0.0139	0.0000	0.0000	0.0000	0.0054
Paid group contributions	-0.0524	0.0000 ***	0.0000	-0.0644 ***	0.0000	0.0000 ***	0.0000	-0.0473 ***	0.0000	0.0000	0.0000	-0.0056
Sales growth	-0.0185	0.0663 ***	0.3054	0.9440	-0.0227	0.0734 ***	0.2513	0.8147	-0.0708	0.0247	0.2226	1.1534
Assets	7.0268	8.2834 ***	9.5531	8.2146 ***	6.6689	8.2832 ***	10.0146	8.4659 ***	4.5539	5.4972	6.5806	5.6891
Listed	0.0000	0.0000	0.0000	0.0121	0.0000	0.0000	0.0000	0.0000 ***	0.0000	0.0000	0.0000	0.0011

Table 11: Distribution of independent variables - Propensity score matching analyses concerning portfolio companies of domestic PE firms

The table presents the lower (25%) median (50%) and upper (75%) quartile values as well as average values and standard deviations of each of the dependent variables concerning the sample of companies held by domestic PE firms. The formation of the variables is exhaustively presented in Table 3. The peer company sample is generated by propensity score matching procedure. All the said values for each of the variable are presented separately for the two samples. The column next to Average -column for domestic PE company sample indicates the statistical significance of average values, which labeled with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms. Significance of the variables has also been measured with two-tailed Wilcoxon signed rank test the results presented next to median values, where ***, **, and * denote the variable being significantly different from zero at 1, 5 and 10 per cent confidence levels. Average and median values for foreign PE sample companies being smaller than the peer companies are presented in italics.

Independent variables	Companies held by domestic PE firm						Peer companies (PSM)					
	#Obs	0.25	Median	0.75	Average	StDev	#Obs	0.25	Median	0.75	Average	StDev
Profitability (RNOA)	247	-0.0281	0.0772	0.2553	<i>-0.0024</i>	0.7376	247	-0.0195	0.0587	0.1978	0.0097	0.7135
Net loss	247	0.0000	0.0000	1.0000	<i>0.4089</i>	0.4926	247	0.0000	0.0000	1.0000	0.4413	0.4976
Net operative losses from previous years	247	0.0000	0.0000	1.0000	0.2874	0.4535	247	0.0000	0.0000	1.0000	0.2551	0.4368
Leverage	247	0.2873	0.4907 ***	0.7292	0.6739	1.5843	247	0.1232	0.3832	0.6687	0.5445	1.0373
Intragroup leverage	247	0.0000	0.0212 ***	0.3288	0.1810 ***	0.2512	247	0.0000	0.0000	0.0337	0.0839	0.1841
Intangibles	247	0.0000	0.0095 ***	0.0857	0.1806	1.4186	247	0.0000	0.0023	0.0212	0.0583	0.1404
Multinationality	247	0.0000	0.0000	0.0000	<i>0.2186</i>	0.4142	247	0.0000	0.0000	0.0000	0.2267	0.4196
Abnormal depreciations	247	0.0000	0.0000	0.0000	<i>-0.0002</i>	0.0067	247	0.0000	0.0000	0.0000	0.0045	0.0580
Equity in earnings	247	0.0000	0.0000	0.0000	<i>0.0061</i>	0.0318	247	0.0000	0.0000	0.0000	0.0066	0.0311
Property, plant and equipment	247	0.0048	0.0278 *	0.1051	0.0979	0.1738	247	0.0000	0.0193	0.0920	0.0787	0.1405
Group contributions	247	-0.0364	0.0000 ***	0.0000	0.0295	1.1251	247	0.0000	0.0000	0.0000	0.0000	0.0846
Received group contributions	247	0.0000	0.0000	0.0000	0.0275 *	0.1130	247	0.0000	0.0000	0.0000	0.0132	0.0567
Paid group contributions	247	-0.0524	0.0000 ***	0.0000	<i>-0.0644</i> ***	0.1480	247	0.0000	0.0000	0.0000	-0.0133	0.0603
Sales growth	247	-0.0185	0.0663	0.3054	<i>0.9440</i>	7.2990	247	-0.0775	0.0455	0.3089	1.3144	10.4283
Assets	247	7.0268	8.2834	9.3531	8.2146	1.7197	247	6.6719	8.2158	9.4247	8.1347	2.0297
Listed	247	0.0000	0.0000	0.0000	<i>0.0121</i>	0.1098	247	0.0000	0.0000	0.0000	0.0202	0.1411

Table 12: Distribution of independent variables - Propensity score matching analyses concerning portfolio companies of foreign PE firms

The table presents the lower (25%) median (50%) and upper (75%) quartile values as well as average values and standard deviations of each of the dependent variables concerning the sample of companies held by foreign PE firms. The formation of the variables is exhaustively presented in Table 3. The peer company sample is generated by propensity score matching procedure. All the said values for each of the variable are presented separately for the two samples. The column next to Average -column for foreign PE company sample indicates the statistical significance of average values, which labeled with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms. Significance of the variables has also been measured with two-tailed Wilcoxon signed rank test the results presented next to median values, where ***, **, and * denote the variable being significantly different from zero at 1, 5 and 10 per cent confidence levels. Average and median values for foreign PE sample companies being smaller than the peer companies are presented in italics.

Independent variables	Companies held by foreign PE firm						Peer companies (PSM)					
	#Obs	0.25	Median	0.75	Average	StDev	#Obs	0.25	Median	0.75	Average	StDev
Profitability (RNOA)	247	0.0040	0.1102	0.2881	0.1060	0.6811	247	0.0082	0.0935	0.2146	-0.7491	15.536
Net loss	247	0.0000	0.0000	1.0000	0.3360	0.4733	247	0.0000	0.0000	1.0000	0.2966	0.4568
Net operative losses from previous years	247	0.0000	0.0000	1.0000	0.3117	0.4641	247	0.0000	0.0000	1.0000	0.2834	0.4516
Leverage	247	0.2291	0.4412 ***	0.7656	<i>0.5888</i>	0.6256	247	0.1353	0.4020	0.6456	0.7201	2.4053
Intragroup leverage	247	0.0000	0.0275 ***	0.3017	0.2191 ***	0.4810	247	0.0000	0.0000	0.1575	0.1088	0.1914
Intangibles	247	0.0000	0.0020 **	0.0503	0.3873	5.0065	247	0.0000	0.0017	0.0253	0.0463	0.1216
Multinationality	247	1.0000	1.0000 **	1.0000	0.7530	0.4321	247	0.0000	1.0000	1.0000	0.7206	0.4496
Abnormal depreciations	247	0.0000	0.0000	0.0000	<i>-0.0002</i>	0.0094	247	0.0000	0.0000	0.0000	0.0045	0.0580
Equity in earnings	247	0.0000	0.0000 **	0.0000	<i>0.0043</i>	0.0324	247	0.0000	0.0000	0.0000	0.0061	0.0241
Property, plant and equipment	247	0.0000	<i>0.0095</i>	0.0685	0.0814	0.1632	247	0.0000	0.0134	0.0880	0.0729	0.1694
Group contributions	247	-0.0001	0.0000 ***	0.0000	-0.0350	0.2007	247	0.0000	0.0000	0.0000	-0.0774	0.9128
Received group contributions	247	0.0000	0.0000	0.0000	0.0139	0.1084	247	0.0000	0.0000	0.0000	0.0121	0.0628
Paid group contributions	247	0.0000	0.0000 ***	0.0000	<i>-0.0473</i>	0.1288	247	0.0000	0.0000	0.0000	-0.0321	0.1715
Sales growth	247	-0.0227	0.0734	0.2513	0.8147	5.8578	247	-0.0684	0.0631	0.2356	0.2432	0.9336
Assets	247	6.6689	8.2832	10.0146	8.4659	2.2301	247	6.6939	8.1382	9.7110	8.3087	2.3976
Listed	247	0.0000	0.0000 ***	0.0000	<i>0.0000</i> ***	0.0000	247	0.0000	0.0000	0.0000	0.0324	0.1774

Table 13: Correlation matrix of independent variables

The table presents Pearson correlation coefficients of the variables used in the regression analysis as well as of certain other variables. Values presented in the balance sheet of a company are non-lagged and scaled with total assets. Received and paid group contributions are truncated between 0 and 1. The significance of each correlation is tested with two-tailed test, significant results being labeled with ** (significant at the level 1%) and * (significant at the level 5%).

	PE Ownership	Foreign PE ownership	Domestic PE Ownership	Profitability (RNOA)	Net loss	Operative losses from previous years	Leverage	Intragroup leverage	Intangibles	Multi-nationality	Abnormal depreciations	Equity in earnings	Property, land and equipment	Group contributions	Received group contributions	Paid group contributions	Sales growth	Assets	
PE ownership	1.000																		
Foreign PE ownership	0.707 **	1.000																	
Domestic PE Ownership	0.705 **	-0.003	1.000																
Profitability (RNOA)	-0.003	-0.001	-0.004	1.000															
Net loss	0.023 **	0.011 **	0.021 **	-0.035 **	1.000														
Operative losses from previous years	0.025 **	0.019 **	0.016 **	-0.019 **	0.426 **	1.000													
Leverage	0.024 **	0.013 **	0.020 **	-0.038 **	0.220 **	0.374 **	1.000												
Intragroup leverage	0.099 **	0.077 **	0.062 **	-0.029 **	0.067 **	0.107 **	0.217 **	1.000											
Intangibles	0.068 **	0.067 **	0.029 **	-0.004	0.029 **	0.049 **	0.034 **	0.017 **	1.000										
Multinationality	0.191 **	0.215 **	0.054 **	-0.007 *	0.035 **	0.041 **	0.016 **	0.185 **	0.027 **	1.000									
Abnormal depreciations	-0.001	-0.001	-0.001	-0.005	0.012 **	0.002	-0.002	0.008 *	-0.001	0.007	1.000								
Equity in earnings	0.007 *	0.003	0.007	0.019 **	-0.021 **	-0.012 **	-0.026 **	0.006	-0.004	0.015 **	0.002	1.000							
Property, land and equipment	-0.041 **	-0.031 **	-0.027 **	-0.022 **	0.063 **	0.080 **	0.119 **	-0.027 **	-0.024 **	-0.089 **	-0.014 **	-0.041 **	1.000						
Group contributions	-0.002	-0.014 **	0.011 **	-0.063 **	0.049 **	0.042 **	0.005	-0.006	0.004	-0.004	-0.007 *	0.002	0.000	1.000					
Received group contributions	0.025 **	0.010 **	0.025 **	-0.033 **	0.079 **	0.056 **	0.044 **	0.089 **	0.007 *	0.023 **	-0.006	0.008 *	-0.031 **	0.486 **	1.000				
Paid group contributions	-0.076 **	-0.045 **	-0.063 **	-0.035 **	0.022 **	0.016 **	-0.027 **	-0.149 **	-0.005	-0.050 **	-0.016 **	-0.001	0.041 **	0.354 **	-0.032 **	1.000			
Sales growth	0.000	0.000	0.000	0.000	0.014 **	0.002	0.002	0.010 **	0.001	0.001	-0.004	0.002	-0.006	0.006	0.017 **	0.001	1.000		
Assets	0.131 **	0.097 **	0.088 **	-0.004	-0.046 **	-0.078 **	-0.090 **	0.154 **	0.004	0.298 **	-0.018 **	0.058 **	0.044 **	-0.012 **	0.026 **	-0.066 **	0.010 **	1.000	
Listed	0.012 **	-0.002	0.019 **	0.005	0.019 **	-0.005	0.002	0.015 **	0.003	0.084 **	0.001	0.013 **	-0.017 **	0.004	0.008 *	0.003	0.000	0.126 **	1.000

6.2.1 Use of leverage

In general LBO structure discussed in Section 2.3, the capital structure of an operative company becoming subject to an acquisition by a PE firm turns from average to a highly levered capital structure as the acquisition debt of the target company is not paid by the PE fund or investors but normally the operative company itself to its parent company or to the external lender. In addition to this, the operative entity may make interest payments to its owners as a compensation for excessive external capital investment made instead of equity capital investment. Tax shield generated through interest payments decreases taxable income of the operative company and thereby naturally also the tax leakage.

As provided in Table 10, companies owned by foreign PE firms clearly have on average more intra-group leverage than domestic PE companies the difference being 3.8 percentage points to the end sum of balance sheet of a company evaluated. As regards intra-group debt, the difference in the independent variable is almost 15.6 percentage points when the focus is on the comparison between the full sample of peer companies. The differences in intra-group leverage are statistically significant on 1 per cent confidence level for both the tests and in both samples in relation to peer companies.

However, when all the leverage is taken into account, the mutual order between foreign and domestic PE portfolio companies changes, as domestic PE portfolio firms have 8.5 percentage points more external leverage than foreign PE portfolio companies in relation to total assets. This possibly supports the importance of reputation, as the external banks and other finance providers seem to be keener on providing the finance directly to the operative entity instead of the holding vehicle. Nevertheless, although being more levered than their peer firms, leverage level of PE portfolio companies still seems relatively moderate as even the upper quartile of both PE company samples clearly stays under the ratio 10:1 which is generally considered safe. Two-tailed Wilcoxon signed rank test does not even yield statistically significant differences between total leverage values in comparison with PE portfolio samples and peer companies.

In terms of the PSM samples, the leverage levels are more similar between PE backed and other companies although the two-tailed Wilcoxon signed rank tests still indicate significant differences at 1 per cent confidence level. These results set out in Table 11 and Table 12 result from the controlling of the leverage in the sample modification phase. Nevertheless, portfolio companies of foreign PE firms still have on average over 11 percentage points and companies of domestic PE firms 9.7 percentage points more intra-group leverage in relation to the total assets than their matched peer companies. Although it is obvious that PE portfolio companies seek debt financing from their parent companies, the scale of differences is relatively large. Additionally, a median PE portfolio company has intra-group debt, whereas a median matched peer company has only external leverage.

Further, the Table 13 clearly shows that one of the strongest correlations between independent variables exist between the variable describing relative use of intra-group leverage and foreign PE ownership. However, both the variables indicating PE ownership still correlate statistically significantly between leverage and intra-group leverage. Statistically significant correlation exists also between multinational link and intra-group leverage, which provides support to the assumption that not only companies with foreign PE ownership but also companies having a foreign link in general, tend to use intra-group financing on operative company level than domestic peer companies.

Taking into account that the use of intra-group debt can easily be utilized in aggressive tax structuring, the observed statistically significant results clearly suggest that PE portfolio companies have more levered capital structure than their peer companies in addition to which PE portfolio companies utilize considerably more intra-group leverage even when the total amount of leverage is controlled. The total magnitude of the intra-group leverage presented into balance sheets of PE portfolio companies is 3.1 billion euro which would e.g. by using an annual interest rate of 6 per cent yield annual theoretical tax effect of 49 million euro.

Additionally, operative level companies held by domestic PE firms generally seem to be more levered than portfolio companies with foreign PE ownership. By contrast, companies with foreign PE ownership seem to utilize statistically significantly more intra-group debt financing than PE portfolio companies with a Finnish PE owner. The result is very interesting and deserves further analysis in the section of this thesis concerning limitation of intra-group interest payments. Further, the observation would have interesting implications in contrast

with the location of the owners and subsidiaries of PE firms discussed in Section 6.3 although the evaluation remains on an indicative level due to lack of accurate tax return data.

Although the observed setting may not be fully surprising, it may still have important political and economic implications. For instance, PE portfolio companies with domestic ownership may be more vulnerable to the increase in interest rates and declined provision of independent external financing to companies, assuming that intra-group loans can be more easily re-negotiated and received. Further, activities by legislator and tax authorities aiming at intra-group loans would apply more to foreign PE structures, whereas normal thin capitalization regulation seems to be more attributable to domestic PE structures.

6.2.2 Group contributions

As discussed in Section 2.2.2 of this thesis, group contributions are a Finnish-specific tool and facilitate the reallocation of the taxable profits between qualified operative entities tax resident in Finland. Allegedly, PE portfolio operating in groups having highly levered capital structures could easily utilize group contributions in serving interest payments by a single levered entity and thus decrease the effective tax rate of other operative group companies. To chart the flow of group contributions as a whole, I utilize two additional models in evaluation. In addition to the independent variable *GroupC* which results from deducting extraordinary expenses from extraordinary income and scaling the result with total assets and serves as a proxy for group contributions, I also evaluate inbound and outbound group contribution flows separately. In other words, the regression models would not capture a company receiving 100,000 euro in group contributions from its subsidiaries and granting the sum forward to its parent company. Due to a few sizeable outlier values I truncate both inbound and outbound group contribution values, which are scaled with total assets, between -1 and 1. Table 10 shows that group contributions are not very popular among Finnish companies, as median operative companies do not either grant or receive group contributions irrespective of the sample.

Based on the data presented in Table 10, there is a certain distinction in the direction of the group contributions between peer firms and PE-owned companies. The sample companies held by a domestic PE owner seem to pay on average more group contributions than portfolio companies with a foreign PE owner or peer companies (-6.4 per cent, -4.8 per cent and -0.6

per cent of total assets respectively), and the measured difference to peer companies is statistically significant at 1 per cent confidence level. The same phenomenon and order appear as regards the averages of received group contributions with the sample of domestically held PE companies (2.8 per cent of total assets), portfolio companies of foreign PE funds (1.4 per cent of the total assets) or peer companies (0.6 per cent of the total assets). Based on two-tailed t-test, the latter difference for foreign PE portfolio companies is barely not statistically significant.

Nevertheless, the independent variable which takes the non-truncated net sums of received and granted group contributions into account indicates that foreign PE portfolio companies would on average channel their profits away from the operative portfolio companies with group contributions (on average -3.5 per cent of total assets) whereas the domestic PE portfolio companies have positive group contribution flow (on average 3 per cent of total assets). Only two-tailed Wilcoxon signed rank test provides statistically significant results for all the mentioned variables. This rather surprising result could be interpreted with the other data presented in a way that domestic PE portfolio companies tend to utilize group contributions in various ways, so that a domestic operative PE portfolio company operates rather as a flow-through entity. By contrast, foreign operative PE portfolio companies would seem to use group contributions rather in channeling profits from that operative firm to other entities.

The Table 13 also shows very interesting results concerning the correlation of group contribution related variables. Most importantly, the variable describing granted group contributions correlates negatively with leverage and has a very strong inverse correlation with intra-group leverage. Both effects are statistically significant. The variable describing received group contribution has positive correlation with intra-group leverage although the correlation is smaller. The observed phenomenon provides strong support to the replication effect between group contributions and intra-group interests in the means of distributing operational profit.

As regards PSM matched peer company samples, the statistical differences are not that significant although the PSM model does not control group contributions. Still, the effect of portfolio companies of domestic and foreign PE firms granting more group contributions than their matched peer companies persists on a statistically significant level as regards Wilcoxon

signed rank test. Although the group contributions could be financial assistance to the subsidiaries of the portfolio companies, based on the hypotheses the stream of profits goes upward in the group structure.

Interestingly, PE portfolio companies seem not to receive group contributions to that significant extent in relation to similar peer companies, especially as group contributions are not controlled in PSM procedure. The result is surprising as due to the limit set to turnover in the sample formation phase, the definite majority of the companies should be taxed in accordance with BITA and thus be capable of both receiving and granting group contributions. As regards received group contributions by PE portfolio companies in relation to samples generated through PSM, only t-test for domestic sample companies of PE portfolio companies yields significant results in comparison at 10 per cent confidence level. This also partially supports the idea of the utilization of group contributions in the channeling of the operative profit to a possibly highly levered parent holding company.

Therefore, the empirical results provide evidence for the fact that PE portfolio companies generally utilize Finnish group contribution regime more than other companies and results remain partly robust after PSM matching. As the granted group contributions become always eventually taxed in Finland, the direct tax effect is hard to observe. However, based on empirical evidence, the group contributions are mostly utilized in distributing the profit of an operational PE portfolio company to some other entity which in most cases can be argued to be its parent company. The correlations of observed variables also suggest that use of intra-group leverage and granting group contributions are strongly inversely correlated although they have similar effect on the taxation of the company.

Conclusively, the observed empirical results provide support to hypothesis *H3*. Further, the flows of group contributions clearly differ between domestic and foreign PE portfolio companies, as the domestic PE portfolio companies operate rather as a flow-through entity having more variation in the use of group contributions whereas foreign PE portfolio companies seem to grant more group contributions than receive, although the magnitudes are smaller than for domestic PE portfolio companies.

As an important policy implication, the inverse correlation between group contributions and intra-group debt could be taken into account when constructing interest limitation regulation.

One major fact to make the difference between these two tax planning measures is that payment of group contributions is very restricted (e.g. a dormant holding company cannot receive group contributions) whereas intra-group interest payments may practically be made between all group companies having intra-group debt. Thus, the limitation of deductibility of intra-group interest expenses may lead to even significant replication effect, as a result of which its observed implications on tax revenue may remain smaller than expected, unless group contribution regime or tax practice relating thereto is tightened simultaneously.

6.2.3 Utilization of tax losses

In the light of existing research concerning the effectiveness of the private equity industry (e.g. FVCA 2012) it is also notable that according to the data available, approximately 41 per cent of portfolio companies held by a domestic PE firm and 34 per cent of portfolio companies held by a foreign PE firm made loss prior to extraordinary items, described with the independent dummy variable *LOSS*, in the financial year preceding the financial year ended in 2010. In contrast, in the full peer company sample the relative amount of loss making companies was 25 per cent. When the losses from previous years, described with the independent dummy variable *NOL*, are evaluated, the mutual order between PE portfolio company samples changes. Over 31 per cent of portfolio companies held by foreign PE firms show losses from previous years in their balance sheets, the ratio being 29 per cent for portfolio companies of domestic PE firms and only 18 per cent for full peer company sample. Peer company samples generated through PSM are not meaningful to analyze as both the dummy variables were used in sample formation.

The total tax effect of the tax losses of all the PE portfolio companies evaluated based on the losses from previous years shown in balance sheet would be almost 400 million euro. However, due to the limitation of the utilized proxy and especially the inability to address changes in ownership resulting to the forfeiture of tax losses, the true tax effect is very likely smaller. Nevertheless, the practical significance of tax assets may be large and potentially prevent changes in ownership where receiving the dispensation to use losses after qualified change in ownership is currently unclear.

Especially taking the possible selection bias by PE firms into account, the difference in the two independent variables may be a signal of earnings management or book-tax conforming

tax planning, and possibly to a large extent of leveraged capital structure as Baderstcher et al. (2011) suggest. Very strong mutual correlations between the two dummy variables relating to losses and both relative total leverage and intra-group leverage presented in Table 13 support the last alternative.

Based on Table 10, another explanation for loss making could be the investments made by PE portfolio firms, as the assets held and especially intangible assets are significantly larger for both portfolio company samples. On the other hand, the relative amount of property, plant and equipment is significantly smaller in both PE portfolio company samples when compared to the full peer company sample as indicated by both two-tailed Wilcoxon signed rank test and two-tailed t-test. Secondly, the diversification between successful and unsuccessful firms seems to be more drastic among PE portfolio companies. As discussed above, this may partly relate to the buyout firms which operate in asset-intensive branches. Both characters were also noticed by Badertscher et al. (2011). The observations may also reflect the effect of add-in investments (FVCA 2012).

The existence of tax losses affects the observed results of the study in various ways. First of all, as I discuss in the context of variable formation, due to differences in Finnish tax and accounting regulation as regards the accounting of losses deductible in taxation and especially the asymmetric treatment, the accounting data is not a perfect proxy for tax losses and its sufficiency is hard to assess. Nevertheless, the correct directions of independent variables in regression models as well as high p-values indicate that the proxies for tax losses are sufficient for the purposes of the empirical research. Secondly and as a more behavioral aspect, profitable firms have greater incentive to engage in tax planning activities than firms already making loss (Baderstcher et al. 2011). Nevertheless, the significant differences relating to losses provide further support to hypothesis *H1*.

6.2.4 Utilization of tax planning measures generating book-tax difference

According to the *Hypothesis 5*, the PE portfolio companies were not anticipated to engage in tax planning measures generating book-tax difference as much as in more visible tax planning measures. The motivation for this was alleged to be in accordance with the idea of Desai and Dharmapala (2009a) the avoidance of very aggressive but invisible tax structures, which would not appear lucrative for investors at the moment of the exit. In my research I develop

two major proxies for the measurement of such measures. Firstly, the variable abnormal depreciations (*AB_DEPR*) reflects increase or decrease in abnormal depreciations and voluntary accruals in relation to total assets. Secondly, the variable equity in earnings (*EQ_EARN*) measures the sum of profits from group companies, affiliated companies and other fixed asset investments which can be tax exempt to Finnish entities either as tax-exempt dividends or due to the application of Finnish participation exemption regime.

Based on the results observed, the actions reflected through the two measures are not utterly popular among PE portfolio companies. When evaluated against full peer company sample, Wilcoxon signed rank test indicated statistically significant differences for both PE portfolio company samples for the variable equity in earnings, whereas the difference appears significant as measured by two-tailed t-test only for portfolio companies of domestic PE funds at 10 per cent confidence level. The variable describing abnormal depreciations does not yield any significant results. Even the observed results disappear totally for both PE portfolio samples when the differences are tested against peer company samples generated through propensity score matching.

One reason behind the observed phenomenon can be the scaling of the variables against total assets. As in Finland the depreciations can be made in taxation only if the depreciation is made in accounting, the shelved depreciations sparsely present a major part in relation to remaining assets in accounting. Table 14 reveals that 20.6 per cent of portfolio companies of domestic PE firms and 27.4 per cent of portfolio companies of foreign PE firms exhibit such tax planning activities in the financial year under evaluation to either direction, whereas the same ratio for the full peer company sample is only 6.0 per cent. Table 14 presents also a break-down of the figure to both directions. Similar effect is observed when dummy variables concerning equity in earnings are evaluated, as the observed ratios are in respective order 16.5, 21.9 and 9.8 per cent. All the differences are statistically significant from the observed frequencies in relation to the full peer company sample. Evaluation against samples generated through propensity score matching is not meaningful as both the independent variables *AB_DEPR* and *EQ_EARN* were observed when forming the samples.

Table 14: Frequency of use of abnormal depreciations and equity in earnings

The table presents amounts of both PE portfolio firm samples and full sample of peer firms which enter either positive or negative total sum of voluntary accruals and change temporary depreciation difference (i.e. unscaled variable AB_DEPR) or sum of profits from group companies, affiliated companies and other fixed asset investments (i.e. unscaled variable EQ_EARN). The table presents the total sums of such observations concerning each sample groups. The statistical significance of the differences in relation to full peer company sample is labeled with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms.

Variable	Domestic PE portfolio firms	Foreign PE portfolio firms	Peer companies
Positive sum of depreciation difference and voluntary accruals	28 ***	41 ***	2307
Negative sum of depreciation difference and voluntary accruals	23 ***	26 ***	2189
Profit from group companies, affiliated companies and other fixed asset investments	54 ***	41 ***	7281
Number of observations	247	247	74497

Conclusively, the empirical evidence suggests that PE portfolio companies in general exhibit more signs of book-tax difference generating activities than peer companies. On the other hand, the total impact on tax revenues captured by the variable is actually positive when the focus is on nominal values instead of relative values. The tax effect of abnormal depreciations and accruals for companies with negative net abnormal depreciations and accruals amounts to 2.4 million euro. Additionally, postponing depreciations generates benefit only through postponing taxation to a later fiscal year, i.e. no permanent effect is normally gained through the voluntary accruals or generation of depreciation difference. These results provide support to hypothesis *H5* although the support is weaker and more incoherent than it would generally seem based on the tests concerning scaled independent variables.

6.3 Utilization of foreign subsidiaries in tax planning activities

According to Section 2.3.4 of this thesis, the availability of foreign subsidiaries or parent companies may provide an effective tool for tax planning. In particular, the tax planning possibilities may be utilized through financing the operative company tax resident in Finland with a hybrid instruments or provision of goods or services from a country having lower corporate income tax rate than Finland. Although the latter is required to take place on arm's length terms based on Finnish domestic legislation, the difference in tax rates facilitates the channeling of profits to a jurisdiction with more beneficial tax regulation. As shown in Table

10, almost 21 per cent of the portfolio companies owned by Finnish PE firms have a foreign subsidiary or parent company, which forms a statistically significant deviation from the average.

Table 15 shows the distribution of foreign parent companies and subsidiaries, as well as such companies existing in low-tax countries. Low-tax countries include countries that applied a lower corporate income tax rate than Finland⁶. The definition of tax havens includes countries that belonged to the grey list of Organization for Economic Cooperation and Development (OECD) as updated on 5 May 2009. Countries are placed on the grey list based on the lack of bank secrecy or information exchange. Exiting from the list requires normally 12 bilateral tax conventions to be entered into by the respective grey list country. The grey list consists mostly of small offshore countries, however e.g. Austria, Belgium, Liechtenstein, Luxembourg, Switzerland and Singapore also belonged to the list. I include the countries eliminated from the grey list during the second half of 2009 (e.g. Luxembourg and Belgium) still in the list of grey list countries for the purposes of this research in order to provide a better picture of tax planning motivations prevalent in 2009–2010.

Table 15: Owners and subsidiaries in low-tax and tax haven countries

The table presents nominal and relative numbers of subsidiaries and owners of portfolio firms of foreign and domestic PE operators as well as both full peer company sample and peer company samples generated through propensity score matching (PSM). Each sample company is labeled with value 1 if it has either one or several subsidiaries or shareholders in countries having lower statutory tax rate (left major column) or tax havens (right major column). The data concerning structures is obtained from Orbis. Statistical significance of the relevant difference between PE samples and peer companies (either full sample or PSM samples) is labeled with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms.

	# Obs	Number of companies having owners or subsidiaries in low-tax countries	Number of companies having owners or subsidiaries in tax haven countries
Full sample			
Domestic PE portfolio firms	247	22 ***	3
Foreign PE portfolio firms	247	101 ***	47 ***
Peer companies	74497	1224	218
Sample generated through prop.score matching			
Domestic PE portfolio firms	247	22	3
Peer company sample (PSM)	247	20	5
Foreign PE portfolio firms	247	101	47 ***
Peer company sample (PSM)	247	84	19

⁶ The tax rates are collected from KPMG's Global Tax Survey. Based on the survey, 69 countries had a lower statutory corporate income tax rate than Finland, in addition to which Luxembourg is manually added to the list of low-tax countries due to certain tax exemptions very widely available.

The results in Table 5 show, that PE portfolio companies have more foreign subsidiaries located in low-tax countries, the results being statistically significant for both PE portfolio samples. In terms of tax havens, the effect disappears for domestic portfolio companies. The domestic PE portfolio companies seem to have no significant differences in similar peer companies as regards the subsidiaries and owners in low tax countries or tax havens. The results are still visible although the PSM sampling procedure controlled the multinational link, which makes the observed results even more convincing.

On the other hand, the results suggest that portfolio companies of foreign PE firms would have more subsidiaries or owners in tax havens in relation to both full sample and propensity score matching sample. Although it is natural that foreign-backed companies may seldom have domestic parent companies, the result is still surprising with the background that no significant difference occurs for low-tax countries against PSM sample. Thus, these results may suggest that especially foreign PE portfolio companies would be able to utilize conforming tax planning through the utilization of tax havens, whereas domestic PE portfolio companies do not engage in such tax planning. Additionally, these results could explain the lower degree of tax planning in the operative company level. Unfortunately, the flows of goods and services between Finnish companies and their group companies in low-tax countries cannot be observed by Finnish financial statement data. The results presented in this section are generally in line with the results of Badertscher et al. (2012).

6.4 Tax planning implications of interest deduction limitation rules

6.4.1 Discussion of the anticipated impact of the Finnish interest deduction rules

As discussed in Section 2.3.1, Finnish interest deduction limitation rules can drastically amend the tax planning activities of the entities subject to said rules. As acknowledged in the statement issued by FVCA concerning the said rules, the regulation limiting the deductibility of interest payments appear problematic to PE industry. According to FVCA 2012a, the regulation would fail in meeting its purposes in attributing to interests paid to abroad as well as sole tax planning arrangements and that the regulation would have especially negative effect to the PE branch through increased difficulties in the fundraising and development and

growth of target companies. This would in a long term have negative effects on the already struggling Finnish economy.

Based on the Government Bill HE 146/2012, the provisions would mainly be targeted to companies belonging to either domestic or foreign originated multinational groups and having large turnover. The PE branch is not specifically mentioned in the Government's Bill HE 146/2012. Government's Bill HE 146/2012 acknowledges that based on the feedback received by the Finnish Ministry of Finance to its initial draft issued on interest deduction limitation ruling, exemptions attributable to certain branches (in practice attributable to financial and insurance sector) were implemented. However, despite of the statement issued by FVCA, the exemptions were not stretched to cover PE branch.

According to the empirical results of this thesis, PE portfolio companies tax resident in Finland engage more in tax planning activities through the use of debt structures than their peer firms without PE backing. Thus, it is interesting to evaluate, how well the legislative actions applicable as of 2014 would affect PE branch. As a quantitative approximation briefly discussed in the Government Bill HE 146/2012, the interest limitation regime would have been applicable to 185 Finnish companies in the year 2010. The interest payments being subject to restrictions would be 587 million euro which would lead to static tax effect of 144 million euro and tax profit effect of 70 million euro, although it is acknowledged that at least part of the tax effect potential would be bound to the tax losses. Although it is not specifically expressed in context of the study, I assume that the effect study has been made with the tax data provided by tax authorities, which has not been available to my research.

Nevertheless, from the point of view of the topic of hypotheses *H3* and *H4* of this research as well as especially in the light of my final contribution arguments, developing a model which would evaluate the interest deduction rules with my data is crucial.

6.4.2 Methodology

Blaufus and Lorenz (2009) evaluate the German *Zinsschranke* regulation, which are to a large extent similar to the existing Finnish rules. I utilize the model of Blaufus and Lorenz (2009) in modeling the companies potentially subject to the regulation. However, I limit the evaluation of the affected companies only to the evaluation of certain descriptive statistics as

the potential benefits from examining the effects of the regulation through regression models would be to a large extent inflated by the structure of the regulation, which consciously applies to international groups which have major operations in Finland.

As the data compiled by Finnish tax authorities is not available in public, I need to develop a proxy based on financial statement data. For that purpose I utilize the non-final sample of companies, which includes all the companies concerning which data was available in Orbis and Voitto+. In other words, in addition to the full company sample used in the previously discussed empirical research (74991 companies, of which 494 are identified to have either foreign or domestic PE backing), I also include companies excluded based on the amount of assets and turnover to this evaluation.

To model the companies being potentially subject to Finnish interest deduction limitation rules, I firstly exclude companies having net interest expenses less than 500,000 euro. After that I calculate modified EBITDAs for each of the companies by adding EBIT of each of the companies with interest expenses, depreciations and write-downs of financial assets and net extraordinary expenses which serve as a proxy for group contributions. I exclude a company from the remaining sample if 30 per cent of the modified EBITDA of the company exceeds the net interest payments.

One major problem in charting the affected entities is Finnish GAAP, which does not require companies to report such interest expenses separately which are paid to intra-group entities. Therefore, I need develop a proxy for intra-group interest expenses by multiplying all the interest expenses of a company by the proportional amount of intra-group loans compared with all the interest-bearing loans. My approach could be justified based on the general approach in transfer pricing, according to which the intra-group borrowing should be executed in arm's length terms, which would be justified preferably by external comparable transaction data. On the other hand, in Finland the interventions by tax authorities in the interest rate levels of intra-group loans have been a strongly emerging trend. (Karjalainen 2010) Based on the attempts to minimize the operative results of the companies, it is anticipated that the proxy has a downward bias in terms of showing interests subject to the limitations (by contrast e.g. Knuutinen 2005b).

Further, I manually ensure that the remaining companies subject to sample do not probably

qualify as financial companies not subject to limitations. I also calculate the ratio of equity divided by total assets for each of the remaining companies and exclude such companies, which are members of a group according to Orbis and for which the global ultimate owner of the group has filed a consolidated financial statement for year 2010 or 2011, indicating smaller equity/total assets –ratio than the evaluated Finnish company. Notably, I exclude a link to a group for 14 companies for which the group referral in Orbis is obviously wrong (e.g. the ultimate owner of the group is claimed to be a Finnish individual, a municipality or a PE fund, none of which normally files consolidated financial statements of their holdings).

After approximation of the intra-group interests and limitations relating thereto and forming the companies potentially subject to the regulation, I calculate the amount of non-deductible interests. I identify 167 companies potentially subject to interest deduction limitation rules and the combined amount of interest being subject to the limitations is approximately 405 million euro. The sample of 167 identified companies contains 9 domestic PE portfolio companies and 13 foreign PE portfolio companies. The number of the identified companies is somewhat smaller than the number of companies subject to the regulation in the Government's Bill HE 146/2012. The difference is probably caused the financial statement data and my proxies, which may overestimate e.g. the amount of taxable income and depreciations. The smaller amount of interest payments subject to the regulation can be explained with the cautious measurement of intra-group debts.

Notably, as the EBITDA ratios and interest expenses are determined for the purposes of interest deduction limitation rules by values reported in taxation and not accounting, the use of accounting data generates skewness to the results. For instance, interest payments which are not reported in interest expenses but e.g. are capitalized in the balance sheet (e.g. PIK interests) are not covered by this empirical part.

6.4.3 Results of the modeling

The distribution of the ownership background companies affected by the interest limitation regulation is presented in

Table 16. It can be concluded that the interest deduction limitation regulation would specifically harm companies engaged in manufacturing and real estate activities. No companies operating in water supply, sewerage, waste management and remediation

activities, administrative and support service activities, public administration and defense, education, arts, entertainment and recreation and unclassified activities would become affected by the legislation, whereas other considerably underrepresented main branches include agriculture, human health and social work activities as well as construction.

Table 16: Companies potentially affected by regulation limiting deductibility of interest - distribution by branch

The table illustrates the division of sample companies potentially affected by Finnish interest deduction limitation rules grouped based on Finnish industry sections. The evaluation is made based on financial statements of FY2010. The distribution is presented for all the affected companies as well as affected companies identified to be held by a PE firm by Orbis. The peer company sample includes all the Finnish companies which were identified both by Voitto+ and Orbis. In other words, the peer company sample here is not limited to operative companies as in most of the other section of this thesis. The statistical significance to number of company in the branch in full company sample is denoted with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test conducted separately for each branch for both samples and in relation to peer companies. The number of firms in each row of both the PE columns is presented in italics, should the number of firms in the branch belonging to the sample be relatively smaller than in peer company sample.

Industry	All affected companies	Affected PE portfolio companies	Finnish companies
	# firms	# firms	# firms
Agriculture, forestry and fishing	<i>1</i> **	<i>0</i> ***	2913
Mining and quarrying	<i>1</i>	<i>1</i>	417
Manufacturing	<i>27</i> ***	<i>5</i>	11909
Electricity, gas, steam and air conditioning	<i>3</i>	<i>0</i> ***	668
Water supply; sewerage, waste management and remediation activities	<i>0</i> ***	<i>0</i> ***	549
Construction	<i>5</i> ***	<i>2</i>	17650
Wholesale and retail trade; repair of motor vehicles and motorcycles	<i>16</i> ***	<i>3</i>	24692
Transportation and storage	<i>6</i>	<i>0</i> ***	7370
Accommodation and food service activities	<i>2</i> ***	<i>0</i> ***	4837
Information and communication	<i>9</i>	<i>0</i> ***	7258
Financial and insurance activities	<i>22</i> ***	<i>4</i>	7212
Real estate activities	<i>54</i> ***	<i>0</i> ***	9539
Professional, scientific and technical activities	<i>12</i> ***	<i>4</i>	22151
Administrative and support service activities	<i>2</i> **	<i>1</i>	5955
Public administration and defence; compulsory social security	<i>0</i> ***	<i>0</i> ***	40
Education	<i>0</i> ***	<i>0</i> ***	1466
Human health and social work activities	<i>2</i> **	<i>2</i>	4419
Arts, entertainment and recreation	<i>0</i> ***	<i>0</i> ***	2502
Other activities	<i>0</i>	<i>0</i>	1545
Total	162	22	133092

In order to evaluate possible differences between tax planning activities of firms identified to be affected by the regulation with other firms, I also compare the values of independent and dependent variables between affected companies and peer companies. All dependent variables have not been available for the affected firms due to lack of multi-year data concerning the firms not belonging to the sample set evaluated in the earlier empirical tests.

In order to avoid bias generated by non-operative firms, I chart the possible differences of the affected firms in relation to the sample used in empirical research, not to the larger sample. I find this necessary as the companies excluded from the larger company sample when forming the smaller company sampler are mostly excluded based on the small turnover. Thus, the observations regarding differences as set out in Table 17 are not driven by dormant companies.

Table 17: Distribution of dependent and independent variables for companies potentially affected by interest deduction limitation regime

The table presents the lower (25 %) median (50 %) and upper (75 %) quartile values as well as average values and standard deviations of some of the dependent and independent variables concerning the companies which would, based on modeling described in this section, be affected by Finnish interest deduction limitation rules as well as full company sample used in previous empirical tests. All the said values for each of the variable are presented separately for the two samples. The values of independent variables from balance sheet are scaled with non-lagged total assets. The column next to average-column of affected companies indicates the statistical significance of the difference of average values in relation to average respective value of peer company sample, which are labeled with ***, ** and * at 1, 5 and 10 per cent confidence levels in two-tailed t-test for unpaired sample firms. Significance of the variables has also been measured with two-tailed Wilcoxon signed rank test the results presented next to median values, where ***, **, and * denote the variable being significantly different from zero at 1, 5 and 10 per cent confidence levels. Average and median values for companies affected by regulation being smaller than the respective values for peer companies are presented in italics.

Independent variables	Affected companies						Full company sample					
	#Obs	0.25	Median	0.75	Average	StDev	#Obs	0.25	Median	0.75	Average	StDev
PE Ownership	162	0.0000	0.0000	0.0000	0.1358	0.3436						
Domestic PE ownership	162	0.0000	0.0000	0.0000	0.0625	0.2429						
Foreign PE ownership	162	0.0000	0.0000	0.0000	0.0802	0.2725						
Profitability (RNOA)	162	-0.0158	<i>0.0229</i> ***	0.0530	<i>0.1751</i>	2.7487	74497	0.0166	0.1220	0.2895	0.1333	1.9451
Losses	162	0.0000	1.0000 ***	1.0000	0.6235 ***	0.4860	74497	0.0000	0.0000	0.0000	0.2488	0.4323
Net operative losses from previous years	162	0.0000	1.0000 ***	1.0000	0.6296 ***	0.4844	74497	0.0000	0.0000	0.0000	0.1818	0.3857
Leverage	162	0.5957	0.8308 ***	0.9682	0.9917 ***	1.8723	74497	0.1089	0.3128	0.6186	0.4367	0.6567
Intragroup leverage	162	0.2663	0.4818 ***	0.7323	0.5151 ***	0.3619	74497	0.0000	0.0000	0.0000	0.0258	0.1386
Intangibles	162	0.0000	0.0002	0.0147	0.0493	0.1475	74497	0.0000	0.0000	0.0025	0.0227	0.0856
Multinationality	162	0.0000	1.0000 ***	1.0000	0.6914 ***	0.4634	74497	0.0000	0.0000	0.0000	0.0352	0.1843
Abnormal depreciations	162	0.0000	0.0000 ***	0.0000	0.0017 **	0.0106	74497	0.0000	0.0000	0.0000	-0.0001	0.0139
Equity in earnings	162	0.0000	0.0000 ***	0.0000	0.0060	0.0282	74497	0.0000	0.0000	0.0000	0.0024	0.0308
Property, plant and equipment	162	0.0000	<i>0.0072</i> ***	0.3555	<i>0.2100</i>	0.3397	74497	0.0132	0.1062	0.3636	0.2229	0.2626
Group contributions	162	0.0000	0.0000 ***	0.0000	<i>-0.0082</i> ***	0.0608	74497	0.0000	0.0000	0.0000	0.0007	0.1339
Received group contributions	162	0.0000	0.0000	0.0000	0.0083 ***	0.0227	74497	0.0000	0.0000	0.0000	0.0054	0.0493
Paid group contributions	162	0.0000	0.0000	0.0000	<i>-0.0165</i>	0.0540	74497	0.0000	0.0000	0.0000	-0.0056	0.0523
Assets	162	9.8711	10.5150 ***	11.4374	10.7176 ***	1.3252	74497	4.5539	5.4972	6.5806	5.6891	1.6283
Listed	162	0.0000	0.0000 ***	0.0000	0.0309 ***	0.1735	74497	0.0000	0.0000	0.0000	0.0011	0.0332
Dependent variables												
Book-tax difference (BTD)	162	0.0000	<i>0.0000</i>	0.0000	<i>0.0131</i> ***	0.0519	74497	-0.0021	0.0000	0.0111	0.0251	0.1817
Cash effective tax rate (CASH_ETR)	45	0.0000	<i>0.0479</i> ***	0.2600	<i>0.1201</i> ***	0.1247	55291	0.1494	0.2583	0.2600	0.1935	0.1030
Cash effective tax rate 2 (CASH_ETR2)	91	0.0000	<i>0.0000</i> ***	0.0083	<i>0.0280</i> ***	0.0695	57281	0.0588	0.2458	0.2600	0.1762	0.1072
Discretionary permanent book-tax difference (DTAX)	142	-0.0645	<i>-0.0086</i> ***	0.0262	<i>-0.0268</i> ***	0.0831	74497	-0.0089	0.0263	0.0503	-0.0001	0.3310

The evidence in Table 17 above shows clear differences between companies being affected by interest deduction limitation regulation and other operative peer companies. Not surprisingly, potentially affected companies are in general highly levered as even the lowest quartile of the

affected company sample contains companies which have interest bearing debt of almost 60 per cent of the balance sheet. Further, the portion of intra-group loans is also significant, as the relation of intra-group debt to total assets is on average almost 50 percentage points higher than the same ratio in peer companies. Almost 70 per cent of the companies subject to the new regulation are identified to have a multinational link and 62 per cent of affected companies made loss during the financial year 2010. Interestingly, although quite naturally having more assets, the affected companies have less property, plant and equipment to total assets than operational peer companies. Save for that, all the mentioned differences are statistically significant at 1 per cent confidence level.

Based on the results set out in Table 17, companies potentially subject to interest limitation regulation also engage more in tax planning activities measured based on the tax planning proxies reflecting effective tax rate, but not based on dependent variables reflecting book-tax difference or discretionary permanent book-tax difference. This is expected in the case of effective tax rate measured in relation to operative income which captures intra-group debt. The scale of the differences is drastic as companies identified as affected companies pay on average 14.9 percentage points less tax per each euro of earned operating income than other operative companies.

The analysis shows that the critique interest deduction limitation regime has received (e.g. FVCA 2012a) appears to be correct in the light of the empirical model viewed herein. According to Aalto and Viilo (2013), the regulation would be especially harmful to companies operating in branches in which companies have difficulties in predicting the accurate amount of income at the end of the year. Especially taking into account the potential effects of the regulation to multinational entities having large scale operations in Finland, the implementation of the regulation may have unintended consequences to Finnish economy.

Additionally, the interest deduction limitation regime appears problematic to PE portfolio companies. PE portfolio companies represent 13.6 per cent of the companies identified as affected companies by the modeling. Furthermore, foreign PE portfolio companies seem to be slightly more affected than domestic PE portfolio companies. As I already discuss, the possibly emergent lack of ability to consolidate operative companies e.g. with PE funds, the high importance of ability to accurately predict the result of the end of the year and wide concept of intra-group guarantees turning external financing into intra-group borrowing

subject to the regulation definitely makes Finland a less lucrative target for foreign PE investors. Based on my modeling and in theoretical terms, the deductible expenses for PE firms would have decreased, should the regulation be implemented to affect the financial year 2010, approximately 99 million euro due to the limited deduction of interest payments leading to an estimated static tax effect of 24 million euro.

6.5 Results

Section 6 of this thesis mainly attributes to the evaluation of hypotheses *H3–H5*. According to hypothesis *H3*, PE portfolio companies would utilize more intra-group borrowing and group contributions than their peer companies. The hypothesis is based on the assumption that PE portfolio companies would exhibit more signs of tax planning activities. A tax shield generated through interest payments directly contributes to financial engineering and lower effective tax rates whereas group contributions can be utilized in decreasing the effective tax rates of the operative companies with various ways. The empirical results were drastically unanimous about the fact that PE portfolio companies generally utilize more leverage and especially intra-group leverage than their peer companies. Even if the amount of leverage in relation to total assets was controlled in PSM procedure, the PE portfolio companies still exhibit higher amount of intra-group leverage in comparison to the matched peer companies on a statistically significant level.

The results concerning group contributions do not appear fully robust in PSM as intra-group interest payments when comparing the results of utilized statistical tests. The weaker effects may be explained by the small number of sample companies distributing group contributions, as well as the fact that the general variable for group contributions returns an indication of zero activity if a company receives and grants the same nominal amount of group contribution. Nevertheless, there is still convincing and strong evidence that PE portfolio companies pay more group contributions than their peer firms, which supports the utilization of the relatively strict Finnish group contribution regime to be utilized in connection with debt financing. Thus, the hypothesis *H3* can be confirmed.

The hypothesis *H4* accounted for differences between utilization of group contributions and intra-group borrowing between domestic and foreign PE portfolio companies. Based on the empirical results statistically significant at least at 5 per cent confidence level, portfolio

companies of domestic PE firms use on average approximately 8 percent points more leverage in relation to the total assets than portfolio companies of foreign PE firms and over 23 percent points more than other peer firms, whereas the mutual direction between PE firms is reverse in terms of intra-group leverage. As discussed above, the same reverse direction is apparent between sample matches generated through PSM as well as correlation coefficient matrices. The view is slightly supported by group contributions, which show mutual differences between PE portfolio company groups indicating that PE portfolio companies of domestic PE firms would operate more like flow-through entities than the sample of portfolio companies of foreign PE firms. Based on the empirical results, the hypothesis *H4* can be confirmed, as the said differences clearly exist.

According to the statement of hypothesis *H5*, portfolio companies with PE backing would utilize less book-tax difference generating tax planning measures than other tax planning measures. The idea was derived mostly from the possible hardships in the exit phase as well as interpretative items generating either downward or upward bias to balance sheet items and EBIT important in the price formation process. Although the general emergence of use of abnormal depreciations and equity in earnings seems more common to PE portfolio companies than to their peer firms, the magnitude of such activities combined provides mixed evidence concerning the end direction of the variables. Nevertheless, the activity and fiscal effects are considerably smaller than e.g. in the case of use of leverage or utilization of tax losses. As the rejection hypothesis *H5* would predict a negative direction to dependent variables concerning abnormal depreciation and equity in earnings, the hypothesis can be accepted.

The evaluation concerning interest deduction limitation rules clearly shows that the regime would be more attributed to PE portfolio companies than other firms, and inside the group of PE firms the entities being harmed would in practice be held by the funds of foreign PE firms. Based on the modeling, the interest deduction limitation model clearly hits more PE portfolio companies than all the peer companies, even though the peer company sample used in the modeling covers also companies which are excluded from the peer company sample used in other empirical research based on turnover.

The actual difference in the treatment of the regulation to PE portfolio companies in relation to other companies may be even more drastic, as I approve the balance sheet test

automatically to all the companies which Orbis identify to belong to the consolidated group of companies and that group has filed consolidated financial statements. In practice, the regulation requires the financial statement of the group to be prepared in accordance with IFRS or other GAAP accepted in an EU member state. Thus, for several foreign PE portfolio companies which utilized the balance sheet test, the consolidated financial statement used in the modeling for the purposes of this thesis might not be applicable.

Table 18: Summary of the results

Hypothesis	Contents	Results
<i>H1</i>	Finnish PE portfolio companies exhibit systematically different levels of tax planning compared to other Finnish companies	Strong support
<i>H2</i>	Portfolio companies of foreign and domestic PE firms exhibit different levels of tax planning	Support
<i>H3</i>	Finnish PE portfolio companies utilize more group contributions and intra-group borrowing than other Finnish companies	Strong support
<i>H4</i>	Finnish PE portfolio companies of funds of a foreign PE firm utilize group contributions and intra-group borrowing differently than Finnish portfolio companies of Finnish PE firms.	Support
<i>H5</i>	PE portfolio firms utilize less tax planning measures that generate differences between book income and taxable income than more visible tax planning measures	Support

7 Implications of the results

7.1 Implications to public policy

The purpose of the final section of this thesis is to briefly discuss the impacts the results have to both regulation as well as PE industry. In other words, the matter of interest is to highlight the key takeaways of the research to both sides of the tax planning field.

The empirical results achieved in this thesis provide several policy implications. Their leading idea is to show that the current tax policy may not be the most optimal one. As the results almost unanimously show, the PE portfolio companies exhibit more signs of tax planning activities than their peer companies. This is naturally a problem to the neutrality between economic operators. On the other hand, as the revenue from corporate income tax in Finland was in 2010 approximately 2.9 billion euro, e.g. the interest deduction limitation regime in force would have, by utilizing the calculations provided by Finnish government and assuming no changes in behavior of the companies subject to regulation, led to an increase of 2.4 per cent in corporate income tax revenues. On the other hand, it may persuade several group companies to consider an international reallocation of their business operations.

This research also provides tools for the evaluation of the effects of tax planning measures on tax revenues. As a very interesting fact, I compare the effective tax rates between PE portfolio companies and other operational peer companies by dividing the taxes paid with the revenue and windzoring the results by removing 2 per cent of the lowest and highest observed values. Multiplying the difference in averages with the total revenue of all PE portfolio firms produces an assumption of total tax effect of 40 million euro (similarly Cheng et al. 2012), which thus represents the additional amount of taxes which PE portfolio companies would have paid if no difference between PE portfolio firms and other firms occurred. As another estimate for the effects of tax planning of operative PE backed companies, when using a similar method with the dependent variable measuring taxes paid in relation to the operating income (*CASH_ETR2*), the total tax effect is approximately 24 million euro. The figure is 0.8 per cent of Finnish corporate income tax revenues in 2010. The latter figure produces a more accurate estimate which e.g. eliminates the effects of expensing tax losses in accounting and does not truncate outlier ratios. The observed total amount is considerably smaller than the tax effect of interest payments potentially subject to regulation as set out in Section 6.4.3, as this

figure captures, among other things, the upside created by PE portfolio firms paying more taxes as well as the replication effect. Further, the dependent variable does not take into account companies which make operational loss.

The major matter which causes vulnerabilities to the Finnish tax base and is also discussed in this research is the possibility to utilize international tax arbitrages. Knuutinen (2013) acknowledges the international tax arbitrage to refer to the utilization of differences between two tax systems in a way which is acceptable from the point of view of both tax systems but the relevant tax systems do not work together so that the arrangement would be acceptable as a whole. These kinds of arrangements are not especially evaluated in this study, as current empirical tax planning literature has not come up with sufficient means to address the problem (Hanlon and Heitzman 2010). When the Finnish tax regulation tightens towards taxpayers and addresses also arrangements which have purely economic motives and the tax authorities' resources increase, arguably the emergence of arrangements benefiting from international level tax arbitrage increases. Knuutinen (2013) suggests the interpretation of bilateral tax treaties as a potential solution and especially highlights the idea of the so-called treaty anti-avoidance rule. According to it, the new inherent principle developed by OECD would apply to arrangements holding a more favorable tax position as one of the main motives and which are in contrast with the purposes of the articles of the relevant tax treaties. The complementary nature of the tax planning activities in accordance with the rapidly evolving legislation observed in this research support Knuutinen's (2013) idea.

Due to the utilized data and framework of the empirical research, this study applies mainly to Finland or other tax environments similar to Finland. Nevertheless, the study provides implications also to the foreign operators. Setting the results in the empirical background provides sound evidence that PE portfolio companies engage in tax planning through debt structures and group taxation but do not utilize more complex and invisible measures. Additionally, the observed differences between the behavior of foreign and domestic PE portfolio firms are a matter which presumably has clear implications worldwide. Thirdly and possibly most importantly, the Finnish evidence show that regulation changes may cause harmful effects on the PE branch to an unexpectedly large extent, thus the effect studies made in the regulation preparation should also consider both direct and consequential effects to the PE branch.

The results of this study are to my knowledge very similar to the only existing empirical research concerning tax planning behavior in the PE industry, i.e. the research of Badertscher et al. (2011). Even the observed scale of the tax planning activities is quite similar, irrespective of methodological and regulation related differences.

This study does not evaluate positive effects of the PE firms on the society. However, e.g. FVCA 2012 provides empirical evidence of the positive effect caused by PE firms to the society e.g. through the rapid increase of turnover, number of employees, value added to the products as well as growth of the companies. The positive effects are nonetheless hard to accurately capitalize.

Conclusively, the regulation changes viewed in this section should be executed in a way that the neutrality between firms with and without PE backing is preserved and that the other side effects on the society, which may well exceed the benefits from tax planning, are not forfeited. Especially from the point of view of economic effects of tax planning measures and on the other hand the scale of positive side effects, the Finnish tax regulation could tilt from prevention of certain narrow kinds of activities to a direction where it would encourage investment activities and boost the economy. The increase in tax revenues would thereby result from increased economic activity.

As a practical example, amending tax loss dispensations to be granted in case the transaction has economic motives and tax losses are needed for continuing the business operations could even in short term remove existing hindrances from transactions with economic motives (see also Nuotio 2012). Although the amount of tax asset relating to losses (400 million euro) is strictly upward biased due to the use of the financial statement figure, the economic importance of such a decision would still be evident.

Another possible resolution to negative and unanticipated effects of regulation is the modification of the interest deduction limitation regulation into more specific form, as a consequence of which the effects of the regulation could be controlled better. A good example of specific regulation are the Swedish focused interest deduction limitation rules which, by contrast to Finnish corresponding regime, only limit the deduction of intra-group interests if among other things, the interest is not taxed at the hands of the receiving group entity at the rate of 10 per cent and the loan has not been granted to obtain significant tax benefits. Another

option for deductibility may be fulfilled if the receiving entity is tax resident in EEA or a country with which Sweden has a tax treaty in force and the borrowing has business motives. (Taxand 2013) Although the Swedish rules have recently been adjusted, the rules can still be more precisely attributable to activities without economic motivation, whereas the Finnish regime will also certainly limit loans regarding purely commercially motivated arrangement.

7.2 Implications to PE firms

The most plausible point viewed in this research which has a direct and immediate effect on PE portfolio companies are the rules limiting the deductibility of interest payments. As the empirical results clearly suggest that PE firms utilize a tax shield generated through intra-group interest payments in the allocation of profits in operational structure, part of interest expenses becoming non-deductible will have a direct effect on the profitability of an investment. Furthermore, PE firms should by latest now discuss the consolidation of the portfolio companies, especially if the levered portfolio company is already in financial distress or operates in a volatile branch.

Although certain means of mitigating the effects of the regulation exists e.g. in the form of debt reallocation, conversions or transfers of operations, especially due to the unpredictability of the Finnish interest limitation regulation with regard to both its applicability and its future development (see Aalto and Viilo 2013), in future PE firms may consider structuring the investments e.g. through Sweden instead of Finland. The same questions may arise in countries with a similar interest deduction regime than Finland, including e.g. Germany, Denmark, Norway and Italy.

The results also show the vulnerability of the PE structures to certain changes in tax practice, which are not necessary to occur at the legislation level. For instance, although the leverage of the PE portfolio firms is based on this research more moderate than often expected, 229 PE portfolio firms would result in an endangered position e.g. if the tax authorities would start successfully challenging structures where more than half of the balance sheet consist of liabilities. According to Knuutinen (2013), e.g. the municipal council of Helsinki has decided that the city of Helsinki avoids procurements from companies engaged in tax haven countries although the decision is against EU law. The limitation of public procurement activities would exclude almost one fifth of the companies belonging to the foreign PE portfolio company

sample of this research from the potential providers. In practice the ratio is very likely larger, as the ownership information is very limitedly available in Orbis database. Naturally, the relocation of a PE fund is very seldom an option for the PE investor.

Conclusively, PE firms having portfolio companies in Finland should be at least aware of the potential adverse changes in business environment and e.g. through sensitivity analyses develop alternative plans in case the legislative risk realizes. On the other hand, positive development may also occur. Probably the best example of this is the Finnish corporate income tax rate, which has been gradually lowered from 26 per cent (at the end of 2010) to 20 per cent (as of 2014). As the total tax payments of PE portfolio firms to Finland were in 2010 based on the financial statement data for the financial year ended altogether 72 million euro, the magnitude of the decrease is probably significant to PE firms.

7.3 Validity of the results and future research

The validity of the results of this research relates to two major matters: the data and the methodology. As regards the first issue, the decision of using the financial statement information as the major data is probably the best resolution available and presents the definite mainstream in empirical tax planning literature. However, in several different sections the use of proxies becomes necessary. On the other hand, the validity of the proxies is carefully evaluated and they seem to provide concise results throughout the thesis. The use of ownership data from Orbis causes another potential source of error, as the ownership data concerning Finnish companies is sparsely available. I have minimized the possible deficiencies by manually checking the PE portfolio company sample, in addition to which I have utilized deal data mostly from FVCA and SDC Platinum. However, especially the distinction between foreign and domestic PE ownership may be a potential source of error, especially if both kinds of PE actors are involved in the deal and Orbis does not recognize the PE owner with the major stake correctly.

Methodological concerns which may affect the validity of the results, rise mostly from the lack of panel data. Similarly to Badertscher et al. (2011), this study is rather cross-sectional than panel data study in terms of PE investment. Thus, in the trade-off situation I emphasize the generalizability derived from large sample size over the evaluation with panel data but considerably smaller amount of PE portfolio companies. However, in my understanding the

results would not suffer from endogeneity bias as the utilization of the propensity score matching method and small panel data evaluation in Section 4.5 yield coherent results against the endogeneity, which is according to Badertscher et al. (2011) not likely to be a problem.

The room for further research relating to the field of this study is actually threefold. First of all, replicating the idea with e.g. other Nordic or German data and somehow controlling differences in tax regulation to a sufficient extent would provide insight whether the domicile of PE firm affects the tax planning tendencies on operative company level. Secondly, making the study with actual tax return data could provide more light to tax planning activities, the effects of interest deduction regulation and especially to the tax planning behavior of loss-making firms. As the third matter partly relating thereto, the evaluation of the actual PE ownership stakes in the portfolio companies, as well as the participation of employees of PE firms into the board work of the portfolio firms, would provide more accurate information about the mechanisms behind the results of this thesis.

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