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Differing regulation across Real Estate Investment Trust (REIT) regimes: Capital structure perspective

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ABSTRACT:
The purpose of this thesis is to examine how differing regulation across Real Estate Investment Trust (REIT) regimes affects capital structures and applied funding sources of REITs. The investigation is conducted with a sample including REITs from 18 different countries. Specifically, this thesis aims to determine if differences in regulation concerning the level of allowed leverage and amount of income required to be distributed as dividends to shareholders result in differences in the level of leverage and applied financing sources.

The prior literature regarding the effects of differing regulation across REIT regimes is scarce. Thus, this thesis attempts to provide robustness to existing literature concerning the influential power of differing legislation on capital structures of REITs. In addition, this thesis extends the literature by investigating how the regulation a REIT is exposed to affects its decisions concerning the usage of different financing sources.

The results of this thesis suggest that leverage restriction is a more crucial factor in determining the leverage of a REIT than the payout requirement. In detail, the absence of leverage restriction is associated with higher leverage. However, REITs without payout requirement seem to retain more earnings compared to ones exposed to such regulation implying that REITs prefer to utilize internal funds. However, the results of this thesis do not suggest that the absence of payout requirement would result in REITs to reduce the usage of other funding sources implying that the amount of earnings a REIT can retain is insufficient in covering the ultimate financing needs. The evidence also implies that the absence of leverage restriction is associated with more substantial debt issuances. In addition, the evidence suggests that the need to finance growth opportunities is a substantial determinant driving the fundraising of REITs.

Keywords: Real Estate Investment Trust, capital structure, regulation

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TIIVISTELMÄ:
Tämän opinnäytetyön tarkoitus on tutkia, miten maiden väliset erot listattujen kiinteistörahastojen sääntelyssä vaikuttavat näiden rahastojen pääomarakenteeseen ja niiden käyttämiin rahoituslähteisiin. Työssä käytetty aineisto sisältää dataa listatuista kiinteistörahastoista 18 eri maasta. Työn empiirinen osuus keskittyy regulaatioon koskien sallittua vieraan pääoman määrää sekä vaadittua osuutta, joka vuotuisista tuotoista tulee jakaa osinkoina. Tavoitteena on selvittää, vaikuttavatko maiden väliset erot näiden tekijöiden sääntelyssä listattujen kiinteistörahastojen pääomarakenteeseen ja niiden käyttämiin rahoituslähteisiin.

Olemassa oleva akateeminen kirjallisuus koskien maiden välisiä eroja listattujen kiinteistörahastojen regulaatiossa on niukkaa. Siten tämä opinnäytetyö pyrkii osaltaan tukemaan olemassa olevaa tutkimusta, jossa sääntelyn on todettu vaikuttavan listattujen kiinteistörahastojen pääomarakenteeseen. Lisäksi tämä opinnäytetyö laajentaa aiemman tutkimuksen näkökulmaa keskittyen tutkimaan sääntelyssä esiintyvien erojen vaikutusta siihen, millaisia rahoituslähteitä listatut kiinteistörahastot käyttävät.

Empiiristen tulosten mukaan sääntely koskien sallittua vieraan pääoman määrää on tärkeämpi tekijä listatun kiinteistörahaston pääomarakenteen määrittymiselle kuin sääntely, joka määrittää osuuden tuotoista, joka rahaston tulee jakaa osinkoina. Tutkielman tulosten mukaan niiden rahastojen pääomarakenteet, jotka tulevat maista joissa sallittua vieraan pääoman määrää ei säännellä, sisältävät enemmän velkaa. Kuitenkin listatut kiinteistörahastot, joiden sääntely ei sisällä vaadittua määrää, joka tuotoista tulisi jakaa osinkoina, näyttäisivät jakavan vähemmän osinkoja, ja siten hyödyntävän mahdollisuutta käyttää sisäisesti tuotettuja varoja rahoituslähteenä. Tästä huolimatta tämän opinnäytetyön tulosten mukaan kiinteistörahastot, joiden osingonjakopolitiikkaa ei ole säännelty eivät näyttäisi vähentävän muiden rahoituslähteiden käyttöä. Tämä havainto viittaisi siihen, että sisäisesti generoidut varat ovat sääntelystä riippumatta riittämättömät kattamaan listattujen kiinteistörahastojen rahoitustarpeet. Empiiriset tulokset osoittavat myös, että mikäli sallittua vieraan pääoman määrää ei säännellä, listatut kiinteistörahastot kerryttävät enemmän vieraan pääoman ehtoista rahoitusta. Lisäksi on huomion arvoista, että listatut kiinteistörahastot näyttäisivät kerryttävän pääomaa lähinnä rahoittaakseen kasvumahdollisuuksia.

Avainsanat: listattu kiinteistörahasto, pääomarakenne, sääntely

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1 Introduction

During recent years, the academic literature has paid substantial attention to the capital structure determinants of Real Estate Investment Trusts (REITs). General capital structure studies typically exclude REITs due to these firms being exposed to a distinctive regulation. The most crucial regulation concerning REITs is these firms being typically exempt from corporate taxes given that they distribute a specified typically large share of earnings as dividends to shareholders. Consequently, REITs are unable to utilize benefits associated to debt financing in the form of a tax shield. In addition, REITs are obligated to rely on external financing due to their inability to retain substantial amounts of earnings. Hence the setting for capital structure decision-making is unique for REITs, making it a particularly interesting research area for academics.

While utilizing traditional capital structure theories into REIT context yields in mixed results, the relevancy of each theory has been empirically proven in this setting. According to the trade-off theory, each firm has an optimal capital structure in which the benefits of pre-mentioned tax shield equal to the financial distress costs associated to debt financing. Given that most REITs are unable to benefit from a tax shield, trade-off view suggests low leverage for REITs. However, the trade-off theory also proposes that high asset tangibility increases the debt capacity of a firm, implying that REITs with substantial amounts of tangible real estate investments should be highly levered. On the other hand, pecking order theory proposes preference order for financing sources to start with retained earnings, and then move to different debt instruments with the least risky one being the most preferred. Equity is issued only as a last source for capital. Accordingly, pecking order view predicts REITs to be highly levered due to limited amount of retained earnings. Lastly, the market timing theory states that the financing decisions are made with respect to the current market conditions as an attempt to time the market. In practice, the theory suggests that companies prefer external equity in the bullish market conditions, and debt financing in the bear market.

Despite the history of REITs tracking all the way back to 1960s when first introduced by the U.S congress, the structure has only relatively recently established a permanent role

globally. Moreover, the bulk of the literature concerning capital structures of REITs is conducted with U.S. data. However, given that there is no international regulation for REITs, the recent academic literature has concentrated on examining whether the capital structure determinants differ across countries. The typical approach for such studies is to investigate firm-specific and country-specific factors in a certain geographical context, and to evaluate the results applying traditional capital structure theories as a framework. Firm-specific variables with a most permanent place in the capital structure literature are profitability, asset tangibility, firm size, and growth opportunities (see e.g. Harrison, Panasian & Seiler 2011; Barclay, Heitzman & Smith 2013; Rovolis & Feidakis 2014; Morri & Parri 2017.) The expected correlations these variables are hypothesized to have with leverage can be formed based on capital structure theories. However as regulation varies across REIT regimes, this approach in which the development of hypotheses is typically based only on capital structure theories, is insufficient when attempting to provide general conclusions regarding capital structure determinants of REITs. Consequently, there is a gap in the literature concerning the specific effects differing regulation across REIT regimes has on capital structures.

The first attempt to fulfill this gap is the study of Dogan, Ghosh and Petrova (2019). In their research, authors identify the differing regulation concerning the payout requirement and leverage restriction across REIT regimes, and investigate how these differences influence the capital structures of REITs. The results of their study suggest that these factors are significant capital structure determinants for REITs. Utilizing the same approach, this thesis attempts to provide further evidence and robustness regarding the explanatory power of differing regulation has on the applied leverage of a REIT. Moreover, the investigation is extended to cover how differing regulation across REIT regimes affects the decisions concerning the usage of different financing sources by REITs.

1.1 Purpose of the study

The study of Dogan et al. (2019) focuses solely on investigating the impact of regulation on capital structure. While this thesis attempts to provide robustness for their results with a similar approach focusing on differences in payout requirement and leverage restriction,

the purpose is to provide new contribution to the literature by also investigating how differing regulation affects the choices regarding funding sources made by REITs. According to my knowledge, this is the first study with this approach. In practice, this examination is done by utilizing the techniques introduced by Baker and Wurgler (2002), and applied in REIT context with a sample from the U.S. by Feng, Ghosh and Sirmans (2007). In detail, this approach allows the examination of determinants driving the raising of capital through net debt issues, net equity issues, and retained earnings.

The expected results in terms of regulative aspects for both perspectives included in this thesis follow the results of Dogan et al. (2019). In detail, the leverage is expected to be higher in REIT regimes where its level is not restricted. Similarly, the absence of payout requirement is expected to result in REITs to retain more earnings, and consequently result in lower level of leverage. In addition, the missing leverage restriction is expected to correlate with the amount of net debt issues. While the focus in this thesis is not in firm-specific variables, a special attention is given to the correlation between market to book (M/B) ratio and capital issues. This allows the investigation concerning market timing behavior of REITs. As Feng et al. (2007) document a persistent positive correlation between high M/B ratio and net debt issues, it is expected that such correlation exists with an international sample as well. In addition, it is being investigated whether high M/B ratio correlates with net equity issues as suggested by market timing theory, or not.

1.2 Structure of the study

This thesis is structured as follows: the second chapter provides a thorough introduction concerning REITs with a focus on regulation these firms are exposed to. The third chapter introduces capital structure theories in order to clarify the theoretical framework in which the analysis of empirical results of this thesis is done. The fourth chapter provides a literature review introducing prior academic studies concerning capital structures of REITs. The fifth chapter presents the data and methodologies that are utilized in deriving the empirical results presented in the sixth chapter. The final chapter provides conclusions.

2 Real Estate Investment Trusts (REITs)

The purpose of this chapter is to provide a thorough introduction of REITs. This includes describing the main features of the overall listed real estate market in which REITs operate. In addition, characteristics distinguishing REITs from regular real estate companies are introduced with an emphasis being on special regulation REITs are exposed to.

2.1 Listed Real Estate Markets

Several academic studies have established how real estate offers diversification benefits in a mixed asset portfolio due to the returns of these investments having only a moderate correlation with returns of other asset classes. Other key benefits associated with real estate investments are steady cash flows and inflation cover. (Falkenbach & Niskanen 2012.)

However, direct inclusion of real estate into a portfolio is complex due to the substantial unit size and illiquidity of these investments. Moreover, the heterogeneity of each property complicates the creation of a well-diversified real estate portfolio. Direct real estate investments also require active asset management as well as expertise concerning the local real estate market and single properties. (Falkenbach, Niskanen & Kiehelä 2013.) Hence, an investor seeking to obtain benefits associated with real estate investments may consider indirect methods to invest in these assets.

Indirect approaches to invest in real estate can be separated with following two questions: is the vehicle public or private, and is it equity or debt. Private real estate equity contains for example direct investments and non-listed funds investing in real estate. On the other hand, public real estate equity encompasses shares of real estate companies quoted on a stock market. (Falkenbach et al. 2013.)

European Public Real Estate Association (EPRA) defines listed real estate as “companies quoted on an official national stock exchange that derive income from the ownership, trading, and development of income producing real estate assets”. According to the

estimations of EPRA, the total value of global real estate markets is nearly EUR 3 trillion. (EPRA 2020.)

Listed real estate companies can further be separated into real estate investment trusts (REITs) and real estate operating companies (REOCs). The main difference between these two forms is REITs being principally exempt from corporate taxes given that they distribute the majority of taxable income as dividends to shareholders. The exact percentage a REIT is required to distribute is typically high, but depends on national legislation, and can vary across countries. For instance, the U.S. REITs have to payout 90% of their taxable income. National legislation can also include additional restrictions to REITs including for instance governed level of maximum leverage. The differences between legislation across countries will be discussed more in detail in the following chapter. Moreover, REITs typically need to originate majority of their income through renting activities, while REOCs may concentrate more on real estate development projects. (Niskanen & Falkenbach 2012; Grybauskas & Pilinkiene 2019.)

Countries differ from each other in terms of the weights REITs and REOCs represent the listed real estate market. In the European markets, a fairly equal distribution is common as according to EPRA, REITs represented 57.16% and REOCs 43.84% of the total listed real estate market in 2017. On the other hand, in the U.S., the vast majority of listed real estate market is covered by REITs, and the REOC structure is extremely rare. (Grybauskas & Pilinkiene 2019.)

2.2 REITs: Establishment of regimes and regulation across countries

The REIT structure was established through Real Estate Investment Trust Act by the U.S. Congress in 1960 defining REIT as a firm generating income from real estate assets or assets related to real estate. These companies can be divided according to assets a REIT invests in into three sub-classes: mortgage, equity, and hybrid REITs.

Mortgage REITs are specialized in real estate-related assets as they provide debt financing to housing and commercial real estate via direct and indirect debt instruments such as

mortgages, real estate loans, or mortgage-backed securities. On the contrary, equity REITs own real estate assets directly, and focus on managing and generating income from these properties. The investment strategies can concentrate on a specific property type, such as office or retail assets, or a REIT can diversify its holdings across these segments. Hybrid REITs are a mix of a mortgage and an equity REIT in terms of assets it holds. (Dogan et al. 2019)

Despite the long history, the role of REITs was modest in the U.S. economy until 1990s when the rapid expansion started by equity REITs. The REIT structure then spreaded globally, and was implemented or at a planning stage in over 30 countries by 2016. However, REITs are still a fairly new phenomenon in Europe as for instance Germany, Italy, and the UK introduced REIT regulation only in 2007, and Spain in 2009. (Grybauskas & Pilinkiene 2019.)

According to National Association of Real Estate Investment Trusts (NAREIT), by 2019 the total number of countries with an established or a developing REIT structure was near 40. In the Global REIT market report 2017 of E&Y, the following twelve countries are listed to have an established structure: *Australia, Belgium, Canada, France, Germany, Hong Kong, Japan, the Netherlands, New Zealand, Singapore, the UK, and the US*. In addition, the report classifies *Finland, Ireland, Italy, Malaysia, Mexico, South Africa, South Korea, Spain, Turkey, and the United Arab Emirates* as countries where the REIT regime is in an emerging phase with recently established REIT structure. Lastly, following fifteen countries are considered to have a REIT structure in a planning phase: *Bahrain, Brazil, Bulgaria, Costa Rica, Greece, Hungary, India, Israel, Kenya, Pakistan, the Philippines, Saudi Arabia, Taiwan, Thailand, and Vietnam*. (Ghosh & Petrova 2020.)

The sample to be applied in this thesis includes REITs from each of the pre-mentioned classes, and includes each country with an established structure except New Zealand. From the countries with emerging REIT structure, the available data allowed the inclusion of Malaysia, Mexico, South Africa, Spain, and Turkey. In addition, the sample includes

REITs from Bulgaria[1] and Greece[2]. The final sample formation is described later in chapter 4.

The legislation across REIT regimes can differ in terms of required minimum share capital, whether the management is required to be external or not, and the required minimum of real estate investments measured, for instance, with a percentage of total assets. The regulation may also prevent a REIT from undertaking real estate development activities. In addition, the legislation may differ regarding the minimum amount of profits a REIT is required to payout as dividends to its shareholders. The legislation in some regimes additionally restricts the amount of leverage a REIT can apply. (EPRA 2020.)

The empirical part of this thesis focuses on examining how the differing regulation regarding payout requirement and leverage restriction across regimes affects the applied leverage and funding sources of a REIT. Table 1 presents the legislation concerning these aspects in the sample REIT regimes illustrating the variation across countries.

In detail, the payout requirements in Netherlands and Greece are 100% and 50% respectively, whereas in most cases it is typically between 75-90% of distributable income. It is also noted that there exists variation between the countries regarding the income components (i.e. rent income and capital gains) that are subject to the payout requirement. Whether the undistributed income is being taxed or not, also differs between regimes. Moreover, there is no regulation setting minimum payout requirement in Australia, Canada, Malaysia, and Turkey[3]. However, only in Turkey the undistributed income is not taxed. The main implication of undistributed income being taxed is that it gives REITs an incentive to payout the bulk of their earnings as dividends.

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[1] REITs from Bulgaria are regulated according to the SPIC (Special Investment Purpose Companies) Act exposing these companies to equivalent regulation as in established REIT regimes (EPRA 2020). Hence, observations from Bulgaria are decided to be included in the sample.

[2] Greek law identifies the legal forms of Real Estate Mutual Funds (REMF) and Real Estate Investment Companies (REIC). According to EPRA (2020), the REIC structure could be qualified as REIT structure due to similar regulation, and hence observations from Greece are decided to be included in the sample.

[3] According to the regulations of Capital Markets Board of Turkey, public companies whose shares are not traded in the exchange have to distribute at least 20% of the net distributable profit calculated under the Communiqué as dividends (EPRA 2020).

The leverage restriction may set some specific level of leverage a REIT is not allowed to exceed. For the sample regimes, this level varies between 35% (Singapore prior 2016) and 75% (Australia & Greece). It is also possible that the specific gearing limit is not determined, but there exists some other restrictions on the usage of debt financing. For instance, in the UK a REIT is being penalized with a tax charge if its interest coverage surpasses 1.25. In addition, in several regimes the level of leverage is not restricted at all. These countries include Canada, France, Japan, Mexico, Spain (2012 onwards), and the U.S.

Table 1. Regulation concerning payout requirements and leverage restrictions across sample REIT regimes (Dogan et al. 2019; EPRA yearly reports (2020).

	Australia	**Belgium**	**Bulgaria**	**Canada**	**France**	**Germany**	**Greece**	**Hong Kong**	**Japan**
Enacted year	1970	1995	2004	1994	2003	2007	1999	2003	2000
Leverage restriction	75% of the adjusted Australian asset base.	65% of the (consolidated) assets.	No restriction but short-term loans cannot exceed 20% of income-generating assets.	No restriction.	No restriction.	55% of the total asset value of immovable property.	75% of the total assets.	45% of total gross asset value	No restriction. REITS may only obtain loans from financial institutions.
Minimum dividend payout requirement	No requirement. Typical distribution of 100% of income due to undistributed income being taxed.	80% of net profit.	90% of the net income of the year.	No requirement. Typical distribution of 100% of income due to undistributed income being taxed.	95% of tax-exempt profits.	90% of the net income of the year.	50% of annual net profits.	90% of the audited annual net income after tax.	90% of 'distributable profits'.
Undistributed real estate income taxed	Yes	No	No	Yes	No	No	Yes	No	Yes
Distribution of capital gain requirement	No	No	Yes. Included in net income.	No	No	No	No	No	Yes
Undistributed RE capital gain income taxed	Yes	No	No	Yes	No	No	No	No	Yes

Table 1. Continued.

	Malaysia	**Mexico**	**Netherlands**	**Singapore**	**South Africa**	**Spain**	**Turkey**	**UK**	**USA**
Enacted year	2005	2004	1970	2002	2013	2009	1995	2007	1960
Leverage restriction	50% of the total assets.	No restriction.	60% (20%) of fiscal book value of real property (all other investments).	Single-tier leverage limit of 45%. 35% prior to 2016.	60% of the total assets.	No restrictions (2012 onwards)	No restriction. Short-term credits limited to five-times the shareholders' equity.	No restriction. Tax charge if interest coverage exceeds 1.25.	No restrictions.
Minimum dividend payout requirement	No requirement. Typical distribution of 100% of income due to undistributed income being taxed.	95% of taxable income.	100% of taxable profit.	90% of tax transparent income.	75% of its taxable earnings. 100% prior to 2013.	80% of profits obtained from other than dividends and capital gains.	Allowed to determine their own profit distribution politics under general regulations of the Capital Markets Board of Turkey.	90% of rental income.	90% of taxable income.
Undistributed real estate income taxed	Yes	No	No	No	No	No	No	No	Yes
Distribution of capital gain requirement	No	No	No	No	No	Yes	No	No	No
Undistributed RE capital gain income taxed	Yes	No	No	No	No	No (Yes until 2013)	No	No	Yes

3 Theoretical framework

The value of a company ultimately follows its ability to produce cash flows. In practice, this is done by utilizing existing assets of a firm, which are financed by issuing capital in the form of debt, equity or a mix of the two. The relation of different funding sources defines the capital structure of a company, which is one of the most fundamental research areas in the corporate finance literature.

The most distinguishing difference between debt and equity is how the investors of given capital expect to be compensated. Debt is normally issued in the form of a loan, and is typically paid back as interest payments to the lender. The fact that interest expenses are usually tax deductible is commonly seen as a key advantage of debt. On the other hand, the bankruptcy risk of a company increases as the amount of debt in the capital structure i.e. financial leverage of a company increases.

As through debt financing no ownership rights over a company are being received, the typical way for such investor to influence how the company is being operated is by covenants. Covenants can for example require a company to maintain some key ratio under the pre-determined level. If a company fails to meet these restrictions, the lender may be allowed to for example increase the interest rate.

In contrast to debt, equity can be either internal or external. Internal equity has no direct costs as it is generated by the cash flows of a company. A typical form of internal equity is retained earnings that are not being distributed as dividends. On the other hand, external equity comes with costs as in an equity issuance the investor acquires an ownership right to a company and becomes entitled to receive a part of the profits. The risk for an equity investor is higher compared to creditor as in the event of a bankruptcy the latter is compensated first. As always in finance, the higher risk should be associated with higher expected returns. Consequently, the required rate of return is higher for an equity investor, and relying on external equity may be more expensive source of capital for a company compared to other financing instruments in the long term.

This chapter focuses on presenting the relevant theories regarding capital structures. In addition, studies investigating the explanatory power of these different theories in determining the observed capital structures in the market are being briefly introduced and discussed. The ultimate purpose of this chapter is to present the theoretical framework, which is applied when evaluating the empirical results of this study.

3.1 Modigliani & Miller theory

Modern capital structure theory has its foundations in the irrelevancy theory introduced in the early work of Modigliani & Miller (1958). The theory relies heavily on unrealistic assumptions such as no taxes, no transaction costs, and no information asymmetries, making it inappropriate in the real-world context. However, it is crucial to understand the framework provided by the irrelevancy theory in order to evaluate other capital structure theories. Thus, this chapter focuses on introducing the two propositions computed by Modigliani and Miller.

Modigliani & Miller theory without taxes

The proposition I states that in frictionless, perfect market conditions the capital structure of a company is irrelevant factor in determining the value of a firm. In fact, authors argue that the value is solely based on real assets the company in question owns, and rationalize this by arguing that the total value of securities of a company cannot be altered by separating firm's cash flows into different components. According to the proposition II the weighted average cost of capital (WACC) of a company is independent to modifications in its capital structure as demonstrated in Figure 1. Solving the following formula of WACC proves this:

$$WACC = r_a = r_e * \frac{E}{V} + r_d * \frac{D}{V} \quad (1)$$

$$r_e = r_a + (r_a - r_{d)} * \frac{D}{E} \quad (2)$$

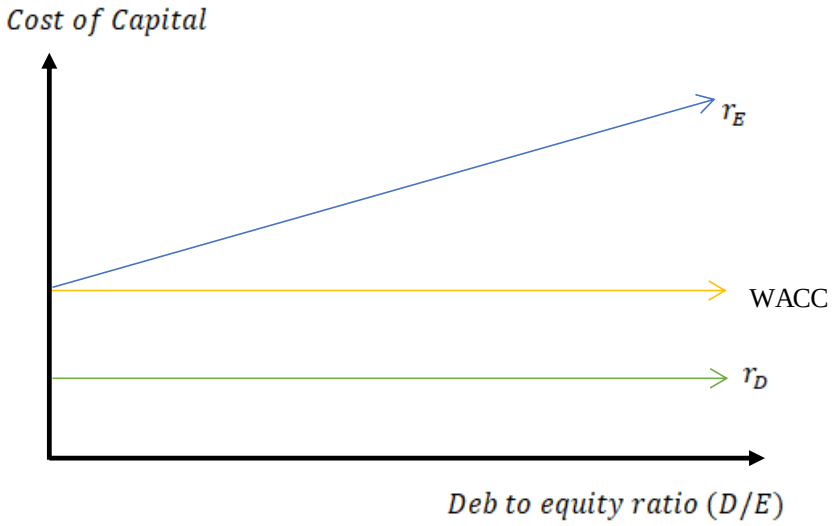

Figure 1. Weighted average cost of capital (WACC), re = return on equity, rd = return on debt, E = equity, D = debt, V = E + D. (Knüpfer & Puttonen 2009: 187.)

Modigliani & Miller theory with taxes

The theorem was reviewed by Modigliani & Miller (1963) as the authors added the so-called tax shield effect into the theory. Tax shield effect refers to the tendency of companies to prefer debt over equity in the pursuit of optimal capital structure due to the tax deductibility of interest. In the presence of taxes, both propositions are altered.

In theory, the tax shield increases the value of a firm, implying debt financing to be more beneficial in relation to equity. The valuation of a company can ultimately be tracked back to free cash flows (FCF) it can distribute to its creditors and shareholders. Utilizing the benefits of a tax shield result in higher FCF for levered company than for unlevered one. Moreover, as illustrated in figure 2, the more levered the capital structure is, the bigger the tax shield. Accordingly, a conclusion can be drawn that if the costs such as bankruptcy costs linked with high leverage would be non-existent, the theoretical optimal capital structure would consist solely of debt.

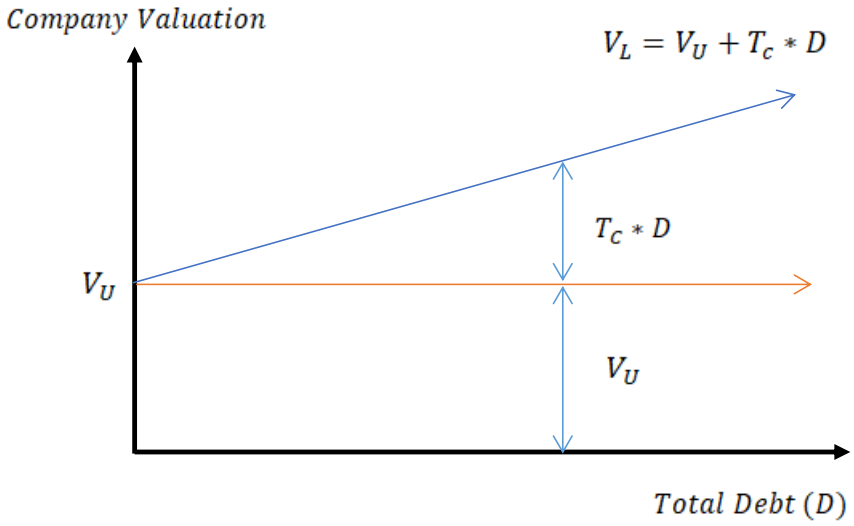

Figure 2. The relation between the amount of debt and magnitude of the value of a tax shield (Knüpfer & Puttonen 2009: 189)

The proposition II is also affected by the tax deductibility as applying higher level of leverage lowers WACC as shown with formulas 3 and 4. Figure 3 illustrates this relation. Consequently, consistent with the conclusion already drawn in the proposition I, the theoretical optimal capital structure consists solely of debt financing.

$$WACC = r_A = r_E * \frac{E}{V} + r_D * (1 - T_C) * \frac{D}{V} \quad (3)$$

$$r_E = r_A + (r_A - r_D) * \frac{D}{E} * (1 - T_C) \quad (4)$$

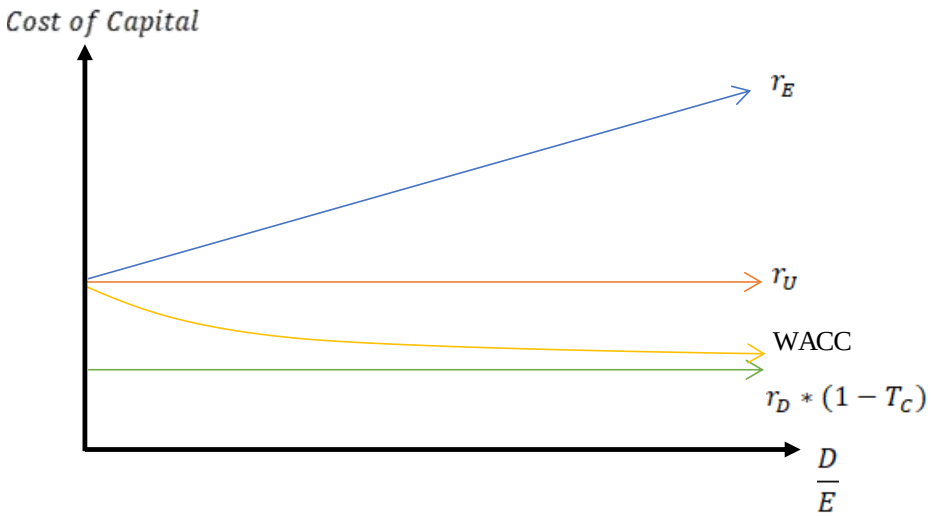

Figure 3. The effect of higher leverage on WACC (Knüpfer & Puttonen 2009: 188.)

3.2 Trade-off theory

As evident, by following the Modigliani and Miller theory it is possible to prove that the theoretical optimal capital structure is 100% debt. However, this view completely ignores so called financial distress costs associated with debt financing and high level of leverage. Excessively high debt ratio makes a company more vulnerable to these costs as in the event of a decrease in profitability, a highly levered firm is more likely to fail to meet its debt obligations. As an attempt to tackle this issue, the trade-off theory suggests that the optimal structure balances the costs and benefits of debt.

The view of the trade-off theory is that the optimal capital structure maximizes the value of a company by balancing between the financial distress costs associated with debt and the benefits obtained through tax shield. In detail, the valuation of a company increases all the way to the point where the value of a tax shield equals the financial distress costs, and then starts decreasing afterwards. (Myers 2001.) In figure 4 this is illustrated by presenting the market value of a company as a sum of the value of unlevered firm (VU) and the market value of a company's debt and tax shield.

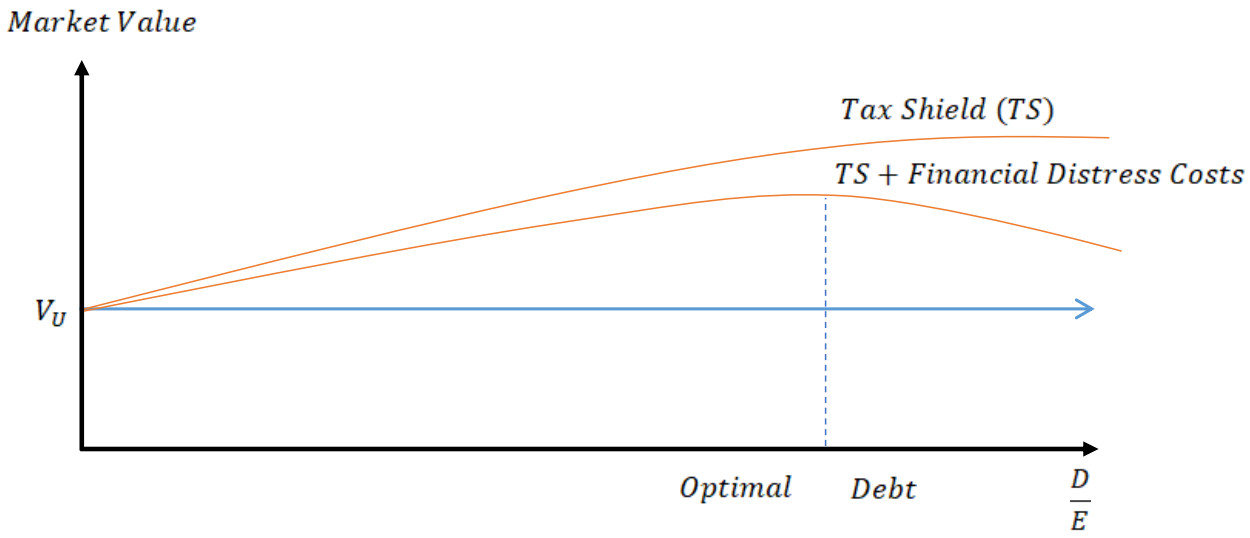

Figure 4. Trade off theory: Optimal debt to equity ratio (Knüpfer & Puttonen 2009: 189.)

Inside the theoretical framework, the trade-off theory can be divided into static and dynamic models. The static trade-off theory suggests that there is an optimal capital structure for every company. The initial idea behind the theory was originally introduced by DeAngelo and Masulis (1980) who argued that highly profitable companies have a low risk of encountering financial distress, and costs associated to it. Thus, such companies with low levels of debt should increase the leverage in their capital structure as it would allow them to benefit from tax deductibility of interests. In addition, the theory includes an assumption that each company has an optimal capital structure, identified and pursued by the management.

The dynamic model was first presented by Fischer, Heinkel and Zechner (1989) who noted that the assumption of companies having only one optimal capital structure is unrealistic due to real life debt ratios not being constant. In their model, authors suggest that companies can optimize their capital structure inside certain minimum and maximum limits for leverage. These limits are determined by tax shield, financial distress costs, interest rates and costs associated with altering the capital structure. In addition, the study of Graham and Harvey (2001) suggests that, according to the corporate management, firms rarely pursue an exact capital structure providing further evidence in favor to the dynamic model.

The results from prior academic research are somewhat inconsistent with the static trade-off theory. In detail, evidence from several studies states that the correlation between the leverage and profitability of a company is negative violating the very fundamental idea behind the static trade-off theory (see e.g. Titman & Wessels 1988; Myers 1993; Rajan & Zingales 1995; Fama & French 2002).

However, the literature provides also evidence supporting the trade-off theory. The research finding that firms apply a target level of leverage while executing financing decisions is vast (see e.g. Marsh 1982; Korajczyk & Levy 2003; Hovakimian, Hovakimian, & Tehranian 2004). The study of Myers (1984) highlights the theoretical relevance of the trade-off theory by suggesting that the key force in driving the observed capital structures to differ from the optimal one proposed by the trade-off theory is the costs of altering the capital structure. In addition, Leary and Roberts (2005) extend this perspective by showing that while the capital structures differ from the optimal ones majority of the time, companies pursue the target level of leverage by executing actions aiming for this alteration simultaneously.

3.3 Agency theory

The agency theory has its foundations in the research of Jensen & Meckling (1978) who studied the principal-agent problem in the context of capital structure. In practice, the agency theory extends the trade-off theory by including the corporate governance as a factor influencing the capital structure. The theory suggests that financial distress costs may occur from the principal-agent problem leading the optimal capital structure to be the point where tax shield minus the sum of financial distress and agency costs reaches its maximum as illustrated in figure 5.

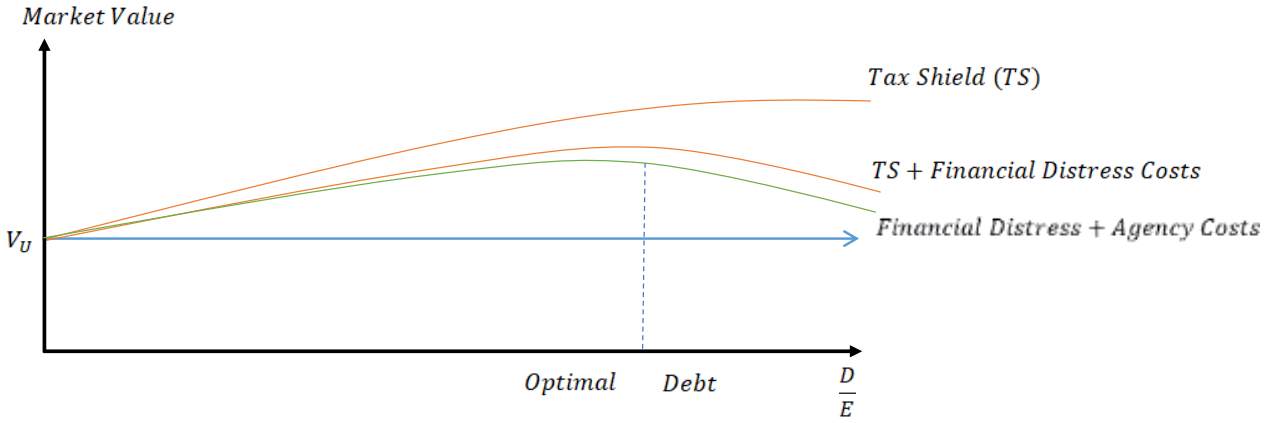

Figure 5. Agency costs and capital structure (Niskanen & Niskanen 2000: 293.)

The agency relationship is formed when a principal grants an agent with responsibility and authority regarding the management of operations. The principal-agent problems arise from the differing interests between these parties that both are assumed to attempt to maximize their own utility. Hence, it is expected that in the decision making, agents emphasis their own utility at the expense of principals. These problems are a cause of management fundamentally having a superior knowledge about the company compared to the owners and creditors, who have a limited ability to monitor the decision-making happening in the company. Consequently, the most effective way for principals to assure that the interests of both parties align with each other, is by setting the proper incentives for the management. (Jensen & Meckling 1978.)

3.4 Pecking order theory

The pecking order theory, based on the work of Myers (1984) and Myers & Majluf (1984), explains the capital structure choice through preferred order of different financing sources. According to the pecking order theory, the current capital structure of a company is simply an outcome of financing decisions made in the past rather than attempt to achieve an optimal debt to equity level as suggested by the trade of theory.

According to the theory, information asymmetries between the company executives and external funding sources i.e. investors and creditors define the pecking order.

Consequently, external parties only have initiative to invest in the company's securities that are trading at a discount. As an outcome, public firms typically favor internal financing as a first source for capital over external ones. In practice, companies aim to set their dividend policies to a level at which the amount of retained earnings is sufficient in covering the upcoming financing needs. Additionally, the usage of internal funds is seen beneficial as it comes without interest payments or issuing costs. In addition, management can use the internally generated funds more freely as opposed to debt financing or equity issues that often require careful explanations regarding the reasons behind the need of an additional capital. (Myers 1984; Myers & Majluf 1984.)

As for the investors debt is more secured compared to the equity, the latter comes at a higher yield, and is thus more expensive source of capital. Consequently, companies always prefer the least risky available debt instrument when in need of external financing, and equity is issued only as a last source for capital.

Similarly as for the static trade-off theory, the academic literature has provided both evidence consistent and inconsistent with the pecking order theory. The fundamental idea of the pecking order being based on information asymmetries has been questioned by numerous studies. In detail, factors such as managerial optimism (e.g., Lee 1997; Heaton 2002), transactions costs (Donaldson 1961), and hidden information costs (MacKie-Mason 1990) have been proposed to be the correct reasons behind the suggested preference order.

The study of Fama and French (2005) provides inconsistent evidence regarding the pecking order theory as authors argue that companies both repurchase and issue equity regularly, and equity seems to be used in circumstances when debt would also be available. Authors also note that modern finance instruments reduce the information asymmetry between the company and outside investors. Moreover, Helwege and Liang (1996) studied companies that had recently went public finding that companies frequently rely on external financing sources even when they possess strong cash reserves.

On the other hand, Shyam-Sunder and Myers (1999) provide evidence in favor of the relevance of the pecking order theory by testing its explanatory power against the static trade-off theory. Their evidence suggests that the shortfall of cash reserves is more relevant factor in forecasting the external debt financing than the pursuit of optimal capital structure proposed by the trade-off theory.

3.5 Market timing theory

As pre-introduced theories provide rather static framework in which the formation of capital structure is explained, the market timing theory focuses on evaluating the role of different market environments in explaining the amount of leverage companies apply. To summarize, as opposed to more traditional theories, market timing model recognizes the inefficiency of capital markets. As an outcome, the variation of market conditions presents so-called windows of opportunities, which companies can utilize in order to minimize their cost of capital (Stein 1996).

As the capital markets are inefficient, there will eventually be times when certain securities are mispriced. According to the market timing theory, company executives should react in such circumstances by either issuing equity or debt in accordance to the financing needs of a company. In detail, when the relative market price for issuing equity is low, the company should decrease the level of leverage by issuing equity, and increase it when the relative price turns high. In practice, the theory suggests that companies prefer external equity in the bullish market conditions, and debt financing in the bear market. Market timing theory is based on an idea that, against the pecking order theory, in certain environment external equity can be cheaper relative to external debt, and the occurrence of issuing such financing is regular. In fact, the study of Huang and Ritter (2009) presents that the whole pecking order theory reflects a certain market environment, and thus is an application inside the market timing framework. Moreover, the market timing theory suggests that companies can issue capital in the form of equity or debt even without any essential financing requirements as purchasing misvalued securities is considered as a value creating project.

The academic literature has provided evidence supporting the market timing theory. From a behavioral perspective, Graham and Harvey (2001) report that majority of CFOs considers the potential misvaluation of firm's stock as a crucial factor when deciding about equity issues. Empirical evidence, in favor to market timing theory, is provided by Baker and Wurgler (2002) stating that the capital structure of a company is a cumulative product of executives' attempts to time the equity market. In detail, authors report a correlation between market valuations and observed capital structure. Their results are in line with the market timing theory by suggesting that firms with low (high) level of leverage are likely to raise capital in the event of their valuation being high (low). Additionally, Rajan and Zingales (1995) provide consistent results suggesting that companies with high M/B value tend to be lowly levered. The rationale behind this is that equity issues during high market values pump up the M/B ratio, and consequently additional financing in the form of debt is not required.

Moreover, the effect of fluctuations in valuations on capital structure seems to be somewhat continuing by lasting at least a decade. Several studies have documented this relation providing additional evidence in favor of market timing theory (see e.g. Alti 2004; Kayhan & Titman 2007). As these studies are conducted by proxying the cost of equity by historical realized returns, it is noteworthy to point out the study of Fama and French (1997) suggesting that this methodology results in inaccurate results due to complications in choosing the correct asset-pricing model.

3.6 Capital structure theories applied to REITs

REITs are largely unable to benefit from the tax shield, as these companies are mainly tax-exempt entities. The fundamental idea of the trade-off theory is that the optimal level of leverage sets according to the balance of financial distress costs and the value of a tax shield, implying that REITs should have low levels of debt. However, the trade-off theory also suggests that firms with high asset tangibility should be highly levered due to increased debt capacity implying that REITs with bulk of the assets consisting of tangible real estate investments should be highly levered. (Dogan et al. 2019.) Moreover, real estate assets are considered to have value for variety of players as opposed to plant and equipment of industrial companies having value for only the firm in question.

Consequently, real estate assets are considered to provide more debt capacity than tangible assets of industrial firms. (Giacomini, Ling & Naranjo 2017.) Given these characteristics, the explanatory power of the trade of theory on REITs becomes merely an empirical issue, as the net impact is hard to evaluate from a pure theoretical perspective.

According to the pecking order theory, retained earnings are considered as number one financing source and equity issues as the last option. Due to REITs being obligated to distribute the majority of the income as dividends, the amount of retained earnings is likely to be insufficient in covering financing needs of a REIT. Therefore, pecking order theory implies that REITs rely heavily on external financing with a preference towards least risky form of debt i.e. bank loans. However, as the REIT regulation varies across nations, the pecking order theory suggests lower debt ratios for REITs from countries without minimum payout requirement as these firms can retain more earnings.

From the perspective of agency costs, potential conflicts of interest between stockholders and creditors may reduce the amount of debt financing applied by REITs. As a possible outcome, managers of a financially distressed REIT may act in a way that maximizes value for the stockholders over the value for creditors. Additionally, high level of leverage acts in the favor of managers by reducing the likelihood of a hostile takeover. This pattern is implicated by such events being extremely rare for REITs. High debt ratio may furthermore encourage managers to maintain enough cash reserves in order to guarantee financially healthy position. However, due to regulation governing investment possibilities of a REIT, high leverage may not have substantial additional effect. Consequently, the main implications of agency costs for REITs should include the losses from profitable investments in which a company is unable to invest. (Dogan et al. 2019.)

It is noteworthy that academic researchers have inconsistent views regarding the information asymmetry concerning REITs. To elaborate, according to Boudry, Kallberg and Liu (2010) REITs are transparent investment vehicles as opposed to the perspective of Han (2006) arguing information asymmetry to be substantial for REITs due to difficulties related to appraisals of real estate. However, Dogan et al. (2019) note that the

main driver of profits for REITs, instead of capital appreciations, are the cash flows generated in the form of rent payments, and consequently information asymmetry should have only a minor effect.

Applying the market timing theory to REITs, results in a similar interpretation as for any company: the financing decisions are made with respect to the current market conditions as an attempt to time the market. As the amount of internal funds a REIT possess is limited, it is forced to seek financing from the capital markets. Consequently, the market timing framework becomes particularly interesting as managers of REITs may be required to attempt to time the market fairly constantly.

4 Literature review

As mentioned, companies operating under REIT status are typically exempt from corporate taxes given that the specified level of income is distributed to shareholders as dividends. Due to this industry specific regulation, REITs have been traditionally excluded from samples of more general capital structure studies. As noted, this regulation results in REITs being unable to benefit from tax shields as well as being obligated to raise capital from external sources due to low internal capital. Consequently, the setting in which REITs make decisions regarding their financing becomes unique and particularly interesting in the light of different capital structure theories. The purpose of this chapter is to present the relevant research regarding the capital structures of REITs with respect to evaluating the explanatory power of different theories. In addition, a closer look is taken to two articles closely related to the empirical part of this thesis.

4.1 Capital structures of REITs

From empirical perspective, results from several studies point out that REITs are, on average, highly leveraged despite missing the apparent benefits of the debt financing. In detail, by examining REITs that went public during 1991 – 2003 Feng et al. (2007) show that on average these companies carried 48% debt in their capital structures. Providing further evidence, Harrison et al. (2011) find very similar results for the period 1990 – 2008 by observing average leverage ratio of 48% for U.S. REITs. Moreover, Barclay et al. (2013) explore a long period of 1984 – 2010 finding REITs to rely substantially more on debt financing compared to industrial firms, the average debt ratios being 44% and 18% respectively. Consistent with this, Giacomini, Ling and Naranjo (2015) find similar ratios for U.S. REITs and industrial companies over period 1990 – 2012. In addition, Breuer, Nguyen and Steininger (2019) report U.S. REITs to be twice as leveraged as non-real estate firms over a period 1998 – 2015.

One empirical way to evaluate the leverage applied by REITs, is to compare their capital structures with the ones of taxable real estate firms. This approach allows evaluating how the REIT specific regulation affects the capital structure. In their study, Barclay et al. (2013) attempt to distinguish a difference in the amount of leverage applied by non-

taxable and taxable real estate firms in the United States. However, the authors are unable to document significantly higher debt ratio for taxable companies suggesting that REITs apply equal amounts debt financing as companies that can utilize tax shield benefits. Inconsistently, studies concerning European real estate firms have reported non-taxable real estate operating companies (REOCs) to have substantially higher debt ratio compared to REITs (Morri & Cristanziani 2009; Niskanen & Falkenbach 2012). However, REOC structure is much more common in the Europe, and it is typical that these firms undertake riskier operations, such as real estate development projects, than REITs (Falkenbach & Niskanen 2012). This can partially explain empirically observed geographical differences as development activities usually require heavy debt financing.

Moreover, researchers have concentrated on one of the most fundamental principles of the trade-off theory suggesting that each company has a target leverage pursued by the management. In their study, Versmissen and Zietz (2017) study U.S. REITs during period 1993 – 2013 observing that REITs tend to adjust their capital structures towards the target levels. The authors suggest that the unique characteristics of REITs emphasis the importance of the active capital structure controlling making it more active compared to other companies. The study of Giacomini et al. (2017) concerning U.S. REITs during 1990 – 2012 provides consistent results regarding this behavior. In addition, their results suggest that the adjustment speed is faster for over-levered REITs compared to under-levered ones suggesting that REITs are more concerned regarding excessively high level of leverage than too moderate one. The active pursuit of a given level of leverage can be interpreted as supporting the dynamic trade-off theory. The results reported by Ooi, Ong and Li (2010) suggest that market conditions have a more crucial role compared to the pursued target. However, authors also observe that REITs have a tendency to move towards a target leverage in the long run. Consequently, their study suggests that the capital structure of a REIT forms according to a combination of market timing and trade-off theories. Combining the evidence supporting existing target leverage with the results of Morri and Artegiani (2015) showing that the amount of debt used by REITs has decreased post-financial crisis implies that the market conditions play a crucial role in determining the target level.

4.2 Capital structure determinants of REITs

Variety of studies have examined the effect of financial statement based variables on capital structures of REITs with differing results. A typical way to analyze the findings in these studies is to contrast the empirical results against the effect a given factor is expected to have on the leverage based on the capital structure theories. While no capital structure theory seems to have a superior explanatory power over the observed leverages, academic literature has proven the relevancy of each theory in the REIT setting. The most permanent firm-specific determinants included in the capital structure literature concerning REITs are *asset tangibility*, *firm size*, *profitability*, and *growth opportunities* (see e.g. Feng et el. 2007; Harrison et al. 2011; Barclay et al. 2013; Rovolis & Feidakis 2014; Morri & Parri 2017; Dogan et al. 2019.)

Following the trade-off and pecking order theories, high amount of *tangible assets* is considered to result in higher leverage. In detail, trade-off theory suggests that tangible assets provide additional debt capacity due to these assets being used as collateral for loans consequently lowering financial distress costs. (Myers 1984; Myers 199; Shyam-Sunder & Myers 1999.) However, tangible assets for REITs consist of properties owned by the company, and the illiquid nature of real estate investments potentially mitigates the increase in debt capacity (Dogan et al. 2019). On the other hand, pecking order view expects tangible assets to lower information asymmetries due to more transparent valuation of a heavily asset driven company. Therefore, managers have more incentive to apply external funding. (Feng et al. 2007; Morri & Parri 2017.)

According to trade-off theory, *firm size* correlates positively with leverage as larger firm size is considered to reduce bankruptcy costs due to more sizeable companies being associated with more profound diversification and more stable cash flows. In contrast, pecking order theory suggests that bigger firms apply less debt in their capital structure due to more information being available about large firms leading their managers to have a relative advantage to issue equity.

Depending on the point of view, *profitability* can be seen either increasing or decreasing the amount of leverage. From the perspective of the trade-off theory, higher profits should

increase the leverage by boosting the value of the tax shield and mitigating the probability and cost of financial distress. However, the pecking order theory suggests that profitability reduces the leverage as highly profitable firms can satisfy their financing needs with retained earnings. (Titman & Wessels 1988; Rajan & Zingales 1995; Fama & French 2002.) As noted, these theoretical implications are invalid in REIT context suggesting that the effect of profitability on leverage should be evaluated only from the perspective of it increasing the debt capacity as profitable firms have more stable cash flows.

Typical proxy used to measure firm's *growth opportunities* in corporate finance literature is market to book (M/B) ratio. Pecking order theory suggests that due to high growth companies possessing limited amount of retained earnings, growth opportunities and leverage should have a persistently positive correlation. Controversially, market timing theory predicts this correlation to be negative as companies with high market value are in an advantageous position to issue equity. Finally, from the trade-off perspective, high M/B ratio itself is not expected to affect the capital structure as it does not ultimately reveal factors such as profitability that could be interpreted in the trade-off context. (Feng et al. 2007.)

Morri and Parri (2017) investigate capital structure determinants of U.S. REITs during 2005 – 2014 finding the trade-off theory to have the most explanatory power in comparison to other theories. In detail, the authors document a positive correlation between asset tangibility and leverage as expected by the trade-off view. In addition, growth opportunities seem to have a negative impact on the amount of leverage, as predicted by the market timing theory. Harrison et al. (2011) report consistent results concerning the impact of asset tangibility and growth opportunities by examining U.S. REITs during 1990 – 2008. Moreover, firm size seems to correlate positively with leverage, providing further support to the trade-off theory.

However, the evidence of Harrison et al. (2011) also supports the pecking order theory by suggesting profitability to affect debt ratio negatively. This is in line with results of Morri and Beretta (2008) who study capital structures of U.S. REITs during 2002 – 2005.

However, also their research suggests both pecking order and trade-off theory to have explanatory power by documenting the positive effect of asset tangibility.

Roviolis and Feidakis (2014) provide further consistency regarding the positive impact of asset tangibility by studying global data set of REITs covering period 2005 – 2010. In addition, authors document a positive correlation between the size of a REIT and the leverage as suggested by the trade-off theory. Providing additional consistency and support for the trade-off theory, Westgaard, Eidet, Frydenber & Grosås (2008) study a sample of 308 UK real estate firms including both REITs and REOCs over a period 1998 – 2006 observing similar results regarding the effect of size and asset tangibility. In addition, also Chikolwa (2011) reports consistent results by examining Australian REITs during 2003 – 2008.

Feng et al. (2007) study U.S REITs that went IPO during 1991 – 2003 finding a persistent positive correlation between book leverage and M/B ratio supporting pecking order theory but contradicting with the market timing view. In addition, inconsistently with several other studies, authors find negative coefficient for tangibility. However, it is notable that authors use the yearly change in leverage as a dependent variable instead of a more common approach where leverage is composed yearly from the financial statement values.

In addition, Feng et al. (2007) find strong support for the pecking order theory by showing that financing of REITs relies more on debt than equity. The study of Brown and Riddiough (2003) provides consistent results with this by showing that the majority of capital structures of U.S. REITs consisted of public credit, with a focus on bank debt during 1993 – 1998. Additionally, their evidence suggests that equity is issued only when other financing sources are unavailable. Moreover, Ott, Riddiough and Yi (2005) report similar results by studying U.S. REITs covering period 1981 – 1999.

The findings of Boudry et al. (2010) imply that the market timing behavior is a crucial factor in defining the capital structure of U.S. REITs during 1997 – 2006 as their evidence suggests that REITs with high market value to net asset value ratio tend to issue equity

more frequently. However, as already introduced, several studies provide inconsistency for this view by documenting the tendency of REITs to prefer debt financing over equity despite the market conditions (see e.g. Brown & Riddiough 2003; Ott et al. 2005; Dogan et al. 2019).

Morri and Cristanziani (2009) investigate capital structure determinants for European real estate companies during 2002 – 2006 with a sample including both REITs and REOCs. In detail, their research results are in line with the trade-off theory regarding the positive impact of firm size on leverage. On the other hand, negative coefficient for profitability supports the pecking order theory. In a similar research with more recent data covering 2003 – 2012, Morri and Artegiani (2015) confirm the earlier findings regarding the effect of size and profitability. In addition, growth opportunities seem to reduce the use of debt as suggested by the market timing theory.

In addition to traditional capital structure determinants, literature has identified several other firm-specific factors to have an effect on debt ratios applied by REITs. For instance, operating risk of a company has been documented to have a negative effect on debt ratio (Morri & Beretta 2008; Morri & Cristanziani 2009; Chikolwa 2011; Ertugrul & Giambona 2011; Zarebski & Dimovski 2012; Morri & Parri 2017). This finding is in line with the trade-off theory as high operating risk increases the financial distress costs forcing managers to use debt financing more carefully.

One typical perspective in the capital structure literature is to examine how the ability to cover debt obligations affects the amount of debt being used. In detail, a company with a high *interest coverage ratio* has a better ability to cover its debt obligations, which lowers its bankruptcy costs. Consequently, trade-off theory associates a high interest coverage ratio with a high level of leverage. Roviolis and Feidakis (2014) provide consistent results with this. On the other hand, Harrison et al. (2011) report this relation to be negative. Some studies have also examined a closely related *cost of debt* finding it to have an expected negative effect on the leverage as the more costly debt financing is, the less it is applied (Rovolis & Feidakis 2014; Morri & Artegani 2015).

Asset turnover is a variable with not so permanent place in the empirical capital structure literature. However, it is can be considered as a useful metric for REITs as it provides indication regarding the operating performance of properties owned by REITs. In detail, high asset turnover values can be interpreted as high occupancy rates, meaning that the core business of a REIT i.e. generating rental income by leasing is operating effectively. On the contrary, low asset turnover figures suggest that a substantial part of the leasable area of the properties owned by a REIT is vacant. (Westgaard et al. 2008; Rovolis & Feidakis 2014.) From the perspective of the trade-off theory, high asset turnover should be associated with higher leverage as firms with a solid operating performance have a lower risk to encounter financial distress costs, and thus can apply more debt in order to gain additional benefits from the tax shield. As high value of asset turnover is associated with substantial internal funds, the pecking order theory suggests it to be negatively correlated with the amount of leverage. (Westgaard et al. 2008.)

In addition, the capital structure to be employed may be affected by the property type in which the REIT specializes. From the perspective of trade-off theory, industrial & office REITs should be less levered compared to residential REITs due to industrial and office properties having more volatile cash flows and asset values compared to residential properties (Dogan et al. 2019). Providing consistency for this assumption, Harrison et al. (2011) find U.S. REITs specializing in highly volatile self-storage properties to have a lower leverage compared to REITs investing in more stable assets such as regional malls and manufactured homes. In addition, Giambona, Harding and Sirmans (2008) find that the liquidity of assets a REIT invests in is correlated positively with the amount of debt in the capital structure. Highlighting the importance of considering property type specialization among REITs, Ertugrul and Giambona (2011) find that approximately 70% of variation in capital structures is related to the property segment of a REIT.

The global expansion of the REIT structure has been speedy during recent years with many Asia-Pacific and South Asian countries establishing a regime. Consequently, the greater number of regimes with varying legislation and other country-specific factors has stimulated the academic research regarding the effect of differing country characteristics on funding decisions made by REITs. In their research, Deng, Wong and Chau (2018)

establish the significant effect of institutional environment by studying listed real estate companies from Mainland China and Hong Kong. The authors confirm their hypothesis regarding the stronger explanatory power of agency and pecking order theories in an environment with more severe information asymmetry and agency conflicts (China). In detail, the set of corporate governance factors including managerial shareholding an ownership concentration is documented to have a stronger negative correlation with the leverage in the Mainland China. In a similar vein, Cashman, Harrison and Sheng (2015) report that higher political risk decreases the use of debt financing. Moreover, Dogan et al. (2019) examine capital structure determinants for REITs from 12 countries during 2002 – 2013. With an emphasis on differing legislation for REITs between countries, the authors document the highest leverage for countries where the required payout ratio is highest, and the amount of debt a REIT can take is not regulated. In contrast, the opposite setting of restrictions for leverage but no regulated level for payout, the leverage appears to be lowest. These findings are interpreted to support the pecking-order theory, as it seems that REITs both rely on retained earnings over external financing and prefer debt to equity when issuing capital. In addition, authors investigate the effect of country-specific stock market and bond market development on leverage finding only weak evidence considering their influential power.

4.3 Feng, Ghosh & Sirmans (2007)

The article "On the Capital Structure of Real Estate Investment Trusts (REITs)" by Feng, Ghosh and Sirmans (2007) examines the effect of M/B ratio on the debt ratio applied by REITs, and whether this impact is temporary or persistent. Their research is closely linked to and motivated by the paper of Baker and Wurgler (2002) reporting M/B ratio to have a persistent negative effect on the leverage. As Baker and Wurgler (2002) examine general sample of U.S. firms, Feng et al. (2007) examine this relation in a REIT setting.

The sample of the study consists of U.S. REITs that went IPO during 1991 – 2003 with accounting and firm-specific information available in the SNL database. Following the approach of Baker & Wurgler (2002), the IPO date allows the examination to be started from a fixed point where managers are known to execute decisions regarding the capital structure with respect to the M/B ratio.

The empirical research is conducted with a time series analysis in order to capture whether the impact of M/B ratio is permanent or not. Controlling variables included in the regression models include the standard set of firm-specific variables: tangibility, profitability and size. In addition, lagged leverage is included in the models. The analysis extends to identifying the financing source applied by a REIT. In practice, the research is divided in three stages.

Firstly, the impact of M/B ratio on the change in leverage ratio is being investigated with an assumption that firms with high market capitalization have extensive growth opportunities through profitable investment possibilities. The results suggest a weakly positive correlation between change in leverage and M/B ratio during the early years after an IPO.

In the second stage, the change in leverage is decomposed into net equity issues, change retained earnings, and net debt issues. The main findings from this analysis are as follows. 1) The positive correlation between M/B ratio and leverage observed in the early years post-IPO due to debt issues. 2) When companies mature, a positive correlation is observed between M/B ratio and net equity issues. However, the overall debt level seems to be fairly stable despite the maturing of firms. 3) The correlation between M/B ratio and residual change in leverage i.e. net debt issues is significant and positive for almost each year meaning that the changes in REIT market capitalization alter the capital structure through debt issues, not equity issues. Furthermore, it seems that debt issues cancel out the effect of simultaneously happening equity issues on the capital structure.

The final stage concentrates on examining the long-term persistence of the impact M/B ratio has on capital structure. The results suggest that the weighted average of firm's trailing M/B and leverage are strongly positively correlated. In practice, this means that REITs issue debt when their market capitalization is high indicating that highly valued REITs are also vastly levered. While the evidence contradicts with the findings of Baker and Wurgler (2002) supporting the market timing theory, it is consistent with the pecking order theory. However, in the REIT setting this outcome may not be due to preference

order suggested by the pecking order theory as authors argue that the regulation limits the financing options to debt and equity forcing REITs to rely heavily on debt.

4.4 Dogan, Ghosh & Petrova (2019)

The article "On the Determinants of REIT Capital Structure: Evidence from around the World" by Dogan, Ghosh and Petrova (2019) examines capital structure determinants for REITs from 12 countries with an emphasis on differing legislation of REITs between countries. The study is motivated by filling the gap in the literature concerning the effect of varying regulation on financing decisions made by REITs.

The sample of the study consists of 313 firms from the following twelve countries: Australia, Belgium, Canada, France, Hong Kong, Japan, The Netherlands, Singapore, South Africa, Turkey, U.S., and UK over the period 2002– 2013. Countries most well represented in the sample are the U.S. (138 firms), Japan, Canada, UK, and Singapore. Accounting information is collected from the SNL database in order to construct firm-specific variables, and country-specific variables are created based on the data from World Bank databases.

Authors classify the countries included in the study to several groups based on the legislation of a given REIT regime. First classification divides countries to the ones with no payout requirement, and that are either exempt or not exempt from corporate tax, and to countries with payout requirements. The next categorization is done according to payout and leverage restrictions, which results in following four groups: 1) no payout and no leverage restrictions 2) no payout but leverage restriction 3) payout but no leverage restriction, and 4) payout and leverage restrictions.

The empirical part of the study is done by utilizing panel data techniques. The firm-specific variables include profitability, tangibility, firm size, growth opportunities, and interest coverage. Country-specific variables are stock and bond market development. According to the regulation-based groups, dummy variables are being constructed and applied in the regressions. In addition, authors control for property fixed effects by utilizing dummy variables based on a classification of a REIT.

The empirical examination starts with analysis of the effect of regulation based country-specific determinants on capital structure across sample countries. The results suggest the highest leverage for countries where the required payout ratio is highest, and the amount of debt a REIT can take is not regulated. In contrast, in the opposite setting of restrictions for leverage but no regulated level for payout, the leverage appears to be lowest. These findings are interpreted to support the pecking-order theory, as it seems that REITs both rely on retained earnings over external financing and prefer debt to equity when issuing capital.

Authors also investigate if the REIT regulation causes firm-specific variables to affect capital structure differently across countries. However, the results do not reveal a consistent pattern. In addition, authors investigate the effect of country-specific factors on the amount of debt applied by REITs. This examination suggests that these variables do not have a significant effect on capital structure choice in the majority of sample countries.

5 Data and methodology

The data applied in this study is provided by the Thomson Reuters Worldscope database. The initial sample includes all REITs around the globe expect mortgage REITs with available data on following financial statement items: total assets, total liabilities, EBITDA, net property, plant & equipment, net real estate investments, preferred stock, deferred taxes, convertible debt, market capitalization, interest expenses, net income and distributed dividends. The financial information is applied in constructing the firm-specific variables introduced in the following chapter 5.1.

As noted earlier, several developed countries in Europe have fairly recently established their REIT regimes. In addition, several Asian countries have introduced a REIT structure during recent years. Consequently, there has not been available data in order to conduct a research examining capital structures of more modern REITs from several countries with a respect to effects of differing legislation, which is why the literature in this area is scarce. As an attempt to extend global evidence regarding the capital structures of REITs, the data collected for this thesis covers period 2010 – 2019. Moreover, as Morri and Artegiani (2015) note, the financial crisis resulted in permanent alteration in capital structures of REITs. Consequently, the most severe part of the crisis is decided to be excluded from the sample (i.e. years 2008 and 2009).

Following the prior academic researches, mortgage REITs are excluded from the sample. This is due to the assets owned by such REITs differing substantially compared to the ones of other REIT types.

5.1 Variable Construction

The purpose of this chapter is to present how the financial statement information is used in constructing the firm-specific variables applied in the models included in this thesis. The examination covers the construction of dependent variables, and firm-level explanatory variables. The more accurate model specifications as well as the introduction of categorical variables made based on legislation of countries is examined in the later chapter.

5.1.1 Dependent Variable

Given that this thesis focuses on identifying factors explaining the capital structures of REITs, proxies for leverage acting as dependent variables are required to be determined. Following prior academic researches, leverage is typically measured with book or market based debt-to-asset ratios. When applying market-based measurements, it is crucial to understand that market values include the value of the call option based on the future growth opportunities of a company (Myers 1997). Consequently, credit decisions based on these values can twist future real investment decisions. In line with this, Titman and Wessels (1998) suggest that in reality managers calculate debt ratios with book values, and thus it is decided to apply both market- and book-based proxies for leverage in this study.

In this study the definition for leverage is based on the existing literature on capital structures of real estate companies. Following several prior studies (see e.g. Baker & Wurgler 2002; Feng et al. 2007; Dogan et al. 2019), book equity is defined as total assets minus total liabilities minus preferred stock plus sum of deferred taxes and convertible debt. Book debt is derived by reducing book equity from total assets.

$$Book\ Equity = Total\ Assets - Total\ Liabilities - Preferred\ Stock + Deferred\ Taxes + Convertible\ Debt \quad (5)$$

$$Book\ Debt = Total\ Assets - Book\ Equity \quad (6)$$

These items enable the construction of both book, and market leverage. In detail, book leverage is measured with the ratio of book debt to total assets, and market leverage by dividing book debt with the sum of book debt and market equity.

$$BLEV = \frac{Book\ Debt}{Total\ Assets} \quad (7)$$

$$MLEV = \frac{Book\ Debt}{Book\ Debt + Market\ Capitalization} \quad (8)$$

However, Welch (2011) argues that debt-to-asset based ratios are invalid in quantifying the leverage. The author suggests that the ratio of total liabilities to total assets is a superior definition for leverage compared to debt-to-asset based measurements. This definition has been applied in several academic research regarding capital structure of REITs (see e.g. Westgaard et al. 2008; Morri & Cristanziani 2009; Rovolis & Feidakis 2014).

$$LEV = \frac{Total\ Liabilities}{Total\ Assets} \tag{9}$$

Due to prior literature including variety of proxies for leverage, the successful comparison of results to be received requires several measurements for leverage to be applied in the study. In addition, the legislation concerning the amount of debt a REIT can take is often based on book values making it mandatory to include book-based proxy for leverage. Consequently, in this thesis the leverage will be measured with all the previously identified definitions.

5.1.2 Firm-specific explanatory variables

As mentioned in the literature review chapter, the most permanent firm-level factors included in the capital structure literature are profitability, asset tangibility, growth opportunities, and firm size. Consequently, proxies for these variables are included in each model applied in this study. In addition, as this thesis follows closely the research of Dogan et al. (2019), interest coverage is included to the list of firm-specific variables. Definitions for these variables follow prior academic research.

Profitability is measured by dividing EBITDA with total assets. Given that the data employed in this study consist of companies from various countries, EBITDA based profitability measure is considered to be most suitable due to it being unaffected by taxes and depreciations that may vary across countries.

$$PROFIT = \frac{EBITDA}{Total\ Assets} \tag{10}$$

Asset tangibility is measured with the ratio of net real estate investments to total assets. In the event of missing year observations for real estate investments, it will be replaced with net property, plant & equipment.

$$TANG = \frac{Net\ Real\ Estate\ Investments}{Total\ Assets} \tag{11}$$

Firm size is defined as a natural logarithm of total assets. While some studies (see e.g. Baker & Wurgler 2002; Feng et al. 2007) use total revenue of a company as a proxy for size, the total assets are seen to be more accurate in REIT context. This is mainly due to total assets capturing the value of assets a REIT possess, while revenue is rather measuring the amount of cash the properties owned by a REIT are generating.

$$LNSIZE = LN(Total\ Assets) \tag{12}$$

M/B ratio is used as a proxy for growth opportunities. Following prior studies (see e.g. Baker & Wurgler 2002; Feng et al. 2007; Dogan et al. 2019; Breuer et al. 2019) it is defined as the sum of book debt and market capitalization divided by total assets.

$$GROWTH = \frac{Book\ Debt + Market\ Capitalization}{Total\ Assets} \tag{13}$$

Finally, interest coverage is measured with the ratio of EBITDA to interest expense of debt. In order to reduce skewness of the distribution, a natural logarithm of the ratio is used (Dogan et al. 2019).

$$LNCOVERAGE = LN\left(\frac{EBITDA}{Interest\ Expense\ of\ Debt}\right) \tag{14}$$

As explained in the literature review chapter, the empirical evidence from prior research considering the effect of firm-specific factors on capital structures is inconsistent. Consequently, expected effect of introduced variables on leverage is done from theoretical perspective. Similarly, the analysis of empirical results is conducted by utilizing capital structure theories as a framework.

5.2 Sample formation

The initial sample includes 567 REITs from 31 different countries forming a data set of 3203 firm-year observations with a period covered being 2010 – 2019. The firm-specific variables are trimmed by excluding observations that are three standard deviations from the mean in order to remove outlier observations. In detail, the main object is to reduce the effect of data in Thomson Reuters Worldscope database not allowing the construction of targeted proxy. The majority of observations removed by this trimming come from asset tangibility and interest coverage (189 out of 259 drops) as several firms have reported unrealistically small figures to the accounts net real estate investments, net property, plant and equipment, and interest expenses.[4] This process reduces the sample to consist of 2944 observations with 538 REITs from 30 different countries.

The sample is further reduced as companies are required to have a minimum of 3 observations. This results in losing 183 firm-year observations. Similarly, countries with less than 20 observations are dropped. Consequently, the following countries (firm-year observations) are removed from the final sample: Ireland (6), Israel (14), Italy (18), Jamaica (5), New Zealand (13), South Korea (18), Taiwan (9), Thailand (8), and United Arab Emirates (6). As an outcome, the final sample of 2664 firm-year observations includes 390 REITs form 18 different countries covering period 2010 – 2019. The table 2 presents the detailed distribution across countries. Unsurprisingly, the U.S is the country with most REITs and observations, followed by Japan, France, Canada, and U.K.

[4] Given that REIT regulation sets a minimum level of required real estate investments, it is obvious that initial data is flawed at some points meaning that not all real estate investments and interest expenses are accounted to the available accounts.

Table 2. The distribution of sample companies and firm-year observations across countries.

Country	Companies	Observations
Australia	25	142
Belgium	9	81
Bulgaria	4	22
Canada	26	162
France	26	186
Germany	4	24
Greece	4	26
Hong Kong	5	44
Japan	39	256
Malaysia	9	66
Mexico	6	31
Netherlands	3	25
Singapore	19	129
South Africa	25	148
Spain	12	50
Turkey	22	132
United Kingdom	20	162
United States	132	978
Total	**390**	**2664**

Sample firms are further divided into Industrial & Office REITs, Retail REITs, Residential REITs, Diversified REITs, Specialty REITs, and Hotel & Lodging REITs in Thomson Reuters Worldscope database. This specification is done according to the specialization in assets a REIT invests in. figure 6 illustrates how the sample is distributed across different classifications. As visible, Retail REITs are most represented in the sample followed by Diversified, Residential, and Industrial & Office REITs. A classification was not available for two (2) REITs in the Thomson Reuters Worldscope database, and are consequently classified as “NA”.

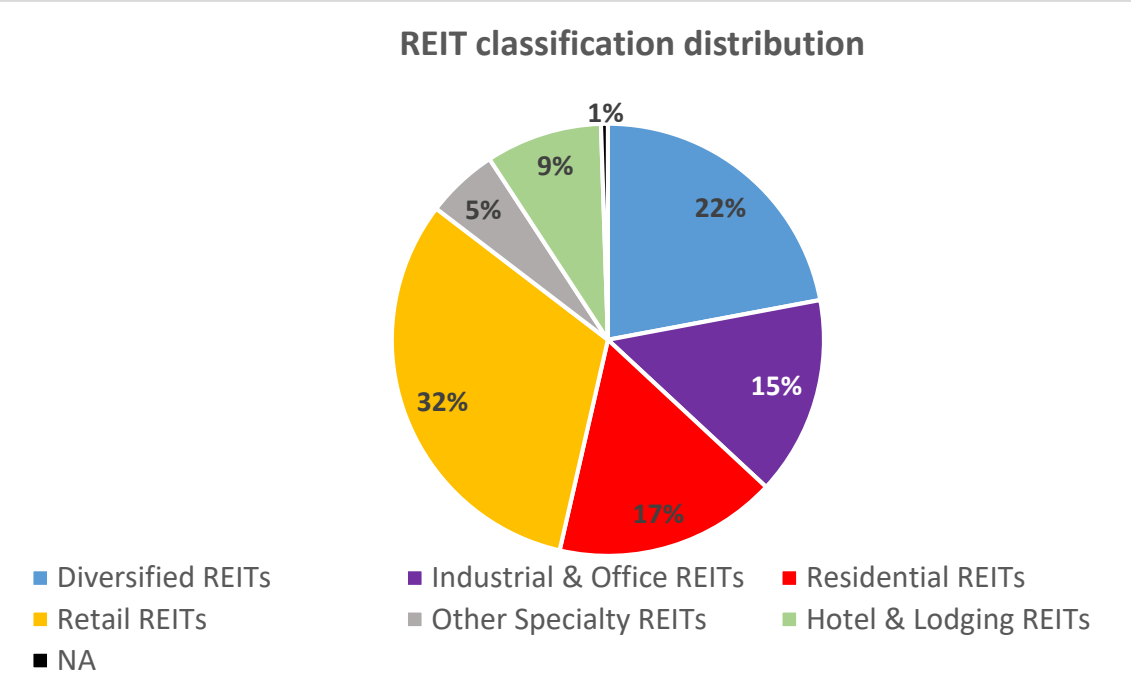

Figure 6. Distribution of sample firms across different REIT types.

5.3 Statistical properties

Descriptive statistics for the final sample consisting of 2664 firm-year observations are reported in table 3. In detail, statistical properties are reported for firm-specific variables including three proxies of leverage used as dependent variables and five explanatory variables. In addition, results of normality tests for each variable are included in the table.

The mean values of leverage suggest that on average book-based measures of leverage are higher compared to market-based ones. In practice, this means that the sum of book debt and market capitalization is higher than the amount of total assets on average reflecting the typical high amount of book debt. Overall, the averages for leverage measurements are similar to prior research (see e.g. Barclay et al. 2013; Giacomini et al. 2015; Breuer et al. 2019; Dogan et al. 2019). Another key takeaway is the expected high asset tangibility, 85% on average. In addition, standard deviation seems to be highest for firm size illustrating how the amount of holdings is diverse across the sample REITs. Potential differences between the mean values of variables across countries is analyzed later in this chapter.

Table 3. Descriptive statistics and normality test for final sample of 2664 observations.

Variable	Mean	Median	Std.dev	Skewness	Kurtosis	Jarque-Bera
MLEV	0,456	0,441	0,172	0,378	0,333	75,837***
BLEV	0,496	0,493	0,182	0,199	0,497	45,089***
LEV	0,493	0,495	0,174	0,117	0,704	61,114***
PROFIT	0,066	0,065	0,041	-0,199	2,900	951,006***
TANG	0,852	0,897	0,142	-2,208	6,048	6225,730***
LNSIZE	14,247	14,377	1,447	-0,483	0,303	113,847***
GROWTH	1,132	1,067	0,346	1,294	3,026	1760,235***
LNCOVERAGE	3,080	3,002	0,455	1,903	69,562	538720,280***

Statistical significance of Jarque-Bera is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Following Wooldridge (2016), normality is an important parameter when evaluating the validity of data applied in statistical procedures. From the statistical properties in the table 3, skewness and kurtosis indicate asymmetry of probability distribution, and can be used in order to assess whether variables are normally distributed or not. Accordingly, an interpretation can be made that all proxies for leverage as well as firm size seem to be fairly normally distributed. However, testing variables with Jarque-Bera results in rejecting the null hypothesis of normal distribution in each case.

To investigate how the variables correlate with each other, a correlation coefficient matrix is presented in table 4. For the data sample to be consider as valid, none of the independent variables should have a perfect linear relationship with each other. In detail, perfect collinearity means correlation coefficient equal to 1. Generally, in order to confirm that multicollinearity is not present in the data, the tolerable frontier inside the variables must stand is 0,7. (Wooldridge 2016.) As visible from table 4, there are no pairs of independent variables with a coeffiecient greater than 0,33 between EBITDA-based profitability and interest coverage. Thus, it can be concluded that multicollinearity is not observed in the data sample. Proxies for leverage i.e. dependent variables seem to correlate with each other as expected. Moreover, the correlation between book-based proxies is logically higher compared to relation to market leverage.

Table 4. Correlation coefficient matrix for sample variables.

	MLEV	BLEV	LEV	PROFIT	TANG	LNSIZE	GROWTH	LNCOVERAGE
MLEV	1,000							
BLEV	0,703***	1,000						
LEV	0,709***	0,937***	1,000					
PROFIT	-0,216***	-0,00102	-0,0114	1,000				
TANG	-0,144***	-0,0545***	-0,0500***	0,151***	1,000			
LNSIZE	-0,0892***	0,106***	0,108***	0,199***	0,0726***	1,000		
GROWTH	-0,329***	0,377***	0,302***	0,276***	0,0906***	0,262***	1,000	
LNCOVERAGE	-0,381***	-0,364***	-0,391***	0,334***	0,0530***	-0,0119	-0,00752	1,000

Statistical significance of correlation is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

5.3.1 Sample analysis

Figure 7 illustrates how the different proxies for leverage have developed during the sample period by observing a decreasing trend with a slight upwards movement during most recent years. Decreasing ratios are in line with the results of Morri and Artegiani (2015) suggesting that the amount of debt used by REITs has decreased post-financial crisis. However, after this adjustment the ratios seem to be fairly stable implying support for the dynamic trade-off view empirically documented by Ooi et al. (2010) and Vermissen and Zietz (2017).

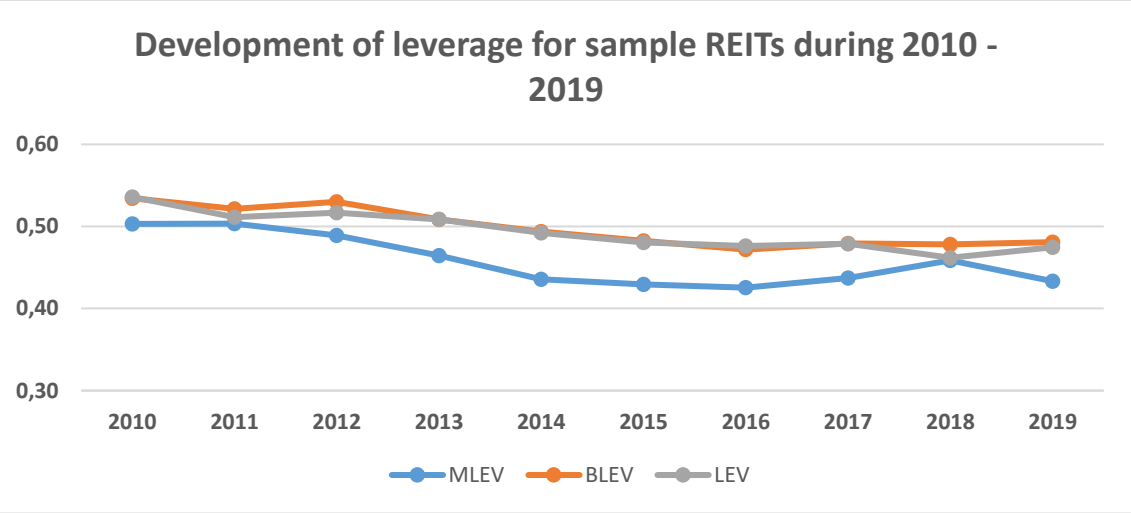

Figure 7. Development of different proxies for leverage of sample REITs during 2010 – 2019.

The averages of firm-specific variables by country are reported in Table 5. Starting from market leverage, France (57%) and Canada (55%) are the countries with highest ratios. Other countries exceeding the sample average are Germany, Netherlands, the U.S., and Turkey. When measured with book leverage, the highest ratios appear for Canada (54%) France (55%), and the U.S. (60%). Moreover, no other country exceeds the sample average suggesting that the U.S. with clearly most observations boosts the mean figure. When using the other book based proxy for leverage, the same countries remain as the ones with highest debt ratio. However, also Germany and Japan exceed the sample average.

From the perspective of regulation, France, Canada, the U.S., and Japan are logical inclusions in the list of countries with highest leverage as the debt ratio is not restricted in these countries. While in Turkey the amount of leverage is not regulated, the required payout ratio is also missing meaning that Turkish REITs can retain more earnings making it logical that Turkey drops from the list when moving to a book-based measure. On the other hand, the level of leverage is regulated in Netherlands and Germany suggesting that the leverage in these countries should be below the sample average. However, the amount of REITs in the sample from Netherlands and Germany are 3 and 4 respectively, making the weight of an individual REIT substantial when calculating country average.

The level of profitability seems to be relatively stable across sample countries with majority being at or close to the sample average of 7%. REITs from South Africa and Hong Kong seem to be the most profitable ones with 10% and 9%, respectively. On the other hand, the lowest levels of profitability stand in Bulgaria (3%), Greece (4%), Netherlands (4%), and Japan (4%).

When analyzing asset tangibility, one can clearly note that the level in Turkey (71%) is obviously below the sample average (85%). This is logical as the minimum share Turkish REITs are required to invest in real estate is only 51% (EPRA 2020). In the other end, 10 countries exceed the sample average, highlighting the major impact countries below the mean level with large amount of observations have when calculating the average value.

The biggest firm sizes across the sample countries are observed, in the following order, in Netherlands, Hong Kong and the U.S. However, the amount of firms is low for Netherlands (4) and Hong Kong (5) enabling the conclusion of these countries having particularly large REITs on average. On the other hand, observing sizeable REITs in the U.S in relation to other sample firms comes as no surprise given that it has the largest and most developed REIT regime globally. Similarly, detecting that the smallest REITs in the sample come from relatively new and undeveloped regimes is logical. These countries include Bulgaria, Greece, Spain, and Turkey. (EPRA 2020.)

M/B ratio acting as a proxy for growth opportunities is largest in the U.S. suggesting that the markets in the U.S act efficiently in capturing the growth prospects into the market values of REITs. Only three countries (Belgium, Japan, and Spain), besides the U.S. exceed the sample average illustrating how the mean is boosted by observations from the U.S. On the other hand, M/B ratios are particularly low in Greece, Hong Kong, Mexico and Turkey, which can be considered as relatively undeveloped markets.

Table 5. Averages of firm-specific variables by country in a sample of 390 REITs from 18 different countries during 2010 - 2019.

Country	N	MLEV	BLEV	LEV	PROFIT	TANG	LNSIZE	GROWTH	LNCOVERAGE
Australia	142	0,404	0,389	0,389	0,056	0,778	14,191	1,035	3,044
Belgium	81	0,405	0,459	0,462	0,055	0,925	13,392	1,138	3,192
Bulgaria	22	0,373	0,334	0,334	0,027	0,793	10,387	0,976	2,890
Canada	162	0,552	0,540	0,589	0,074	0,940	14,527	1,002	2,976
France	186	0,567	0,546	0,566	0,057	0,816	13,999	0,979	3,111
Germany	24	0,496	0,486	0,510	0,068	0,895	13,159	1,043	3,070
Greece	26	0,251	0,203	0,204	0,037	0,866	12,980	0,791	3,016
Hong Kong	44	0,381	0,262	0,315	0,090	0,927	15,338	0,719	3,542
Japan	256	0,448	0,495	0,495	0,044	0,846	14,394	1,143	3,241
Malaysia	66	0,334	0,339	0,340	0,068	0,953	13,299	1,048	3,146
Mexico	31	0,381	0,302	0,302	0,068	0,892	14,371	0,824	3,236
Netherlands	25	0,487	0,422	0,480	0,035	0,920	15,374	0,868	2,911
Singapore	129	0,414	0,373	0,398	0,068	0,920	14,559	0,934	3,136
South Africa	148	0,405	0,451	0,467	0,100	0,857	13,644	1,102	2,977
Spain	50	0,361	0,417	0,445	0,048	0,899	12,864	1,172	3,216
Turkey	132	0,468	0,357	0,363	0,066	0,710	12,550	0,789	3,454
United Kingdom	162	0,438	0,410	0,412	0,061	0,828	14,523	0,955	3,010
United States	978	0,471	0,600	0,565	0,073	0,849	14,723	1,354	2,989
Full Sample	2664	0,456	0,496	0,493	0,066	0,852	14,247	1,132	3,080

Table 6 reports the descriptive statistics of firm-specific variables by the different REIT classifications made according to the property types a REIT specializes. On a book based measures, the leverage is highest for Residential REITs. The underlying assets of this REIT type produce relatively stable cash flows, which can be interpreted to provide

additional debt capacity (Dogan et al. 2019). Consistently, book based leverage is lowest for diversified REITs that invest in more risky assets. Hotel & Lodging REITs become the most levered type when switching to market leverage while Residential is only slightly over the sample average.

There seems not to be major differences in profitability across REIT classes. Same goes for tangibility apart from Hotel & Lodging having clearly highest level of real estate investments in relation to total assets. This is in line with Hotel REITs typically having fewer amount of property holdings due to a substantial unit size of an individual investment. In addition, Diversified REITs seem to have less tangible assets than other types suggesting that these kinds of REITs engage more in developed activities. Consequently, a part of their total assets can consist of work in progress (WIP).

Table 6. Averages of firm-specific variables by REIT classification in a sample of 390 REITs from 18 different countries during 2010 – 2019.

Classification	**N**	**MLEV**	**BLEV**	**LEV**	**PROFIT**	**TANG**	**LNSIZE**	**GROWTH**	**LNCOVERAGE**
Diversified	566	0,455	0,462	0,461	0,065	0,814	13,803	1,036	3,147
Hotel & Lodging	196	0,510	0,506	0,508	0,069	0,898	14,236	1,023	3,050
Industrial & Office	375	0,451	0,495	0,482	0,066	0,863	14,308	1,155	3,071
Other Specialty	128	0,412	0,481	0,475	0,063	0,864	13,647	1,210	3,101
Retail	938	0,446	0,500	0,498	0,072	0,861	14,536	1,155	3,090
Residential	450	0,468	0,533	0,525	0,058	0,850	14,333	1,214	2,997
NA	11	0,546	0,587	0,603	0,031	0,875	14,084	1,106	2,883
Full Sample	2664	0,456	0,496	0,493	0,066	0,852	14,247	1,132	3,080

In terms of firm size, Retail REITs seem to be the most sizeable ones followed by Residential and Industrial & Office. It is notable that substantial bulk of observations for these classes comes from the U.S. in which the size of a REIT is largest on average across the sample countries. Figure 8 illustrates how the observations of each REIT type are spread across countries.

Growth opportunities seem to be highest for Retail and lowest for Hotel & Lodging. This can at least partially be explained with the transaction activity being typically really moderate for Hotel assets. Oppositely, Retail assets are traded more frequently. Consequently, the market valuations of Retail REITs may react more frequently to the news of potential acquisitions to be made. (EPRA 2020.)

Interest coverage differs across REIT types as expected according to the stability of cash flows the underlying assets produce. In detail, Residential and Hotel & Lodging associated with stable income stream have the lowest interest coverage levels as their businesses are not so sensitive to shocks (Dogan et al. 2019). On the other hand, Diversified REITs have the highest coverage as their riskier activities require a REIT to maintain a stronger cash position compared to other types. These findings are in line with the observed levels of leverages as Diversified are less levered than Residential and Hotel & Lodging despite the proxy for leverage.

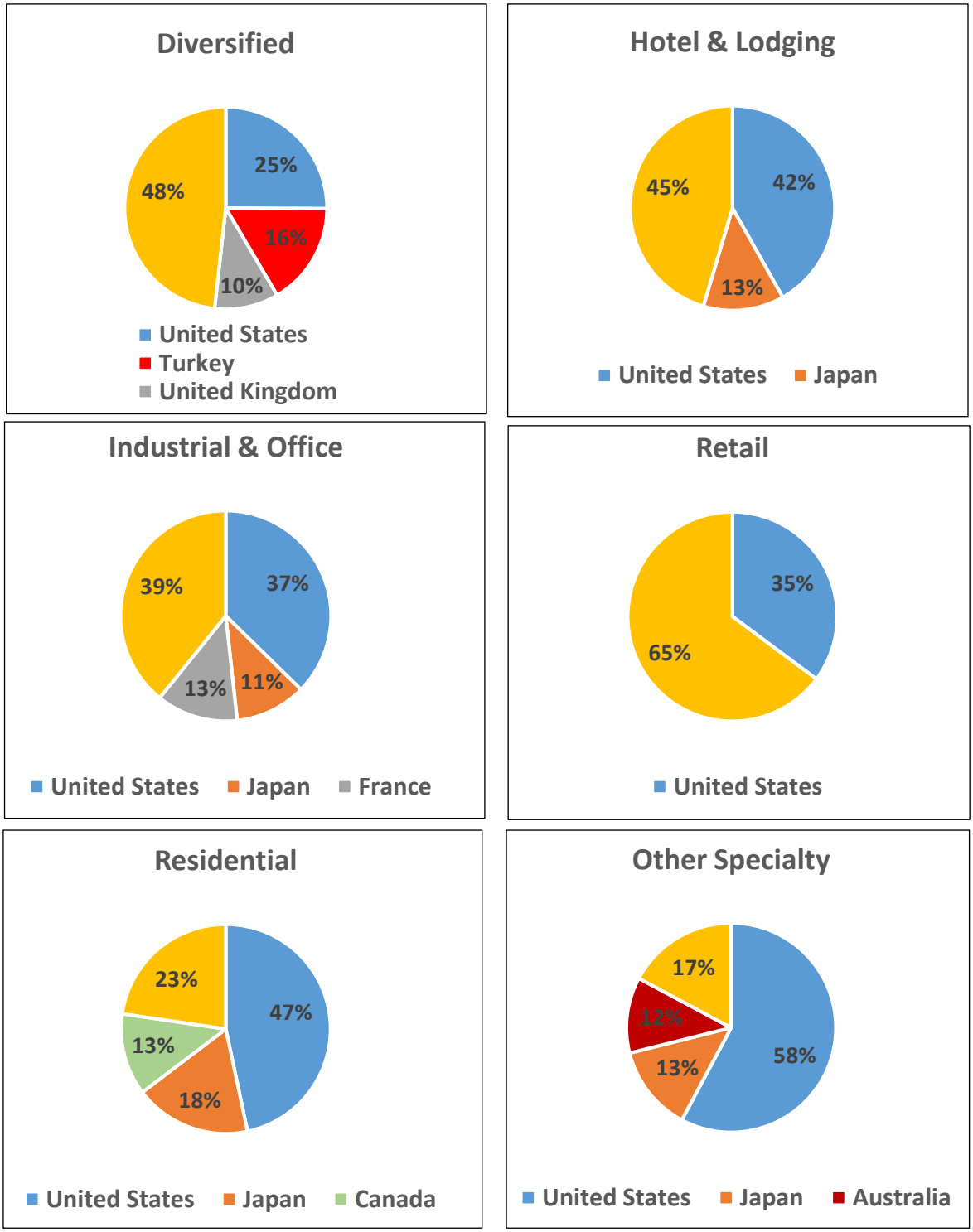

Figure 8. Distribution of observations by REIT classification across sample countries.

5.4 Methodology and hypotheses

The purpose of this thesis is to examine how differing legislation across REIT regimes affects the capital structure choices of REITs. The investigation focuses on both, the amount of leverage, and funding sources applied by REITs. In practice, the empirical investigation is conducted with an unbalanced panel data set covering the period 2010 – 2019 with a methodology being based on Ordinary Least Squares (OLS) method.

OLS is a method used to estimate the parameters of a multiple linear regression models by minimizing the sum of squared residuals. The OLS method produces unbiased estimators in a setting that fulfills four out of five assumptions included in Gauss-Markov Theorem. The fulfillment of the fifth assumption results in estimators being called as the best linear unbiased estimators (BLUE). (Wooldridge 2016, 92.)

According to the first assumption, the multiple linear regression model (MLR) should be linear in parameters. The second assumption suggests that the sample observations should represent a random taking form the population. The third assumption prohibits the existence of perfect collinearity between independent variables included in the model.[5] Similarly, the fourth assumption states that there should not be correlation between independent variables and the error term. In detail, this means that the expected value of the error should always be zero despite the value of an independent variable. Finally, the fifth assumption states that there should not be heteroscedasticity in data meaning that the variance of the error term should not vary based on the values of explanatory variables. Thus, homoscedasticity is present when the error terms have constant variance. (Wooldridge 2016, 92.)

This study attempts to generate as unbiased estimators as possible by following the Gauss-Markov Theorem. The fulfillment of pre-described assumptions is crucial in confirming the unbiasedness of the results of this thesis given that unbalanced OLS panel data regressions are being applied. The common problems in such models relate typically to endogeneity, autocorrelation, and heteroscedasticity.

[5] Table 4 confirms that there is no perfect multicollinearity between independent variables.

The endogeneity issue arises when an independent variable predicts the value of the error violating the fourth assumption of Gauss-Markov Theorem (Wooldridge 2016, 274). In this thesis, the possible problems related to endogeneity are tackled by applying the fixed effects model similar to the one of Dogan et al. (2019).

Heteroskedasticity is present in the data sample used in this thesis, and it is documented with Breusch-Pagan test. Consequently, robust standard errors are utilized in each model. Following Dogan et al. (2019) the robust standard errors are clustered by firm ID in order to obtain accurate results.

To conclude, in order to obtain as unbiased estimates as possible by using unbalanced OLS panel regressions, all the models of this thesis exploit robust standard errors and fixed effects. The inclusion of fixed effects controls also heteroscedasticity by letting both firm and time specific effects to be constant. In detail, the year fixed effects are being controlled as well as cross-sections. In the controlling of cross-sections, dummy variables constructed based on REIT classifications are being utilized. This approach is justified by existing literature providing strong evidence regarding the effect of the type of assets a REIT invests on capital structure (see e.g. Ertuglur & Giambona 2011; Harrison et al. 2011; Dogan et al. 2019).

5.4.1 Construction of dummy variables and regression models investigating the determinants of leverage

The first objective of this thesis is to determine how much explanatory power differing regulation across REIT regimes has on the leverage applied by a REIT. Following the approach of Dogan et al. (2019), this investigation starts with grouping the sample countries based on differing legislation regarding payout requirement, taxation, and leverage restrictions.

To be clear, countries without a specified restriction on the level of applicable leverage ratio are classified as countries with no leverage restriction despite having some kind of regulation governing the use of debt. These countries include Bulgaria and Turkey where the useage of short-term credits is restricted as well as the UK with a restriction on

allowed interest coverage. Moreover, it is noted that the leverage was restricted in Spain prior to 2012, and hence the observations are treated accordingly meaning that the value of dummy variable is allowed to vary over the periods. Initially, this specification follows Dogan et al. (2019). According to these classifications illustrated in figure 9, dummy variables are constructed, and utilized in the models included in this study.

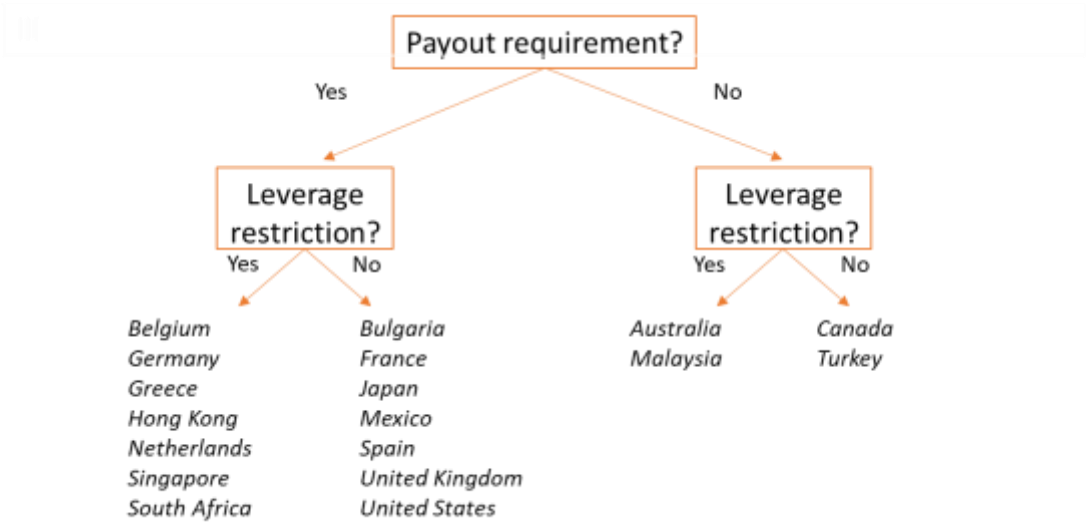

Figure 9. Identifying differing legislation across sample REIT regimes.

The empirical investigation is done with the complete dataset of 2664 firm-year observations. In each model, profitability, tangibility, firm size, growth opportunities and interest coverage are included as firm-specific controlling variables according to definitions specified earlier in this chapter. In addition, REIT classification, and year fixed effects are controlled in models. It is noted that currencies vary among sample countries. While all other variables used are calculated as ratios, proxy for firm size is determined as total assets in USD. This may result in the size variable to be affected by changes in exchange rates, and may distort the results to some extent. However, inclusion of time fixed effect should capture some of the changes in market conditions including exchange rates. Consequently, the structure of the regression models to be ran is as follows:

$$Leverage = a_0 + b(Tang_i) + c(Profit_i) + d(Size_i) + e(Growth_i) + f(LNCoverage_i) + \sum Legislation\ Dummies + \sum REIT\ Dummies + \sum Year\ Dummies + u_t \quad (15)$$

The first set of dummy variables concerns countries without payout requirement as the target is to investigate whether REITs in these countries have higher leverage due to ability to retain more earnings. It is noted that the taxation concerning income not distributed as dividends in Australia and Canada encourages to payout majority of the income. In addition, while Malaysian REITs are not specifically required to payout any dividends, these REITs lose the benefits of tax exemption if distributed dividends are below 90% of taxable income. As this setting may not differ from the one in a country with payout requirement in practice, Malaysian REITs still have a possibility to retain earnings, and are hence treated accordingly when constructing categorical variables. For before mentioned reasons countries without payout requirement are further divided into ones that are exempt (Turkey) and the ones that are not exempt from corporate tax (Australia, Canada, and Malaysia). The base case in this model is that country legislation includes a payout requirement. With these dummies, the regression model takes the following form:

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOPAYOUT\_NOTAX) + h(NOPAYOUT\_TAX) + \sum REIT\ DUMMIES + \sum YEAR\ DUMMIES + u_t \quad (16)$$

The second categorization splits countries without payout requirement into the ones where leverage is restricted (Australia and Malaysia), and to ones where it is not regulated (Canada and Turkey). In this model, the investigation focuses on whether the effect of missing payout requirement differs depending on if these regimes are additionally exposed to a leverage restriction. The base case remains the same as in the first model.

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOPAYOUT\_LEVRESTRICT) + h(NOPAYOUT\_NOLEVRESTRICT) + \sum REIT\ DUMMIES \sum YEAR\ DUMMIES + u_t \quad (17)$$

In order to investigate the missing regulations at once, the third model includes variables for countries without leverage restrictions and for the ones without payout requirement. In Bulgaria, Canada, France, Japan, Mexico, Spain, Turkey, United Kingdom, and United States, the amount of leverage is not restricted. Countries in which there are no payout requirement are Australia, Canada, Malaysia, and Turkey. For countries where both regulation dummies equal to one, the base case is REITs where legislation is in place for both payout and leverage. To conduct this examination, the following model is to be estimated:

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOLEVRESTRICT) + h(NOPAYOUT) + \sum REIT\ DUMMIES + \sum YEAR\ DUMMIES + u_t \quad (18)$$

In latter set of models, the main attention is given to the impact of leverage restriction regulation. This examination starts with the fourth model including only one dummy variable identifying countries with no leverage restriction. The specification in fifth model splits countries without leverage restriction into two groups based on whether there is a payout requirement or not. The sixth and last model includes all possible combinations of regulation in terms of payout requirement and leverage restrictions. These models are estimated in following forms:

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOLEVRESTRICT) + \sum REIT\ DUMMIES + \sum YEAR\ DUMMIES + u_t \quad (19)$$

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOPAYOUT\_NOLEVRESTRICT) + h(PAYOUT\_NOLEVRESTRICT) + \sum REIT\ DUMMIES + \sum YEAR\ DUMMIES + u_t \quad (20)$$

$$LEVERAGE = a_0 + b(TANG_i) + c(PROFIT_i) + d(SIZE_i) + e(GROWTH_i) + f(LNCOVERAGE_i) + g(NOPAYOUT\_LEVRESTRICT) + h(PAYOUT\_NOLEVRESTRICT) + i(NOPAYOUT\_NOLEVRESTRICT) + \sum REIT\ DUMMIES + \sum YEAR\ DUMMIES + u_t \quad (21)$$

In order to provide robustness for the results, all pre-introduced models are ran with all three proxies of leverage specified earlier in this chapter as dependent variable. Table 7 concludes the model specifications by presenting categorical variables included in each model as well as the main object of a respective model.

5.4.2 Models investigating determinants of applied funding sources of REITs

Another perspective evaluated in this thesis concerns the effect of differing regulation across REIT regimes on the usage of different funding sources applied by REITs. In order to investigate if such effects exists, the change in book leverage is decomposed into net equity issues, newly retained earnings, and net debt issues following the approach of Baker and Wurgler (2002) and Feng et al. (2007).

In their specifications, net equity issues (e/TA) is change in book equity minus change in retained earnings divided by total assets. Newly retained earnings (ΔRE/TA) is net income minus dividends divided by total assets. Net debt issues (d/TA) is determined as residual change in assets divided by total assets. The following equation presents the decomposition relying on two accounting identities. First, change in leverage equals change in book equity as a ratio of total assets, and second, change in book equity equals sum of net equity issues and change in retained earnings.

$$\left(\frac{D}{A}\right)_t - \left(\frac{D}{A}\right)_{t-1} = -\left(\frac{e_t}{A_t}\right) - \left(\frac{\Delta RE_t}{A_t}\right) - \left[E_{t-1}\left(\frac{1}{A_t} - \frac{1}{A_{t-1}}\right)\right] \quad (22)$$

The last term captures the total change in assets from the combination of different funding sources: net equity issues, debt issues, and newly retained earnings. To investigate the determinants of the applied funding sources, each component is used as dependent variable in the regressions. Following the approach of Baker and Wurgler (2002) and Feng et al. (2007), these leverage components are used as dependent variable with a negative signs in order to smooth the interpretation. The models include firm-specific controlling variables with a one period lag. In addition, the model includes lagged leverage. Baker and Wurgler (2002) rationalize this with the fact that debt ratio is bounded from 0 to 1, and consequently the impact of other factors may be obscured if lagged leverage is omitted. The variable is expected to have a negative coefficient. Hence, following models including the legislation variables are specified:

$$\Delta BLEV_T = a_0 + b(Tang_{T-1}) + c(Profit_{T-1}) + d(LNSize_{T-1}) + e(Growth_{T-1}) + f(LNCoverage_{T-1}) + BLEV_{T-1} + \sum Legislation\ Dummies + \sum REIT\ Dummies + \sum Year\ Dummies + u_t \quad (23)$$

$$-\left(\frac{e}{TA}\right)_T = a_0 + b(Tang_{T-1}) + c(Profit_{T-1}) + d(LNSize_{T-1}) + e(Growth_{T-1}) + f(LNCoverage_{T-1}) + BLEV_{T-1} + \sum Legislation\ Dummies + \sum REIT\ Dummies + \sum Year\ Dummies + u_t \quad (24)$$

$$-\left(\frac{\Delta RE}{TA}\right)_T = a_0 + b(Tang_{T-1}) + c(Profit_{T-1}) + d(LNSize_{T-1}) + e(Growth_{T-1}) + f(LNCoverage_{T-1}) + BLEV_{T-1} + \sum Legislation\ Dummies + \sum REIT\ Dummies + \sum Year\ Dummies + u_t \quad (25)$$

$$-\left(\frac{d}{TA}\right)_T = a_0 + b(Tang_{T-1}) + c(Profit_{T-1}) + d(LNSize_{T-1}) + e(Growth_{T-1}) + f(LNCoverage_{T-1}) + BLEV_{T-1} + \sum Legislation\ Dummies + \sum REIT\ Dummies + \sum Year\ Dummies + u_t \quad (26)$$

As the firm-specific variables are being entered as lags, the period sample covers limits to 2011 – 2019 reducing the sample size due to loosing observations from 2010. In

addition, some firms having a first observation in the middle of the period reduce the sample size. Consequently, the sample size for these models is 2217.

5.4.3 Hypothesis development

The basis for hypotheses for this thesis follow the results of Dogan et al. (2019) confirming the influential power of regulation concerning leverage restriction and payout requirement as capital structure determinant for REITs. In detail, their evidence implies that the leverage of REITs is lower in regimes where regulation does not include a payout requirement. This observation is in line with the view of pecking order theory suggesting that firms prefer retained earnings as a primary funding source. Accordingly, the first hypothesis of this thesis is formed as follows:

H1: *In countries without (with) payout requirement, REITs have lower (higher) level of leverage.*

Similarly, Dogan et al. (2019) document that the absence of leverage restriction is associated with higher leverage. This results in the second hypothesis of this thesis to be as follows:

H2: *In countries where level of leverage is restricted (unrestricted) REITs have lower (higher) leverage ratios.*

To be specific, these hypotheses are associated with the regression models investigating capital structure determinants of REITs. Moreover, the investigation is conducted with respect to different combinations of regulation concerning payout requirement and leverage restriction allowing the comparison of influential power of these regulative aspects. Following Dogan et al. (2019), leverage restriction is expected to have more explanatory power on leverage than the payout requirement.

When moving to the models investigating determinants of funding sources, regulation concerning payout requirement and leverage restriction is expected to have a similar effect as in models investigating capital structure determinants of REITs. This is rational

as decisions concerning financing sources ultimately define the capital structure of a company. Consequently, following two hypotheses are formed:

H3: *Countries without payout requirement retain more earnings*

H4: *REITs from countries without leverage restriction issue more debt.*

Moreover, in models investigating determinants of funding sources attention is given to the market timing behavior of REITs. This is done by concentrating to growth opportunities i.e. M/B ratio. Contradicting with the market timing theory, Feng et al. (2007) documented this factor to have a persistent positive impact on the amount of leverage applied by U.S. REITs. Accordingly, following hypothesis is presented:

H5: *REITs with high market-to-book ratio issue more debt.*

The results of Feng et al. (2007) concerning the correlation of M/B ratio and net debt issues violate the assumptions of market timing theory. However, authors also provide consistent results with market timing view by documenting that once REITs mature, the correlation of M/B ratio and net equity issues becomes positive. This provides an interesting setting for examination of this correlation in this study as the examination is conducted without similar fixed starting point of an IPO as in the study of Feng et al. (2007).

Table 7. Model Specifications.

	Dummy 1	Dummy 2	Dummy 3	Impact Examined
Model 1	NOPAYOUT_NOTAX	NOPAYOUT_TAX	-	Do REITs in regimes without payment requirement retain more earnings than the ones exposed to such legislation?
Model 2	NOPAYOUT_LEVRESTRICT	NOPAYOUT_NOLEVRESTRICT	-	How the impact of missing payout requirement differs depending on whether the legislation also restricts the leverage of a REIT?
Model 3	NOLEVRESTRICT	NOPAYOUT	-	Is the significance of either missing leverage restriction or missing payout requirement greater in boosting the leverage?
Model 4	NOLEVRESTRICT	-	-	The individual effect of missing leverage restriction on leverage.
Model 5	NOPAYOUT_NOLEVRESTRICT	PAYOUT_NOLEVRESTRICT	-	Is the impact of missing leverage restriction more significant in regimes where also payout requirement is missing?
Model 6	NOPAYOUT_NOLEVRESTRICT	PAYOUT_NOLEVRESTRICT	NOPAYOUT_LEVRESTRICT	All possible combinations of regulation in terms of payout reuirement and leverage restriction.

6 Empirical results

The purpose of this chapter is to present the empirical findings derived from the regression models introduced in the earlier chapter. The analysis is conducted by first introducing the results from models attempting to provide evidence regarding the effect of differing legislation on capital structures of REITs. This is done with respect to each previously identified proxies for leverage. In addition, observed trends concerning financial statement based firm-specific variables are evaluated. Second, the results from models investigating the determinants of funding choices of REITs are presented. The final part of this chapter evaluates the robustness of results.

6.1 Models investigating capital structure determinants

Tables 8, 9 and 10 in the following pages present the regression results from models examining the impact of payout requirement and taxation regulation on leverage ratios. Tables include results from each model with all three proxies applied as a dependent variable.

Starting from the Model 1, the coefficient for countries without payout requirement and tax exemption is negative and significant at 5% level when the dependent variable is book leverage suggesting lower leverage for these REITs. Surprisingly, the coefficient for the dummy variable representing regulation without payout requirement, but existing tax exemption is positive and insignificant suggesting that the tax exemption does not result in REITs retaining more earnings. It is noted that this categorical variable represent only one country, Turkey, and hence a closer look on the differences between the regulations of regimes without payout requirement is necessary.

While these results could be regarded as supporting Hypothesis 1 it is to be noted that the countries representing the first variable include Australia, Canada, and Malaysia. While Canadian regulation does not specify leverage restrictions, this regulation exists in Australia and is quite strict in Malaysia.[6] Combining this with the fact that Turkish REITs

[6] See table 1.

are not exposed to leverage restrictions may suggest that the results from Model 1 are mostly doings of regulation concerning the allowed level of leverage. Moreover, when applying other proxies for leverage as dependent variables, both coefficients become insignificant suggesting that Hypothesis 1 is not supported.

The outcome from the Model 1 conflicts with the results of Dogan et al. (2019). In fact, authors document a significant positive correlation between no payout and full tax exemption and market leverage. This is interpreted to be driven either by smaller dividends reducing the market value resulting in higher market leverage, or missing payout requirement resulting in improved cash position allowing more substantial debt usage. However, when switching dependent variable to total liabilities to total assets, the coefficient becomes negative and highly significant. However, it should be noted that in this thesis as well as in the study of Dogan et al. (2019), the dummy variable identifying regimes with no payout but tax exemption includes only Turkey thus limiting the conclusions to be made based on results. Moreover, results are consistent in terms of insignificant coefficients for a categorical variable representing regimes without payout requirement and tax exemption across all model specifications.

Table 8. Regression results from models investigating the impact of payout requirement, taxation regulation, and leverage restriction on book leverage.

	Model 1 BLEV	Model 2 BLEV	Model 3 BLEV
TANG	-0.0868**	-0.0914**	-0.0496
	(0.0423)	(0.0396)	(0.0404)
PROFIT	0.135	0.0810	0.248*
	(0.151)	(0.152)	(0.143)
LNSIZE	-0.00115	-0.000831	-0.00398
	(0.00526)	(0.00514)	(0.00511)
GROWTH	0.1926***	0.200***	0.164***
	(0.0234)	(0.0232)	(0.0230)
LNCOVERAGE	-0.141***	-0.142***	-0.143***
	(0.0277)	(0.0260)	(0.0253)
NOPAYOUT_NOTAX	-0.0348		
	(0.0330)		
NOPAYOUT_TAX	-0.0459**		
	(0.0212)		
NOPAYOUT_LEVRESTRICT		-0.115***	
		(0.0232)	
NOPAYOUT_NOLEVRESTRICT		0.0119	
		(0.0217)	
NOLEVRESTRICT			0.109***
			(0.0145)
NOPAYOUT			-0.0272
			(0.0169)
CONSTANT	0.835***	0.833***	0.802***
	(0.123)	(0.120)	(0.117)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.302	0.323	0.361

The dependent variable is book leverage (BLEV) defined as book debt divided by total assets. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 9. Regression results from models investigating the impact of payout requirement, taxation regulation, and leverage restriction on market leverage.

	Model 1	Model 2	Model 3
	MLEV	MLEV	MLEV
TANG	-0.109***	-0.119***	-0.0783**
	(0.0416)	(0.0387)	(0.0392)
PROFIT	0.0790	0.0273	0.191
	(0.146)	(0.145)	(0.138)
LNSIZE	-0.00130	-0.00140	-0.00447
	(0.00498)	(0.00491)	(0.00483)
GROWTH	-0.161***	-0.155***	-0.189***
	(0.0188)	(0.0185)	(0.0185)
LNCOVERAGE	-0.141***	-0.141***	-0.143***
	(0.0275)	(0.0260)	(0.0254)
NOPAYOUT_NOTAX	-0.00123		
	(0.0369)		
NOPAYOUT_TAX	-0.0296		
	(0.0198)		
NOPAYOUT_LEVRESTRICT		-0.0949***	
		(0.0220)	
NOPAYOUT_NOLEVRESTRICT		0.0323	
		(0.0215)	
NOLEVRESTRICT			0.105***
			(0.0141)
NOPAYOUT			-0.00764
			(0.0167)
CONSTANT	1.211***	1.215***	1.185***
	(0.121)	(0.119)	(0.116)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.286	0.309	0.347

The dependent variable is market leverage (MLEV) defined as book debt divided by the sum of book debt and market capitalization. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 10. Regression results for models investigating the impact of payout requirement, taxation regulation, and leverage restriction on total liabilities to total assets.

	Model 1 LEV	Model 2 LEV	Model 3 LEV
TANG	-0.0737*	-0.0729*	-0.0366
	(0.0436)	(0.0399)	(0.0420)
PROFIT	0.200	0.133	0.295**
	(0.149)	(0.149)	(0.144)
LNSIZE	0.00143	0.00233	-0.000564
	(0.00519)	(0.00504)	(0.00506)
GROWTH	0.143***	0.153***	0.120***
	(0.0235)	(0.0231)	(0.0235)
LNCOVERAGE	-0.147***	-0.150***	-0.1503***
	(0.0288)	(0.0269)	(0.0268)
NOPAYOUT_NOTAX	-0.0306		
	(0.0335)		
NOPAYOUT_TAX	-0.0225		
	(0.0226)		
NOPAYOUT_LEVRESTRICT		-0.109***	
		(0.0229)	
NOPAYOUT_NOLEVRESTRICT		0.0420*	
		(0.0227)	
NOLEVRESTRICT			0.0929***
			(0.0151)
NOPAYOUT			-0.0103
			(0.0178)
CONSTANT	0.857***	0.846***	0.822***
	(0.126)	(0.122)	(0.122)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.269	0.302	0.316

The dependent variable is book leverage (LEV) defined as total liabilities divided by total assets. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Model 2 documents a highly significant negative coefficient for the variable representing a combination of an environment where payout requirement is missing but leverage restriction is in place. This result is consistent with all specifications for dependent variable. In practice, this variable differs from the variable representing regulation with no payout requirement and tax exemption by dropping Canada and only including Australian and Malaysian REITs suggesting that the negative correlation documented in Model 1 is mainly driven by the existing leverage restriction in these countries. Consistently with this interpretation, R-squared of Model 2 increases compared to Model 1 with each specification of dependent variable. In detail, this suggests that the consideration of leverage restriction adds the explanatory power of Model 2 in relation to Model 1, which does not account for differences in leverage restrictions.

Moreover, dummy variable combining missing leverage restriction with missing payout requirement is positive and not significant for models using book and market leverage as dependent variable. When total liabilities to total assets is dependent variable, this coefficient becomes significant at 10% level. Consequently, Model 2 provides inconsistent evidence with Hypothesis 1 as it is unable to document a negative correlation between the absence of payout requirement and leverage. The results of Dogan et al. (2019) from this same model suggest that the effect of regulation differs according to the dependent variable specification, and consequently evidence between studies is inconsistent to some extent.

Model 3 provides consistent results with the conclusion derived based on the evidence of Model 2. As Model 3 includes individual dummies for missing leverage restriction and payout requirement it enables the simultaneous evaluation of their explanatory power. Evidently, the absence of leverage restriction correlates positively with leverage, with coefficients being positive and statistically significant. On the other hand, the coefficients for missing payout requirement are insignificant. Apart from Dogan et al. (2019) finding the absence of payout requirement driving the market leverage, the results are in line with each other. These results are consistent with all specifications of dependent variable. These results provide support for Hypothesis 2, and conflict with Hypothesis 1.

In addition, the R-squared for Model 3 increases compared to Model 2 with each specification of dependent variable. In detail, this increase is almost 4% when dependent variable is either book or market leverage suggesting that Model 3 has clearly higher explanatory power than Model 2. Given that the dummy identifying REIT regimes without payout requirement enters with statistically insignificant coefficients, this provides strong support for the conclusion of leverage restriction being more crucial capital structure determinant for REITs than the payout requirement.

To conclude the results from the first set of models, the evidence suggests that leverage restriction is more crucial factor in determining the leverage of a REIT compared to the payout requirement. In detail, models document the expected positive correlation between absence of leverage restriction and level of leverage. Similarly, models document the negative correlation between leverage restriction and level of leverage. On the other hand, payout requirement does not seem to have expected negative correlation with leverage. Accordingly, the evidence is inconsistent with Hypothesis 1, while Hypothesis 2 seems to hold. These findings are essentially in line with the ones of Dogan et al. (2019).

Tables 11, 12 and 13 present the results from the second set of models focusing more on the effect of leverage restriction. Consistently, results are reported with each proxy for leverage as dependent variable. As noted, Model 4 includes only one dummy variable identifying countries with no leverage restrictions without paying attention to whether a payout requirement exists or not. The results suggest that the absence of leverage restriction affects positively to the level of leverage. This effect is highly significant across all specifications of dependent variable, and can be regarded to provide strong support for the Hypothesis 2. This finding is consistent with Dogan et al. (2019). Moreover, the R-Squared does not seem to practically decrease at all compared to Model 3 implying that the dummy identifying REIT regimes without payout requirement adds very little explanatory power to the Model 3, and is not a crucial factor in determining the leverage. This finding can be considered to contradict with Hypothesis 1.

Table 11. Regression results from models investigating the impact of leverage restriction and payout requirement on book leverage.

	Model 4	Model 5	Model 6
	BLEV	BLEV	BLEV
TANG	-0.0464	-0.0455	-0.0516
	(0.0401)	(0.0409)	(0.0405)
PROFIT	0.231	0.254*	0.236
	(0.142)	(0.146)	(0.148)
LNSIZE	-0.00327	-0.00383	-0.00378
	(0.00511)	(0.00513)	(0.00512)
GROWTH	0.170***	0.165***	0.167***
	(0.0226)	(0.0240)	(0.0239)
LNCOVERAGE	-0.144***	-0.144***	-0.143***
	(0.0255)	(0.0255)	(0.0252)
NOLEVRESTRICT	0.112***		
	(0.0149)		
NOPAYOUT_NOLEVRESTRICT		0.0957***	0.0836***
		(0.0222)	(0.0230)
PAYOUT_NOLEVRESTRICT		0.116***	0.104***
		(0.0161)	(0.0171)
NOPAYOUT_LEVRESTRICT			-0.0379
			(0.0245)
CONSTANT	0.781***	0.789***	0.803***
	(0.119)	(0.119)	(0.117)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.358	0.359	0.361

The dependent variable is book leverage (BLEV) defined as book debt divided by total assets. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 12. Regression results from models investigating the impact of leverage restriction and payout requirement on market leverage.

	Model 4 MLEV	Model 5 MLEV	Model 6 MLEV
TANG	-0.0774**	-0.0775**	-0.0811**
	(0.0392)	(0.0393)	(0.0392)
PROFIT	0.186	0.184	0.173
	(0.138)	(0.139)	(0.141)
LNSIZE	-0.00426	-0.00422	-0.00419
	(0.00484)	(0.00484)	(0.00483)
GROWTH	-0.188***	-0.187***	-0.186***
	(0.0181)	(0.0192)	(0.0192)
LNCOVERAGE	-0.143***	-0.143***	-0.143***
	(0.0254)	(0.0254)	(0.0253)
NOLEVRESTRICT	0.106***		
	(0.0141)		
NOPAYOUT_NOLEVRESTRICT		0.107***	0.100***
		(0.0221)	(0.0233)
PAYOUT_NOLEVRESTRICT		0.106***	0.0981***
		(0.0151)	(0.0165)
NOPAYOUT_LEVRESTRICT			-0.0224
			(0.0239)
CONSTANT	1.179***	1.179***	1.187***
	(0.118)	(0.117)	(0.116)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.347	0.347	0.347

The dependent variable is market leverage (MLEV) defined as book debt divided by the sum of book debt and market capitalization. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 13. Regression results from models investigating the impact of leverage restriction and payout requirement on total liabilities to total assets.

	Model 4	Model 5	Model 6
	LEV	LEV	LEV
TANG	-0.0354	-0.0363	-0.0454
	(0.0420)	(0.0416)	(0.0409)
PROFIT	0.288**	0.267*	0.239
	(0.144)	(0.148)	(0.149)
LNSIZE	-0.000293	0.000227	0.000298
	(0.00507)	(0.00508)	(0.00505)
GROWTH	0.122***	0.127***	0.130***
	(0.0230)	(0.0242)	(0.0240)
LNCOVERAGE	-0.151***	-0.151***	-0.151***
	(0.0267)	(0.0268)	(0.0264)
NOLEVRESTRICT	0.0942***		
	(0.0152)		
NOPAYOUT_NOLEVRESTRICT		0.109***	0.0914***
		(0.0237)	(0.0246)
PAYOUT_NOLEVRESTRICT		0.0903***	0.0715***
		(0.0163)	(0.0173)
NOPAYOUT_LEVRESTRICT			-0.0566**
			(0.0247)
CONSTANT	0.814***	0.805***	0.825***
	(0.124)	(0.123)	(0.120)
REIT classification Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	2664	2664	2664
R-squared	0.316	0.317	0.322

The dependent variable is book leverage (LEV) defined as total liabilities divided by total assets. The coefficients of variables are prsented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Model 5 provides consistency for this view by documenting that both categorical variables distinguishing countries with leverage restriction into two groups based on whether the payout requirement exists or not, have a positive coefficient that is statistically significant at 1% level across different proxies for leverage. These results are in line with the ones of Dogan et al. (2019). Moreover, values of these coefficients are really close to each other with slight variations depending on the dependent variable suggesting that the influential power of payout requirement is extremely moderate. This interpretation is supported by the value of R-squared not increasing practically at all when moving from Model 4 to Model 5. Hence, the results from Model 5 can be regarded as contradicting with Hypothesis 1, and supporting Hypothesis 2.

The inclusion of categorical variable representing countries with no payout requirement but leverage being restricted in the model 6 does not change the conclusion derived from Model 5 as it enters with a negative yet statistically insignificant coefficient when dependent variable is either book or market leverage. When dependent variable is total liabilities to total assets, this negative coefficient becomes significant at 5% level. However, this is interpreted to be largely driven by the leverage restrictions Australian and Malaysian REITs are exposed to rather than the workings of missing payout requirement. Consistent with this notion, the R-square does not seem to react when moving from Models 4 and 5 to Model 6. The findings are fundamentally consistent with Dogan et al. (2019).

These results from the second set of models provide further consistency for the pre-presented conclusions regarding the rejection of Hypothesis 1 and acceptance of Hypothesis 2. This conclusion is robust across all models as well as specifications for leverage, and is essentially consistent with results of Dogan et al. (2019).

To conclude, the results concerning regulation variables suggest rejecting Hypothesis 1, and accepting Hypothesis 2. The notion of missing leverage restriction being more influential regulative aspect than payout requirement in determining the leverage for REITs is in line with results of Dogan et al. (2019). However, the results are unable to document the explanatory power of missing payout requirement, conflicting with the

evidence provided by Dogan et al. (2019). In addition to, previously mentioned dominant effect of Turkish REITs in stimulating the results concerning the missing payout requirement, studies differs in terms of inclusion of Malaysian REITs to categories identifying missing payout requirement, which can at least partially explain the observed differences.

While the main focus in these models is on regulation variables, few observations concerning firm-specific variables are to be noted. First, interest coverage has a highly significant negative effect on leverage across all models and specifications. This confirms that the view of trade-off theory, suggesting this relation to be positive due to high interest coverage being associated with high debt capacity and ability to utilize benefits of tax shield, is not applicable in the REIT context. In addition, other studies (see e.g. Harrison et al. 2011; Dogan et al. 2019) have provided consistent results with this.

Moreover, the effect of size is consistently insignificant across models and specifications conflicting with both trade-off and pecking order theory as well as some prior studies (see e.g. Westgaard et al. 2008; Roviolis & Feidakis 2014). On the other hand, profitability seems to have a positive effect on leverage. However, the magnitude of the effect varies, as some coefficients are insignificant while others are significant at either 5% or 10% level. From theoretical perspective, this effect is logical in REIT context as it favors the trade-off view of highly profitable firms having larger debt capacity opposed to pecking-order theory's idea of such firms being lowly levered due to retaining earnings.

Tangibility has consistently negative effect on leverage. However, it is persistently statistically significant only when market leverage is used as dependent variable. This can be at least partially be explained with market values being higher for REITs with more investments, as the ability to produce income, and thus the ability to distribute dividends is better and more predictable for such REITs. This observation conflicts with trade-off theory suggesting tangible assets to increase debt capacity. Moreover, several studies have documented a positive correlation between tangible assets and leverage (see e.g. Westgaard et al. 2008; Roviolis & Feidakis 2014; Morri & Parri 2017). However, Dogan et al. (2019) note that tangible assets for REITs consist of properties owned by the

company, and the illiquid nature of real estate investments can be considered to mitigate the increase in debt capacity as authors do not document significant results concerning asset tangibility. This suggests that in a sample consisting solely of REITs, the asset tangibility may not provide much explanatory power as a capital structure determinant. However, when a sample includes also REOCs, the effect tangible asset have in increasing debt capacity becomes visible. This is documented by studies examining both REITs and REOCs (see e.g. Westgaard et al. 2008).

Finally, growth has consistently highly significant positive effect on book-based leverage measurements i.e. book leverage and total liabilities to total assets. While this contradicts with the market timing theory's view on high M/B ratio encouraging to issue equity, it is consistent with the evidence of Feng et al. (2007) suggesting that REITs with persistently high M/B ratio tend to issue more debt than equity. However, it is noted that in models with market leverage as dependent variable, this effect remains highly significant but turns negative. However, this is considered to be an outcome of the clear relationship between variables as high market capitalization pumps up the value of growth opportunities, while simultaneously reducing the value of market leverage. While these findings are consistent with Dogan et al. (2019) regarding the effect of growth opportunities on market leverage, authors document this effect to remain negative despite the dependent variable being changed to total liabilities to total assets. Similarly, Morri and Parri (2017) document a negative correlation between growth opportunities and leverage with a book based measurement. However, their sample includes only REITs from the U.S.

To conclude, firm-specific variables can be regarded to have explanatory power over different proxies for leverage, as expected. In detail, interest coverage has persistently significant negative effect on leverage conflicting with the trade-off view. Moreover, growth has persistent positive effect on book based leverages, while this correlation seems to be negative when dependent variable is market leverage. Size seems to not have a significant effect, while profitability seems to have a positive, but not persistent, correlation with leverage. Similarly, high asset tangibility seems to imply lower market leverages.

6.2 Models investigating determinants of applied funding sources

As visible from table 14, REITs alter their book leverage rather moderately providing support for the dynamic trade-off view suggesting that each firm has a target level of leverage inside certain limits. Moreover, this observation seems to be in line with the results of Versmissen and Zietz (2017) suggesting that REITs tend to adjust their capital structures towards their target level. The change is negative in six out of nine sample years indicating that on average REITs reduce their book leverage. However, the averages of components suggest that in seven out of nine sample years, REITs issue more debt than equity. This provides some indication of REITs preferring debt over equity, which is in line with the evidence of Brown & Riddiough (2003).

Table 14. Yearly averages of change on book leverage and its components.

		$\Delta BLEV$ %		d/TA_t%		e/TA_t%		$\Delta RE/TA_t$%	
Year	Observations	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
2011	208	-0,537	8,888	4,655	10,027	5,167	10,810	0,024	4,742
2012	229	0,701	7,793	4,252	8,825	4,087	9,032	-0,536	6,372
2013	223	-0,419	9,015	5,028	8,971	4,914	9,418	0,533	4,805
2014	246	-1,168	7,994	4,939	12,384	5,543	13,070	0,565	4,565
2015	263	-0,305	9,411	6,285	10,270	5,589	10,428	1,001	4,563
2016	266	-0,434	7,174	5,007	9,374	4,581	8,888	0,860	3,644
2017	264	-0,178	5,413	5,109	9,717	4,208	9,106	1,079	4,188
2018	270	0,816	5,988	4,076	7,714	2,822	7,052	0,437	4,769
2019	248	0,409	5,002	3,860	7,311	3,434	7,051	0,017	4,467

Tables 15, 16 and 17 present the results from regressions investigating the determinants of the usage of different funding sources by REITs. Regressions include categorical variables focusing on the effect of payout requirement and taxation regulation with respect to the leverage restriction. In addition to the change in leverage, its components have been used as dependent variables. In each row, the sum of coefficients of components equals the coefficient of change in book leverage. First, the regulation variables will be analyzed followed by the notes to be made concerning firm-specific variables.

The results from Model 1 suggests that the missing payout requirement results in REITs retaining more earnings than the ones exposed to such regulation whether the legislation includes a full tax exemption or not, as both dummies have a coefficient significant at 1% level. This finding is particularly interesting given the earlier conclusion regarding the leverage restriction being the main driver in lowering leverage of REITs without payout requirement. Consequently, these results are interpreted to suggest that REITs without payout requirement do retain more earnings compared to the ones with such requirement. However, the amount of earnings not distributed seems not to be substantial enough in resulting drastically lower leverage for these REITs. Consistent with this view, the dummies do not have significant coefficients when the dependent variable is net debt issues suggesting that these REITs do not issue less debt than the ones with payout requirement. However, REITs without payout requirement but tax exemption seem not to increase their leverage as substantially as REITs exposed to such regulation as implied by highly significant negative coefficient when dependent variable is the change in leverage. This suggests that retained earnings are sufficient in reducing the need for debt to some extent. However, it is noted that this regulation category includes Australian and Malaysian REITs exposed to leverage restriction, which is possibly contributing to this effect.

The results from Model 2 provide further support for Hypothesis 3 and consistency regarding the REITs without payout requirement retaining more earnings despite the regulation concerning the leverage restriction, as both dummies have a statistically significant coefficient. In addition, in regimes without payout but leverage restricted, REITs seem to issue less both debt and equity than the ones with exposed to such regulation. Both of these coefficients are significant at 1% and 5% levels, respectively. Moreover, results imply that ability to retain earnings results in REITs altering their leverage more moderately as both dummies enter with highly significant negative coefficients when dependent variable is the change in leverage. When moving from Model 1 to Model 2, the values of R-squared seem not to have a major reaction suggesting that payout requirement is a more significant factor than the leverage restriction in determining financing sources of REITs. However, it is noted that when net debt issues

are used as dependent variable, the R-squared is slightly higher in Model 2 than in Model 1 implying that leverage restriction has explanatory power over debt issuances.

Model 3 provides further support for Hypothesis 3 and consistency regarding the positive correlation between the missing payout requirement and amount of earnings a REIT retains by documenting a highly significant coefficient for the dummy variable identifying regimes without such regulation. The comparison group in Model 3 is REITs exposed to both payout and leverage regulation. In addition, REITs with payout requirement seem to alter their level of leverage more moderately. However, the absence of payout requirement seems not to result in differing usage of other funding sources suggesting that the amount of retained earnings is fairly low. Interestingly, absence of leverage restriction seems to result in lower amount of retained earnings. This may be due to majority of regimes with leverage restriction having a payout requirement, and thus highlighting the influence of REITs having to distribute bulk of their earnings as dividends.

However, missing leverage restriction has no correlation with the usage of other funding sources despite these REITs increasing their leverage as suggested by highly significant negative coefficient when dependent variable is the change in book leverage. This implies that REITs without leverage restriction still issue more debt than equity. Additionally, the value of R-squared increases by almost 1,0% when dependent variable is change in book leverage when moving from Model 1 to Model 2 implying that the inclusion of dummy identifying REIT regimes without leverage restriction increases the explanatory power of the model. However when the dependent variable is net debt issues the value of R-squared actually decreases slightly, and thus no conclusions regarding Hypothesis 4 of positive correlation between absence of leverage restriction and debt issues cannot be made based on the results of Model 3.

To conclude the results of Models 1 – 3, the evidence provides strong support for Hypothesis 3 assuming REITs without payout requirement to retain more earnings than the ones exposed to such regulation. This is essentially in line with the view of pecking order theory suggesting that firms consider internally generated funds as a primary

funding source. However, the results do not suggest that the absence of payout requirement would result in REITs to reduce the usage of other funding sources implying that the amount of earnings a REIT can retain is insufficient in covering the ultimate financing needs. However, the absence of payout requirement seems to result in more moderate increases in book leverage as opposed to REITs with such regulation suggesting that the amount of retained earnings is sufficient to reduce the need for debt financing to some extent. This view is supported by the results not suggesting missing payout requirement to correlate positively with net equity issues. In addition, the missing leverage restriction correlates positively with the increase in book leverage. However, such regulation does not seem to result in increased debt issues making the results unable to confirm Hypothesis 4.

Table 15. Regression results from Model 1 investigating the impact of payout requirement, taxation regulation, and leverage restriction on funding sources applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
$TANG_{T-1}$	-0.0260*	-0.0215	0.00284	-0.00728
	(0.0139)	(0.0227)	(0.0181)	(0.0102)
$PROFIT_{T-1}$	-0.101*	0.160**	0.109	-0.369***
	(0.0534)	(0.0787)	(0.0714)	(0.0420)
$LNSIZE_{T-1}$	-0.00206	-0.0159***	0.0137***	0.000182
	(0.00155)	(0.00259)	(0.00206)	(0.00103)
$GROWTH_{T-1}$	0.00940	0.0428***	-0.0497***	0.0163***
	(0.00649)	(0.00924)	(0.00984)	(0.00398)
$LNCOVERAGE_{T-1}$	-0.00215	0.00714	-0.00712	-0.00217
	(0.00662)	(0.00793)	(0.00645)	(0.00618)
$BLEV_{T-1}$	-0.135***	-0.168***	-0.0117	0.0452***
	(0.0188)	(0.0184)	(0.0170)	(0.00875)
NOPAYOUT_NOTAX	-0.00954	-0.00235	0.0235**	-0.0306***
	(0.00831)	(0.0154)	(0.0101)	(0.00691)
NOPAYOUT_TAX	-0.0194***	-0.00895	0.00484	-0.0153***
	(0.00402)	(0.00688)	(0.00595)	(0.00336)
CONSTANT	0.127***	0.298***	-0.165***	-0.00597
	(0.0403)	(0.0576)	(0.0405)	(0.0283)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.109	0.172	0.0960	0.212

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 16. Regression results from Model 2 investigating the impact of payout requirement, taxation regulation, and leverage restriction on funding sources applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
$TANG_{T-1}$	-0.0293**	-0.0248	-0.00239	-0.00212
	(0.0133)	(0.0219)	(0.0178)	(0.00998)
$PROFIT_{T-1}$	-0.103*	0.148*	0.115	-0.366***
	(0.0535)	(0.0786)	(0.0722)	(0.0419)
$LNSIZE_{T-1}$	-0.00226	-0.0160***	0.0132***	0.000487
	(0.00151)	(0.00253)	(0.00197)	(0.000100)
$GROWTH_{T-1}$	0.0101	0.0466***	-0.0516***	0.0152***
	(0.00660)	(0.00933)	(0.0101)	(0.00408)
$LNCOVERAGE_{T-1}$	-0.00204	0.00642	-0.00611	-0.00235
	(0.00661)	(0.00802)	(0.00651)	(0.00624)
$BLEV_{T-1}$	-0.137***	-0.177***	-0.00935	0.0490***
	(0.0193)	(0.0186)	(0.0172)	(0.00885)
NOPAYOUT_LEVRESTRICT	-0.0233***	-0.0277***	0.0138**	-0.00943**
	(0.00521)	(0.00776)	(0.00704)	(0.00403)
NOPAYOUT_NOLEVRESTRICT	-0.0129***	0.00731	0.00506	-0.0253***
	(0.00495)	(0.00821)	(0.00710)	(0.00420)
CONSTANT	0.133***	0.306***	-0.158***	-0.0147
	(0.0398)	(0.0574)	(0.0394)	(0.0281)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.109	0.177	0.095	0.214

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 17. Regression results from Model 3 investigating the impact of payout requirement and leverage restriction on funding choices applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
$TANG_{T-1}$	-0.0213	-0.0198	-0.00194	0.000471
	(0.0133)	(0.0220)	(0.0179)	(0.00994)
$PROFIT_{T-1}$	-0.0743	0.173**	0.114	-0.362***
	(0.0534)	(0.0800)	(0.0712)	(0.0414)
$LNSIZE_{T-1}$	-0.00289*	-0.0164***	0.0132***	0.000270
	(0.00160)	(0.00259)	(0.00200)	(0.00102)
$GROWTH_{T-1}$	0.00690	0.0415***	-0.0508***	0.0162***
	(0.00647)	(0.00934)	(0.00994)	(0.00410)
$LNCOVERAGE_{T-1}$	-0.00409	0.00628	-0.00659	-0.00377
	(0.00675)	(0.00792)	(0.00642)	(0.00615)
$BLEV_{T-1}$	-0.150***	-0.175***	-0.0131	0.0387***
	(0.0203)	(0.0194)	(0.0184)	(0.00934)
NOLEVRESTRICT	0.0195***	0.00939	0.00198	0.00808***
	(0.00419)	(0.00601)	(0.00599)	(0.00324)
NOPAYOUT	-0.0151***	-0.00650	0.00899	-0.0176***
	(0.00391)	(0.00655)	(0.00552)	(0.00353)
CONSTANT	0.137***	0.304***	-0.156***	-0.0105
	(0.0409)	(0.0574)	(0.0393)	(0.0278)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.118	0.173	0.0949	0.214

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Tables 18, 19 and 20 present the results from the regressions, where change in book leverage and its components are used as dependent variables. The set of dummy variables included in these models focuses more on regulation concerning the level of applicable leverage with respect to the payout requirement.

Model 4 suggests that REITs with no restriction on leverage issue more debt than ones exposed to such regulation with a dummy identifying regimes without leverage restriction being statistically significant at 10% level providing support for Hypothesis 4. Additionally, the increase in book leverage seems to be more substantial when leverage restriction is missing compared to when it is in place suggesting that these debt issues are not balanced with simultaneous equity issues and retained earnings. Consistently with the results from Model 3, the evidence documents highly significant negative relation between the regimes without leverage restriction and amount of earnings retained by a REIT, which is interpreted to be due to majority of regimes having a payout requirement. The value of R-squared is lower for Model 4 compared to Models 1 – 3 when dependent variable is change in retained earnings highlighting the explanatory power of missing payout requirement on the amount of retained earnings.

Model 5 provides similar results concerning the debt issuances as it documents that REITs without regulation on both payout and level of leverage issue more debt than ones where the leverage is restricted. The coefficient is significant at 10% level providing additional support for Hypothesis 3. Moreover, such regulation seems to be associated with more substantial amount of retained earnings implying that Canadian and Turkish REITs retain more earnings than the reference group including several countries without payout requirement but also Australia and Malesia where such regulation is present. This is considered to be mainly driven by Turkish REITs with full tax exemption on undistributed profits. Consistently, REITs with payout requirement but no leverage restriction seem to retain less earnings, which is interpreted to be mainly driven by Australian and Malaysian REITs in the reference group. These coefficients enter with high statistical significance providing strong support for Hypothesis 3. In addition, the combination of payout requirement and absence of leverage restriction is associated with more substantial alteration in book leverage suggesting that the additional funding for these REITs is

obtained mainly through debt instruments. The value of R-squared increases clearly when the dependent variable is change in retained earnings when moving from Model 4 to Model 5 highlighting the explanatory power of payout requirement on the amount of earnings REITs retain.

Model 6 provides similar results apart from the dummy identifying regimes where neither payout nor level of leverage is regulated becoming insignificant when net debt issues is used as dependent variable. However, the added dummy for regimes with no payout requirement but leverage restriction implies that such regulation correlates negatively with net debt issues suggesting that Australian and Malaysian REITs issue less debt than REITs from other sample countries with payout requirement but no leverage restriction. Moreover, such regulation does not correlate with the amount of retained earnings providing support on the view that Australian and Malaysian REITs retain less earnings than Canadian and Turkish ones. This is interpreted to be mainly driven by Turkish REITs that are exempt from corporate taxes. In addition, regulation without payout requirement but leverage restriction is associated with funding relying more on equity issuances and less on debt financing. Both of these coefficients are highly significant.

To conclude the results from Models 4 – 6, the evidence provides further support for Hypothesis 3 suggesting that regulation with no payout requirement is associated with higher amount of retained earnings as expected by pecking order theory. In addition, the evidence suggests that the absence of leverage is associated with more substantial debt issuances providing support for Hypothesis 4. In addition, this view is supported by such regulation correlating with more considerable alterations in book leverage.

Overall across Models 1-6, the values of R-squared are persistently highest when the dependent variable is the change in retained earnings suggesting these models to have the highest explanatory power. The second highest R-squares are observed when the dependent variable is net debt issues. Moreover, the lowest values of R-squared appear when dependent variable is net equity issues suggesting that these financing decisions are influenced most by factors not included in models. This is at least partially explained by lagged book leverage entering with insignificant coefficient only in such models.

Table 18. Regression results from Model 4 investigating the impact of leverage restriction on funding sources applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
TANG	-0.0198	-0.0192	-0.00279	0.00215
	(0.0129)	(0.0219)	(0.01801)	(0.00986)
PROFIT	-0.0856	0.168**	0.121*	-0.375***
	(0.0535)	(0.0799)	(0.0710)	(0.0420)
LNSIZE	-0.00253	-0.0162***	0.0130***	0.000688
	(0.00157)	(0.00256)	(0.00198)	(0.00104)
GROWTH	0.00987	.0428***	-0.0525***	0.0196***
	(0.00623)	(0.00940)	(0.00989)	(0.00435)
LNCOVERAGE	-0.00369	0.00645	-0.00683	-0.00331
	(0.00672)	(0.00789)	(0.00643)	(0.00625)
$BLEV_{T-1}$	-0.147***	-0.174***	-0.0147	0.0418***
	(0.0203)	(0.0192)	(0.0184)	(0.00946)
NOLEVRESTRICT	0.0210***	0.0100*	0.00109	0.00983***
	(0.00422)	(0.00604)	(0.00609)	.0032829
CONSTANT	0.122***	0.297***	-0.148***	-0.0278
	(0.0398)	(0.0563)	(0.0391)	(0.0283)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.113	0.172	0.0938	0.195

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 19. Regression results from Model 5 investigating the impact of leverage restriction and payout requirement on funding sources applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
TANG	-0.0182	-0.0198	-0.00309	0.00473
	(0.0133)	(0.0219)	(0.0180)	(0.0102)
PROFIT	-0.0622	0.160**	0.117	-0.339***
	(0.0546)	(0.0807)	(0.0729)	(0.0405)
LNSIZE	-0.00302*	-0.0160***	0.0131***	-0.0000691
	(0.00162)	(0.00260)	(0.00202)	(0.00104)
GROWTH	0.00467	0.0447***	-0.0516***	0.0117***
	(0.00682)	(0.00949)	(0.0104)	(0.00410)
LNCOVERAGE	-0.00409	0.00659	-0.00676	-0.00392
	(0.00682)	(0.00789)	(0.00638)	(0.00620)
$BLEV_{T-1}$	-0.149***	-0.174***	-0.0144	0.0395***
	(0.0202)	(0.0194)	(0.0185)	(0.00931)
NOPAYOUT_NOLEVRESTRICT	0.00538	0.0156*	0.00381	-0.0141***
	(0.00523)	(0.00874)	(0.00772)	(0.00447)
PAYOUT_NOLEVRESTRICT	0.0251***	0.00854	0.000356	0.0162***
	(0.00470)	(0.00640)	(0.00658)	(0.00340)
CONSTANT	0.133***	0.294***	-0.149***	-0.0113
	(0.0409)	(0.0567)	(0.0392)	(0.0282)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.118	0.173	0.0939	0.228

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

Table 20. Regression results from Model 6 investigating the impact of leverage restriction and payout requirement on funding sources applied by REITs.

	$\Delta BLEV$	$-(d/TA)_T$	$-(e/TA)_T$	$-(\Delta RE/TA)_T$
TANG	-0.0196	-0.0248	0.000132	0.00507
	(0.0134)	(0.0220)	(0.0180)	(0.0103)
PROFIT	-0.0659	0.147*	0.125*	-0.338***
	(0.0545)	(0.0802)	(0.0737)	(0.0403)
LNSIZE	-0.00301*	-0.0160***	0.0131***	-0.0000719
	(0.00161)	(0.00259)	(0.00201)	(0.00104)
GROWTH	0.00524	0.0466***	-0.0529***	0.0115***
	(0.00687)	(0.00954)	(0.0105)	(0.00409)
LNCOVERAGE	-0.00414	0.00643	-0.00665	-0.00391
	(0.00679)	(0.00805)	(0.00651)	(0.00621)
$BLEV_{T-1}$	-0.150***	-0.177***	-0.0126	0.0397***
	(0.0203)	(0.0194)	(0.0183)	(0.00935)
NOPAYOUT_NOLEVRESTRICT	0.00291	0.00721	0.00919	-0.0135***
	(0.00547)	(0.00926)	(0.00827)	(0.00480)
PAYOUT_NOLEVRESTRICT	0.0226***	-0.000135	0.00590	0.0168***
	(0.00496)	(0.00698)	(0.00738)	(0.00383)
NOPAYOUT_LEVRESTRICT	-0.00819	-0.0278***	0.0178**	0.00184
	(0.00518)	(0.00861)	(0.00814)	(0.00434)
CONSTANT	0.136***	0.306***	-0.157***	-0.0121
	(0.0410)	(0.0576)	(0.0395)	(0.0283)
REIT classification Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	2217	2217	2217	2217
R-squared	0.119	0.177	0.0956	0.228

The dependent variables are specified as follows: 1) Change in book leverage (ΔBLEV) is calculated by subtracting the prior yer's book leverage from a given year's book leverage. 2) Net debt issues (d/TA) is defined as residual change in assets. 3) Net equity issues (e/TA) is defined as change in book equity minus change in retained earnings divided by total assets. 4) Newly retained earnings is net income minus dividends divided by total assets. To facilitate the interpretation, the components of change in leverage are entered with negative sign. The coefficients of variables are presented in the first row. Robust standard errors clustered by firm ID are presented in parentheses below the coefficients. The significance is illustrated with *, ** and *** at 10 %, 5 % and 1 % levels, respectively.

As tables 15 – 20 reveal, certain firm-specific variables included in regressions enter consistently with statistically highly significant coefficients providing further insight regarding factors determining the financing decisions of REITs. Hence, the approach of investigating funding choices without similar fixed starting point as Feng et al. (2007) who identified the IPO dates of their sample REITs, seems to be able to explain the determinants of financing decisions made by REITs.

High profitability is associated with higher amount of retained earnings. This result is highly significant across all models. While this is in line with the pecking order theory, it should be noted that it is evident that the amount of retained earnings is insufficient in covering the financing needs of a REIT, and the higher profitability simply increases the amount of earnings a REIT can retain as the distribution requirement rarely is 100%. In addition, high profitability seems to result in more debt issuances as the coefficient is statistically significant at either 5% or 10% level across models. This is somewhat in line with trade-off theory. However, it is obvious that the pursuit of benefits of tax shield is not the driving force behind this observation. Consequently, it is interpreted to be due to highly profitable REITs having better access to debt financing.

Conflicting with the trade-off view, more sizeable REITs seem to issue less both debt and equity. These results are significant at 1% level, and robust to all model specifications. This can at least partially be explained by these REITs already having a substantial amount of real estate investments making them rather inactive in the transaction market, and consequently limiting the need for additional capital.

In addition, neither asset tangibility or interest coverage seem to have an effect on funding decisions of REITs. These variables enter with insignificant coefficients across all model specifications. As noted, trade-off view suggests tangible assets to increase debt capacity, and thus result in higher leverage. However, the investigation concentrating on yearly financing decisions at least partially explains the insignificant effect asset tangibility has on leverage, as REITs with substantial amounts of real estate investments may not be that active in the transaction market, and thus are not in need for additional financing.

The main attention of the firm-specific variables is given to the growth opportunities i.e. M/B ratio. Interestingly, REITs with high M/B ratio seem to issue more both, equity and debt. This result is highly significant, and robust across all models. Essentially this is in line with Feng et al. (2007) documenting that once REITs mature, the correlation between M/B ratio and net equity issues becomes positive, as well as M/B ratio having a persistent positive relation to net debt issues. Accordingly, the evidence both supports and conflicts with the market timing theory. The results support Hypothesis 5.

As noted, the market timing theory predicts a positive correlation between M/B ratio and equity issues, and thus the results provide some evidence favoring market timing behavior. In terms of equity issues, the evidence of this thesis is in line with Boudry et al. (2010) finding high market valuations resulting in more frequent equity issues. However, the positive correlation between M/B ratio and net debt issues conflicts with the market timing theory implying that the fund raising for REITs is mainly driven by needs for capital. The result are also in line with the notion of Fama and French (2005) that companies issue equity even when debt is available, and consequently contradicting with the pecking order theory. Hence, the evidence conflicts with suggestions of studies documenting REITs to prefer debt over equity (see e.g. Brown & Riddiough 2003; Ott et al. 2005) to some extent. Moreover, high amount of growth opportunities is associated with lower amount of retained earnings. This is interpreted to be due to higher amount of dividends resulting in higher market valuations. Moreover, combining the strict payout requirement in the U.S. with these REITs having the highest M/B ratios across sample provides additional explanation for this observation.

To conclude, growth opportunities, profitability and firm size seem to have a significant effect on the decisions REITs make concerning what financing sources to utilize. In detail, more sizeable REITs seem to issue less capital in general while high profitability is associated with more substantial debt issues. M/B ratio i.e. growth opportunities seems to have the widest effect as these REITs issue more both, debt and equity. Combining this with the interpretations of size having negative and asset tangibility no correlation on capital issues due to these REITs being in a rather stable position without urgent financing

needs suggests that REITs issue capital in order to finance growth opportunities i.e. execute additional buy-side transactions.

6.3 Evaluation of results

This chapter focuses on evaluating the robustness of pre-introduced results. The evaluation includes assessments regarding the model specifications, omitted variables, and data utilized in the study.

6.3.1 Considerations related to model specifications

The first set of models investigating the determinants of capital structures utilizes three proxies for leverage: market leverage, book leverage, and total liabilities to total assets. Apart from some differences between market leverage and book based proxies, the results derived from models are largely in line with each other. This is considered to provide substantial robustness to results documenting the explanatory power of differing regulation in determining the amount of leverage and financing sources applied by REITs.

As already noted, the REIT classification done according to the type of properties a REIT invests in has a substantial effect on its capital structure (see e.g. Giambona et al. 2008; Ertugrul & Giambona 2011; Harrison et al. 2011; Dogan et al. 2019). Thus, models in this thesis utilize this approach as well. However, it should be noted that the classification available in Thomson Reuters Worldscope database is not as detailed as in some other databases. For instance, using SNL database, the sample of Dogan et al. (2019) includes 12 different categories for REITs as opposed to the corresponding amount in this thesis being 6. This may result in some of the property fixed effects not being captured in the results of this thesis.

It should be highlighted that samples differ between the models investigating capital structure determinants and determinants for financing decisions. As the firm-specific variables in the latter models are entered into regressions as lags, the sample size is reduced to compared to one used in the first set of models. Consequently, it should be noted that the estimations of the models are not done with the exact same data sets.

Moreover, it should be noted that when book leverage is decomposed, the debt component is not separated into unsecured and secured debt. This may result in substantial limitations in analysis (Feng et al. 2007).

6.3.2 Omitted variables

Due to the methodology of this thesis following closely the study of Dogan et al. (2019), the selection of firm-specifc explanatory variables was based on their models. However, potential omitted variables other studies have documented to have explanatory power over leverages of REITs include operating risk, asset turnover, and cost of debt. It is noted that inclusion of these variables could alter the results derived from the regressions used in this thesis to some extent.

A typical proxy utilized for *operating risk* is beta-based measurement (see e.g. Morri & Beretta 2008; Chikolwa 2011; Ertrugrul & Giambona 2011). In the Thomson Reuters Worldscope database, the available data on beta for REITs is relatively scarce, and the inclusion of operating risk would have hampered the size of the sample. Thus, it was decided to be excluded in order to maintain a big enough sample.

Asset turnover may be used as a variable reflecting the operating performance of properties owned by a REIT, and is typically measured as a ratio of total revenue to total assets (see e.g. Westgaard et al. 2008; Rovolis & Feidakis 2014). It was decided to be excluded as its inclusion could have resulted in presence of multicollinearity among the explanatory variables. In detail, the correlation could have been severe with the size and profitability variables.

Cost of debt is typically measured by dividing interest expenses with the amount of total debt (see e.g. Rovolis & Feidakis 2014; Morri & Artegani 2015). Consequenlty, it was excluded due to its potential correlation with interest coverage.

6.3.3 Data reliability

As already discussed in the data chapter, key statistical properties under evaluation are normality, homoscedasticity and multicollinearity. While all of the proxies for leverage applied as dependent variables in regression models can be interpreted to be fairly normally distributed according to their values for skewness and kurtosis, the Jarque-Bera test results in rejecting the hypothesis for normal distribution to each of these variables. In addition, the same hypothesis is rejected for all the firm-specific explanatory variables.

As noted the assumption of homoscedasticity being present is rejected utilizing Breusch-Pagan test. Consequently, in each regressions included in this thesis, robust standard errors are utilized, and clustered by firm ID in order to obtain the most accurate results possible. In addition, heteroscedasticity is tackled with inclusion of fixed effects controlling periods (i.e. year dummies) and fixed effects (i.e. REIT classifications) in each model.

Moreover, as the correlation matrix in table 4 illustrates, there is no severe multicollinearity between explanatory variables used in the regression models. Thus, it can be concluded that the data utilized in this thesis is fairly reliable, and the necessary adjustments due to the statistical properties of the data are utilized in the regressions.

7 Conclusions

The typical approach for existing research concerning capital structures of REITs is to regress firm- and/or country-specific variables against some proxy for leverage with a sample of REITs from a certain country or geographical area. Utilizing this method, studies have documented differing results concerning the capital structure determinants of REITs. An offered explanation for these inconsistencies is differing regulation across REIT regimes.

In the recent study of Dogan et al. (2019), the authors investigate the impact of differing regulation on capital structures of REITs from 12 different countries. Their study documents that regulative aspects are significant in determining the capital structures of REITs. The first section of the empirical part of this thesis attempts to provide robustness for these results with a slightly increased sample of REITs from 18 different countries. In addition, as Dogan et al. (2019) focus only on how differing regulation affects the level of applied leverage, the second section of the empirical part of this thesis extends this investigation to cover how legislative aspects influence the financing sources applied by REITs. This examination is conducted with the methodology introduced by Baker & Wurgler (2002), and utilized by Feng et al. (2007) in REIT context with a sample of REITs from the U.S. In detail, this approach allows the examination of determinants driving the raising of capital through net debt issues, net equity issues, and retained earnings.

Following Dogan et al. (2019), the investigation regarding regulative differences focuses on legislation concerning payout requirement and leverage restriction with respect to differing taxation regulation. The results of this thesis suggest that leverage restriction is a more crucial factor in determining the leverage of a REIT than the payout requirement. In detail, the absence of leverage restriction is associated with higher leverage. This observation holds through all proxies for leverage used in this thesis, and is essentially in line with the findings of Dogan et al. (2019). However, the evidence of this thesis conflicts with the one of Dogan et al. (2019) in documenting the absence of payout requirement to be associated with lower leverage.

While the payout requirement was not documented to have a significant effect on the leverage, the models investigating the determinants of funding sources document its influential power. In detail, REITs without payout requirement seem to retain more earnings compared to ones exposed to such regulation. This observation is persistently significant across all model specifications, and implies that REITs prefer to utilize internal funds. However, the results of this thesis do not suggest that the absence of payout requirement would result in REITs to reduce the usage of other funding sources implying that the amount of earnings a REIT can retain is insufficient in covering the ultimate financing needs. However, the absence of payout requirement seems to result in more moderate increases in book leverage, as opposed to REITs with this regulation, suggesting that the amount of retained earnings is sufficient to reduce the need for debt financing to some extent. In addition, the evidence viewed in this thesis implies that the absence of leverage restriction is associated with more substantial debt issuances providing consistency for the view of first set of models highlighting the significance of such regulation in determining the capital structure of a REIT.

In addition, decisions concerning financing sources seem to be persistently affected by the M/B ratio of a REIT, which is typically used as a proxy for growth opportunities in capital structure literature. In detail, REITs with high M/B ratio seem to issue more both equity and debt suggesting that REITs issue capital mainly in order to finance growth opportunities. Moreover, such REITs seem to retain less earnings suggesting that market values for REITs are driven by the expected amount of dividends. This is in line with the view that the main incentive when investing in real estate related assets is the stable income producing ability associated with real properties.

To summarize, this thesis sheds light on how differing regulation across REIT regimes affects the capital structure and funding sources applied by REITs. In addition, the evidence suggests that the need to finance growth opportunities is a substantial determinant driving the fundraising of a REIT. While the capital structure theories are utilized as a framework in analysis conducted in this thesis, no theory seems to have a superior explanatory power over capital structures and financing decisions of REITs. This

is the expected outcome as the regulation REITs are exposed to violates the very fundamental principles of pecking-order and trade-off theories.

The literature focusing on the effects of differing regulation across REIT regimes is still relatively scarce. However, this thesis, as well as prior studies such as the one of Dogan et al. (2019), highlight that these matters are in an essential role in order to derive general conclusions regarding REITs. As the REIT structure continues its global expansion and relatively new REIT regimes mature, there will be more available data for similar studies, and the literature in this area is expected to grow in the future. Moreover, the effect of regulative aspects could be studied in the context of financial performance of REITs in order to provide beneficial information for investors.

However, in addition to illustrating the determinants of capital structure and financing decision-making of REITs, the results of this thesis also provide some crucial implications for investors. First, it is evident that the absence of payout requirement results in REITs to retain more earnings, and consequently distributing smaller share of their profits as dividends than REITs exposed to such regulation. Given that the typical target when investing in real estate related assets is to benefit from a stable income stream, this may make such REIT regimes less attractive from the perspective of an investor. This is highlighted by the view of that the amount of expected dividends is a crucial factor in driving the market value of a REIT. However, as noted, the absence of payout requirement is not associated with lesser usage of other funding sources implying that the amount of retained earnings is still fairly low, and consequently may limit this effect to some extent. Still, the missing payout requirement may be a concern for investors as the evidence of Brounen, Ling and Prado (2013) suggests that payout requirement reduces systematic risk and increases the abnormal returns of REITs.

Secondly, whether the regulation of a REIT regime includes a leverage restriction or not provides important implications for investors. The empirical research concerning the relationship between leverage and financial performance of REITs is relatively scarce, and focuses mainly on the U.S. However, Giacomini et al. (2017) investigate U.S. REITs over period 1990 – 2012 with a focus on this relationship. In detail, authors document

consistently with prior studies (see e.g. Chen & Roulac 2007) that REITs with high leverage compared to the sample mean are associated with worse financial performance. However, when the leverage of a REIT is compared to its predicted leverage target, the evidence suggest that higher leverage compared to the target results in improved financial performance. Authors state that results without considerations to target leverage derived from the debt capacity of a REIT lead to inaccurate conclusions. Combining this finding with the absence of leverage restriction being associated with higher leverage suggests that REITs operating without such restrictions have an ability to benefit from the performance driving effects related to higher leverage. This implies that REIT regimes without leverage restriction may be more attractive from the perspective of an investor. However, it should be noted that highly levered REITs are more vulnerable during economic downturns as studies show (see e.g. Giacomini et al. 2015; Sun, Titman & Twite 2015) that the share prices of such REITs dropped more drastically during the financial crisis compared to less levered REITs. This in return, may implicate that REIT regimes without leverage restriction are less attractive from the perspective of a more sensitive investor.

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