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Debt diversification in the real estate companies

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Content table

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Research Paper Summary

1. WHY IS THIS AN AREA OF INTEREST TO EPRA MEMBERS?

European lending markets and the debt structures of listed real estate companies are changing.

2. WHAT WAS THE FOCUS OF YOUR RESEARCH?

We analyse how debt diversification affects the performance of European listed real estate companies.

3. DESCRIBE KEY CONCLUSIONS FOR MARKET PRACTITIONERS.

Diversified debt structure provides benefits to listed real estate companies through lower costs of debt and independency from single lending source.

RESEARCH SUMMARY

In this paper, we analyse how debt diversification, that is the diversification of the company's debt into several sources and instruments of debt, affects the performance of European listed real estate companies. More specifically, we analyse how debt diversification affects the company's cost of debt, investment rate as well as its performance on stock market. We look at these effects in presence of credit supply constraints.

We construct a debt diversification measure by normalizing the Herfindahl-Hirschman Index using the debt type data. Our data indicates a strong reliance on private borrowing. Although, this trend is decreasing.

Our results suggest that debt diversification is associated with lower cost of debt for REITs. The finding is aligned with our hypothesis that REITs benefit more from debt diversification than REOCs due to their regulatory framework that makes them more reliant on external financing. In addition, we test the effect of debt diversification in presence of credit supply constraints. We find that having a diversified debt structure during tight credit supply periods is associated with lower cost of debt. That is, companies with diversified structures have the opportunity to obtain cheaper debt in presence of credit supply constraints.

A second important channel through which debt diversification can affect company performance is investment. Listed real estate companies, and especially REITs, are dependent on debt financing in their acquisitions, and thus having a diversified debt structure could lead to competitive advantages if the companies are able to seize opportunities when their competitors face credit constraints. Our results support this hypothesis. In the presence of credit constraints, companies with more diversified debt structure have significantly higher investment ratios.

We then turn to analysing the effect of debt diversification on the performance of the stock of the company. We find only weak evidence of positive association between debt diversification and higher total returns on real estate companies stocks. This indicates that the benefits obtained through lower cost of debt and higher growth prospects do not necessarily translate into higher stock returns.

These results are interesting from a company management point of view since diversified debt structure provides benefits to listed real estate companies through lower costs of debt and an independency from single lending source.

From an investor perspective, investing in real estate companies with diversified debt structure is advantageous since they have better abilities to seize investment opportunities particularly in presence of tight credit supply.

1 Executive summary

European listed real estate investment companies have traditionally relied on bank lending, whereas the use of alternative funding sources has remained modest. After the global financial crisis (GFC), European banks faced stricter regulation on real estate lending, leading to lower availability, shorter debt maturities and higher debt margins in bank lending. This raises the question, whether companies would benefit from more diversified lending structures.

In our paper, we analyse how debt diversification, that is the diversification of the company's debt into several sources and instruments of debt, affects the performance of European listed real estate companies. More specifically, we analyse how debt diversification affects the company's cost of debt, investment rate as well as its performance on stock market. We look at these effects in presence of credit supply constraints.

Our sample includes the European listed real estate companies included in the EPRA Developed Europe Index on 31.3.2017. We collect the information on debt structures manually from the annual reports of the companies. This enables us to distinguish the following debt types in our analysis: private borrowing (bank loans, other bilateral loans, syndicated loans and private placement bonds), capital market borrowing (senior unsecured and secured bonds), convertible debt, money market instruments as well as obligations under capital leases. We construct a debt diversification measure by normalizing the Herfindahl-Hirschman Index using the debt type data. Finally, we combine the debt structure data with financial data on the companies and their stock market performance.

Our data indicates a strong reliance on private borrowing. Although, this trend is decreasing. On average, the share of private borrowing has declined from 86% in 2001 to 70% in 2016. Meanwhile the share of capital market borrowing has increased from 10% to 22%. The shares of convertible debt, money market instruments as well as obligations under capital leases have remained rather stable, at below 5% level.

After the early 2000s recession as well as the GFC, there has been a notable trend for increasing debt diversification, due to an increase in public borrowings (both bonds and money market instruments). The variation in debt diversification between companies is, however, large. Almost one third of our sample is specialised in one debt source, typically private borrowing. Real Estate Investment Trusts (REITs), which are more dependent on external financing than Real Estate Operating Companies (REOCs), tend to have a more diversified debt structure.

Our results suggest that debt diversification is associated with lower cost of debt for REITs. One standard deviation increase in the debt diversification level is associated with approximately 0.3% decrease in the cost of debt. The finding is aligned with our hypothesis that REITs benefit more from debt diversification than REOCs due to their regulatory framework that makes them more reliant on external financing. We continue by testing the effect of debt diversification in presence of credit supply constraints. Our results suggest that having a diversified debt structure during tight credit supply periods is associated with lower cost of debt. That is, companies with diversified structures have the opportunity to obtain cheaper debt in presence of credit supply constraints. In fact, one standard deviation increase in the debt diversification is associated with a decrease in cost of debt that ranges from 0.11% to 0.20%.

A second important channel through which debt diversification can affect company performance is investment. Listed real estate companies, and especially REITs, are dependent on debt financing in their acquisitions, and thus having a diversified debt structure could lead to competitive advantages if the companies are able to seize opportunities when their competitors face credit constraints. Our results support this hypothesis. In the presence of credit constraints, companies with more diversified debt structure have significantly higher investment ratios. The effect is also economically significant; one standard deviation increase in debt diversification measure is associated with 3% increase in investment.

We then turn to analysing the effect of debt diversification on the performance of the stock of the company. We find only weak evidence of positive association between debt diversification and higher total returns on real estate companies stocks. This indicates that the benefits obtained through lower cost of debt and higher growth prospects do not necessarily translate into higher stock returns.

2 Introduction

Despite the fact that traditional bank lenders continue to be a dominant component of the European lending landscape, the role of the bond market in firm financing has grown rapidly since the financial crisis. This raises the question of whether the European lending landscape is evolving toward the U.S. model characterised by diversity and non-dominance of a unique lending source. The availability of bond and bank financing should affect a firm's external financing and investment decisions (Kashyap et al., 1993; Kashyap and Stein, 2000), and companies with a more diversified funding base might have competitive advantage over more focused companies. This matter is even more relevant in this period of increasing and changing banking regulation, affecting the availability and terms of bank lending for public real estate investment companies.

Following the tradition in general finance literature, research on public real estate companies' capital structure has focused on testing whether established capital structure theories (i.e. the trade-off theory, the pecking order theory, and the market timing theory) can explain the observed capital structures and their variation. Despite the abundance of this literature (e.g. Brown and Riddiough, 2003; Feng et al., 2007; Giambona et al., 2008; Morri and Beretta 2008; Ooi et al., 2010; Harrison et al., 2011a; Niskanen and Falkenbach, 2013; and Alcock et al., 2014;), the results related to the role of the different capital structure theories in real estate sector are mixed.

Recent capital structure literature based on industrial firms suggests that in addition to the level of leverage, the type of debt is also of significance. Rauh and Sufi (2010) demonstrate that traditional capital structure studies that ignore debt heterogeneity miss substantial capital structure variation. Further, Colla et al. (2013) find that most firms borrow predominantly with one type of debt, thus showing a remarkable tendency towards specialisation, but also that the degree of specialisation depends on the characteristics of the company, such as size, age and profitability. For the U.S. REITs, the type of debt and its effects have attracted only limited interest. Ghosh et al (2011), Sun et al. (2015), Alcock et al. (2014) and Pavlov et al. (2016) investigate the role and effects of debt maturities on REITs, whereas e.g. Hardin and Hill (2011) and Harrison et al (2011b) look at the use of credit lines. However, the effect of debt diversification on levels of leverage and on the company cost of debt, growth and overall performance have not yet been identified.

Our analysis proceeds as follows. In the first stage of the project, we construct a measure of debt diversification for the European real estate companies. On this, we rely on data collected manually from companies' annual reports. Our sample consists of 102 companies included in the EPRA Developed Europe Index on 31.3.2017. We exclude firms with less than three consecutive years of observations, which reduces our sample to 94 companies.

Second, we analyse the level and determinants of debt diversification in European public real estate companies and investigate whether there are differences in debt diversification between Real Estate Investment Trusts (REITs) and Real Estate Operating Companies (REOCs). We also evaluate, whether debt diversification affects the overall debt levels in the company.

In the third stage, we turn to evaluating how debt diversification affects the performance of the companies. There are two channels through which debt diversification could affect the performance of public real estate companies: the cost of debt financing and the flexibility to invest. Santos and Winton (2008) show that industrial companies with high reliance on bank loans acquire debt at a higher price than companies with access to the public debt market. They also show that the discrepancy in debt price between bank-reliant and diversified companies increases during recessions. Second, debt diversification resulting in higher debt flexibility provides less dependency on few debt sources, and enhances growth opportunities through the business cycle. Finally, we test whether debt diversification affects returns on company stocks.

The remainder of the report is structured as follows. In the next section we develop our hypotheses related to the effects of debt diversification in the context of listed real estate companies. In the following sections we present the data and the methodology followed by a discussion of our results. Finally, we present our concluding remarks in the last section.

3 Hypotheses on the effects of debt diversification

The literature that focuses on particular debt types employed by real estate companies is limited: even when some of the debt types are studied, overall debt heterogeneity is not a focal point. Capital structure literature in general usually treats debt as uniform, analyses a single debt type, or incorporates a debt type as an explanatory variable.

Literature on industrial firms (e.g. Santos and Winton, 2008) generally suggest that companies with high reliance on bank loans acquire debt at a higher price than companies with access to the public debt market and that this difference is attributable to the informational "hold up" effect. They also show that the discrepancy in debt price between bank-reliant and debt-diversified companies increases during recessions. Hale and Santos (2009) show that industrial firms obtain a lower rate on their bank borrowings after obtaining a debt rating and breaking the bank lender's monopoly control.

To our knowledge only Allen and Letdin (2015) analyse the effect of debt diversification in the context of real estate companies. Using a sample of U.S. REITs they find that, contrary to the evidence on industrial firms, obtaining a debt rating and access to public debt markets increases the overall financing costs of REITs. They explain the finding by the moral hazard engendered by public debt issuance and the fact that REITs that seek funding from public debt markets face stricter leverage restrictions. Allen and Ledtlin (2015) measure debt diversification through a dummy variable indicating if the company has a public debt rating or has issued bonds.

The contradicting findings between general financial literature and the recent evidence in REITs indicates that debt diversification could have either an increasing or decreasing effect on the cost of debt. Our first hypothesis addresses the question of whether debt diversification is associated with higher or lower cost of debt.

Hypothesis 1: Debt diversification has significant (different from zero) effect on the cost of debt. The effect is more pronounced for REITs than REOCs and in presence of credit supply constraints.

Investments and growth of real estate companies depend on their ability to seize opportunities that arise in the competitive market. Real estate investments have a large unit size and are typically partially financed through debt. In this context, the availability of debt financing has great significance, and debt diversification could channel into higher level of investment if it provides the firms with a better or more stable access to debt. In this context, Hardin and Hill (2011) analyse the availability of credit lines and their use under normal conditions as well as during the financial crisis. They find that lines of credit substantially increase liquidity of REITs over the examined period from 1999 to 2009. Total lines available could support 17% of net REIT assets. However, on average REITs use less than 40% of the available credit lines even at the peak of the financial crisis. They find a positive and significant relation between credit line use and real estate investment.

In line with their findings and the dependence of real estate companies on external financing, we formulate our second hypothesis.

Hypothesis 2: Debt diversification increases debt flexibility and thus, firms with more diversified debt structure have higher rates of investment. The effect is more pronounced for REITs than REOCs and in presence of credit supply constraints.

If hypotheses 1 and 2 are accurate, we expect the advantages from the lower cost of debt and the increased ability to seize the investment opportunities to translate into higher returns on companies' stocks. Previous research on the US companies has shown that returns are associated with debt structure. In particular, Allen and Ledtlin (2015) address the effects of access to public debt markets on REIT returns. Their findings indicate that the higher the proportion of mortgages in the REIT debt structure, the higher the returns, except during the Global Financial Crisis. Harrison, Luchtenberg, and Seiler (2011) examine the relation between usage of credit lines and profitability of US REITs. They suggest that REITs widely use lines of credits to facilitate the acquisition activities. Their findings support a positive effect of increased liquidity on the performance of the firms, as well as positive effect on borrowers' wealth after bank loan announcements.

Based on the previous literature and our expectations regarding the advantages of debt diversification, We formulate our third hypothesis 3 as follows:

Hypothesis 3: The more diversified the debt structure of the company, the higher the returns on its stock.

4 Data

Our sample is an unbalanced panel of the 102 European listed real estate companies included in the EPRA Developed Europe Index on 31.3.2017. We use yearly data from 2001 to 2016. We drop firm-year observations with less than three consecutive years of observations. As a result, our sample includes 94 companies with corresponding 1055 firm-year observations of debt constituents. Of these, 52 are REITs and 42 are REOCs. However, not all of these observations have the full set of variables that are required by the models, leading to a decrease of the sample down to 762 firm-year observations for some specifications.

Our data comprises of fundamental financial data on public real estate companies and their performance as well as of data on debt structure. The financial statements data are retrieved from Bureau van Dijk's Amadeus and SNL financial databases. Returns data are retrieved from Datastream Thomson Reuters database. Table 1 presents the descriptive statistics of the fundamental data used in the analysis. To avoid the effect of outliers on our results, we winsorize our data at the 99.7%.

We measure the availability of bank credit with ECB Bank Lending Survey (BLS). BLS provides information on supply and demand conditions in the euro area credit markets and the lending policies of euro area banks. The survey is addressed to senior loan officers of euro area banks (see e.g. Köhler-Ulbrich et al. 2016). In the construction of our measure for constraints in credit supply, we employ the survey results on credit standards on loans to enterprises. The tightening or easing of the standards is influenced by some key factors, such as banks' cost of funds, balance sheet constraints, risk perceptions, competition, and banks' risk tolerance (Köhler-Ulbrich et al. 2016). Constrained lending environment dummy equals one if annual average values of BLS net credit standards tightening (easing) for enterprises of Euro area is higher than historical average (from 2003 to 2016).

The data on debt structure is collected manually from the annual reports of the companies, and augmented by SNL debt data, where possible. We are able to distinguish the following debt types in our analysis: private borrowing (including bank loans, other bilateral loans, syndicated loans and private placement bonds), capital market borrowing (including senior unsecured and secured bonds), convertible debt, money market instruments as well as obligations under capital leases. The debt types are mutually exclusive. Unfortunately, the data does not allow us to distinguish debt diversification by debt maturity.

Table 2 reports the mean and percentile values of the employed variables by sample companies' debt types, as a proportion of total debt. Most of the debt is comprised of private borrowing, with a mean value of over 79%. The second most employed source of debt is capital market borrowing with a mean value of 13.7% followed by convertible debt, money market instruments, and financial lease, whose mean shares are 3%, 2.5% and 1.6%, respectively.

Figure 1 presents the development of the mean use of different types of debt over time. The private borrowing reaches a maximum value of 85% in 2001 and 2008, coinciding with economic recessions, while capital market borrowings are at their respective minimum of approximately 9%. After both recessions, there is a notable trend for increasing debt diversification, due to an increase in public borrowings (both bonds and money market instruments).

Following Colla et al. (2013), we construct our debt specialisation measure (DSM) by normalizing the Herfindahl-Hirschman Index using the debt structure data. First, we calculate

$$HHI_{i,t} = (\frac{PB_{i,t}}{TD_{i,t}})^2 + (\frac{CMB_{i,t}}{TD_{i,t}})^2 + (\frac{CD_{i,t}}{TD_{i,t}})^2 + (\frac{MMI_{i,t}}{TD_{i,t}})^2 + (\frac{CL_{i,t}}{TD_{i,t}})^2$$

where $HHI_{i,t}$ is the sum of the squared debt type ratios for firm i in year t; PB, CMB, CD, MMI, and CL refer to private borrowing, capital market borrowing, convertible debt, money market instruments and obligations under capital leases, respectively. TD refers to total debt. Next, we obtain

$$DSM_{i,t} = \frac{HHI_{i,t} - 1/n}{1 - 1/n}$$

We construct three variants of the debt specialisation measure. The first (DSM1) includes all 5 debt types we can measure. The second measure (DSM2) includes private borrowing, capital market borrowing and convertible debt (3 debt types). The third measure (DSM3) includes only private borrowing and capital market borrowing. n equals five, three, and two in calculation of DSM1, DSM2, and DSM3, respectively. If a firm uses one debt type, the value of DSM equals one. In contrast, if a firm simultaneously uses all debt types that we consider in equal proportion, DSM equals zero. In our models we treat the degree of debt diversification as opposite to the degree of debt specialisation, i.e. we interpret the models according to the context (i.e. whether we talk about diversification or specialisation), while using only DSM to avoid confusion.

The descriptive statistics for the three debt specialisation measures are presented in Table 3. The grand means of all measures are approximately 75%, reinforcing the observation that companies tend to rely on one main source of funding. DSM1 has a value of 1 in 345 observations out of 1055. This indicates that almost one third of our sample is specialised in one debt source. The corresponding number of observations for DSM2 and DSM3 are 547 and 662, respectively. However, there are also companies with significant degree of debt diversification, which is evident from the minimum and 10th percentile values of the DSMs. Figure 2 presents the development of debt diversification over time. As can be observed, the debt diversification has been increasing after the financial crisis. The increase is stronger when measured through DSM3, which is explained by the fact that private borrowing and capital market borrowing represent the large proportion of all lending. Convertible debt, obligations under capital leases and money market instruments do not typically represent large shares of the total debt, and thus the level of specialisation remains higher when measured as a normalized Herfindahl-Hirschman Index. Table 4 presents the correlation matrix of the variables we use in our analysis.

5 Methodology

DETERMINANTS OF DEBT DIVERSIFICATION

We start the analysis of the determinants of debt diversification, by estimating the following equation:

$$DSM_{i,t} = \alpha + \beta X_{i,t}\text{-}1 + v_t + \eta_i + \varepsilon_{i,t}$$

where $DSM_{i,t}$ is the debt specialisation measure. $X_{i,t-1}$ is a vector of one year lagged time-varying capital structure determinants that include firm size (log of total assets), market to book ratio (ratio of the sum of book value of total liabilities and market capitalisation to total assets), tangibility (ratio of tangible assets to total fixed assets), asset turnover ratio (ratio of recurring EBITDA to total assets), coverage ratio (ratio of recurring EBITDA to interest expense) and leverage ratio (ratio of total debt to total assets). The use of lagged variables is consistent with the previous literature as a way to reduce endogeneity (see for example Johnson, 2003; Datta, Iskandar-Datta, and Raman, 2005; and Billett, King, and Mauer 2007) In addition, we include time-invariant dummies as follows: dummy if the company has a REIT status, dummies for countries of incorporation and dummies for the property type. v_t are year fixed effects, η_i are firm fixed effects and $\varepsilon_{i,t}$ is the error term. We estimate the regression using panel fixed effects regressions. In the fixed effects regression, time-invariant variables will be absorbed by the company fixed effects η_i.

EFFECT OF DEBT DIVERSIFICATION ON LEVERAGE

In order to analyse the effect of debt diversification on the company's leverage, we estimate the following equation:

$$Leverage_{i,t} = \alpha + \beta_1 DSM_{i,t-1} + \beta X_{i,t-1} + v_t + \eta_i + \varepsilon_{i,t}$$

where $Leverage_{i,t}$ is company i's book or market leverage ratio in year t, depending on the specification. $DSM_{i,t-1}$ is the debt specialisation measure. $X_{i,t-1}$ is a vector of one year lagged time-varying capital structure determinants that include firm size (log of total assets), market to book ratio (ratio of the sum of book value of total liabilities and market capitalisation to total assets), tangibility (ratio of tangible assets to total fixed assets), earnings to assets (ratio of recurring EBITDA to total assets), coverage ratio (ratio of recurring EBITDA to interest expense). v_t are year fixed effects, η_i are firm fixed effects and $\varepsilon_{i,t}$ is the error term. We estimate the model using pooled cross-section and panel fixed effects regressions. In the fixed effects regression, time-invariant variables will be absorbed by the company fixed effects η_i.

EFFECT OF DEBT DIVERSIFICATION ON COST OF DEBT AND INVESTMENT

For the company cost of debt we estimate

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 DSM_{i,t-1} + \beta_2 REIT \times DSM_{i,t-1} + \beta X_{i,t-1} + v_t + \eta_i + \varepsilon_{i,t}$$

where Cost of $debt_{i,t}$ is the ratio of company i's interest expense to total debt in year t. $DSM_{i,t-1}$ is the debt specialisation measure. To analyse the role of REIT structure, we include the interaction term of DSMs with REIT dummy REIT × $DSM_{i,t-1}$. The main effect of REIT is absorbed in the fixed effects. $X_{i,t-1}$ is a vector

of one year lagged time-varying control variables that include firm size (log of total assets), market to book ratio (ratio of the sum of book value of total liabilities and market capitalisation to total assets), tangibility (ratio of tangible assets to total fixed assets), earnings to assets (ratio of recurring EBITDA to total assets), coverage ratio (ratio of recurring EBITDA to interest expense) and leverage ratio (ratio of total debt to total assets). V_t are year fixed effects, η_i are firm fixed effects and $\varepsilon_{i,t}$ is the error term. We estimate the regression using panel fixed effects regressions.

For the effect of constrained credit environment we estimate

$$Cost\ of\ debt_{i,t} = \alpha + \beta_1 DSM_{i,t-1} + \beta_2 Tight_t + \beta_3 Tight_t \times DSM_{i,t}\text{-}1 + \beta X_{i,t-1} + v_t + \eta_i + \varepsilon_{i,t}.$$

where $Tight_t$ is a dummy that takes value of 1 in years of constrained lending environment, determined as described in the data section.

EFFECT OF DEBT DIVERSIFICATION ON INVESTMENT

For the investment ratio we estimate

$$I\_R_{i,t} = \alpha + \beta_1 DSM_{i,t-1} + \beta_2 REIT \times DSM_{i,t-1} + \beta X_{i,t-1} + v_t + \eta_i + \varepsilon_{i,t}$$

where $I\_R_{i,t}$ is the ratio of company i's change in the gross value of investment properties in year t to the value of the gross value of investment properties in year t-1. $DSM_{i,t-1}$ is the debt specialisation measure and REIT × $DSM_{i,t-1}$ is the interaction of REIT dummy and the debt specialisation measure. $X_{i,t-1}$ is a vector of one year lagged time-varying control variables that include firm size (log of total assets), Tobin's Q ratio (ratio of the sum of market value of equity and book value of liabilities to the book value of total assets), earnings to investments ratio (ratio of recurring EBITDA to the gross value of investment properties), and leverage ratio (ratio of total debt to total assets). V_t are year fixed effects, ηi are firm fixed effects and $\varepsilon_{i,t}$ is the error term. We estimate the regression using panel fixed effects regressions.

For the effect of constrained credit environment we estimate:

$$I\_R_{i,t,t} = \alpha + \beta 1 DSM_{i,t-1} + \beta_2 Tight_t + \beta_3 Tight_t \times DSM_{I,t-1} + \beta X_{i,t-1} + v_t + \eta_i + \varepsilon_{i,t}$$

where $Tight_t$ is a dummy that takes value of 1 in years of constrained lending environment as described in the data section.

PERFORMANCE

Following Chui et al. (2003), we estimate the following equation to analyse the effect of debt diversification on firm returns:

$$R_{i,mt:mt+5} = \alpha + \beta_1 DSM_{i,t-1} + \beta_2 R_{i,mt-2:mt-7} + \beta_3 lnSZ_{i,tm} + \beta_4 lnBeMe_{i,t-1} + \beta_5 EP_{i,t-1} + \beta_6 lnTo_{i,mt-2:mt-7} + \varepsilon_{i,mt}$$

where $R_{i,mt:mt+5}$ is the cumulative excess return (total return over one-month JP Morgan Euro Money Market Fund return) on the ith firm from month m to month m+5 in year t. $R_{i,mt-2:mt-7}$ is the cumulative past six-month excess returns from month m-7 to month m-2 in year t. Similar to the previous studies (e.g. Fama and French 1992, Chui et al. 2003), we skip month m-1 to eliminate the bid-ask bounce effect. $lnSZ_{i,tm}$ is a logarithm of market capitalisation in month m of year t; $lnBeMe_{i,t-1}$ is a logarithm of ith company's total equity to market capitlisation ratio measured at the end of the year t-1; $EP_{i,t-1}$ is the ratio of recurring EBITDA to market capitalisation at the end of year t-1; $lnTo_{i,mt-2:mt-7}$ is the average turnover ratio of companies' shares over months m-2 to m-7 in year t; $\varepsilon_{i,t}$ is the error term, and α is a constant. Therefore, in line with previous studies (Fama and French 1992, Chui et al. 2003), we are matching accounting data in year t-1 with the returns for July of year t to June of year t+1 (rolling 6-month cumulative return, in total twelve 6-month cumulative returns for each year). The gap between the end of t-1 and July of t is made to ensure that the annual reports are released and market is adjusted to the new information. $lnBeMe_{i,t-1}$, $EP_{i,t-1}$, $DSM_{i,t-1}$ are measured annually at the end of the year, while $LnSZ_{i,tm}$, $R_{i,mt:mt+5}$ and $R_{i,mt-2:mt-7}$ are calculated using monthly data. The use of overlapping six-month trailing returns allows to increase the number of observations, and, as a result, the power of the tests. However, this naturally induces serial correlation, which we address by using Newey and West (1987) correction for serial correlation and heteroscedasticity.

To estimate the equation, we use Fama and MacBeth (1973) two-step procedure, which is widely employed for analysis of stock returns. The procedure consists of the following steps: first, we estimate individual time-series regressions for every company of the sample to get estimates of betas, or sensitivities of returns to the aforementioned characteristics. In the second step, we conduct cross-sectional regressions of returns on corresponding sensitivities for every month of the sample. Once new coefficients are calculated, we report averages of these coefficients, and adjust for serial correlation and heteroscedasticity in the t-ratios of these averages.

6 Results

DETERMINANTS OF DEBT DIVERSIFICATION

The results of our regression on determinants of debt diversification are presented in Table 5. The results based on a pooled cross-section regression (columns 1-3) show that REITs tend to have a more diversified debt structure than REOCs. The results suggest that REITs diversify from 9% to almost 15% more than non REIT companies depending on the DSM used. As can be expected, larger companies have more diversified debt structures. Also, in the panel regression, we observe that companies with higher tangibility have higher levels of debt diversification.

DEBT DIVERSIFICATION AND LEVERAGE

We investigate the relationship between debt diversification and leverage. Our results in Table 6 suggest that there is no significant effect of debt diversification neither on book leverage nor on market leverage.

DEBT DIVERSIFICATION AND COST OF DEBT

The results on the effects of debt diversification on company cost of debt are presented in Tables 7 and 8. Since we are interested in looking at the effect of debt diversification on cost of capital for REOCs and REITs, we interact our debt diversification measure with REIT status. The results are presented in table 7. The main effect of the REIT dummy is absorbed in the fixed effects and is thus not shown in the table. The coefficient of the interaction term is positive and significant for all measures of debt diversification, suggesting that companies operating under a REIT status and with a diversified debt structure have lower cost of debt than their diversified counterparts. One standard deviation increase in the debt diversification level is associated with approximately 0.3% decrease in the cost of debt. The finding is aligned with our hypothesis that REITs – that by structure are more dependent on debt funding than REOCs – benefit from debt diversification more than REOCs.

We test the effect of debt diversification in presence of credit supply constraints. We find that the effect of debt diversification alone – without taking into account those constraints – is not significant. However the interaction between credit supply constraint and debt diversification measure is positive and significant. The results suggest that having a less diversified debt structure during tight credit supply periods is associated with higher cost of debt. This translates into the opportunity of getting cheaper debt in presence of credit supply constraints. In fact, one standard deviation increase in the debt diversification measure is associated with a decrease in cost of debt that ranges from 0.11% to 0.20%. The effect is more pronounced when using DSM3, which includes only private and capital market borrowing.

DEBT DIVERSIFICATION AND INVESTMENT

We then turn to analysing whether debt diversification affects company investment. As for cost of capital, we present the interactions for the three DSMs and REIT dummy in Table 9 and the interaction of DSMs with the credit supply measure in Table 10.

As in the cost of debt equation, none of the coefficients for the main effects of the debt diversification measure are significant. Also, the interaction terms for the three DSMs and REIT dummy in Table 9 are not significant, suggesting that the REIT-status is not a factor that channels the effect of debt diversification on investment.

In Table 10 we then interact the debt diversification measure with a proxy of the supply constraints in bank lending markets. The main effect of the supply constraints is negative and significant in the different specification cases, suggesting that on average the investment ratio would decrease by 18% in presence of credit supply constraints. The main effect of debt diversification is not statistically significant alone. However, when interacting debt diversification with the credit market conditions, the effect becomes significant with DSM1 at 5% and DSM2 at 10%, suggesting that one standard deviation increase in the debt diversification measure is associated with 3% increase in investment. The fact that

only DSM1 and DSM2 are significant might be an indication that companies need a larger range of debt types in order to benefit from the diversification.

DEBT DIVERSIFICATION AND PERFORMANCE

Table 11 reports results of Fama-Macbeth estimation with heteroscedasticity and autocorrelation consistent Newey-West (1987) standard error estimates with a lag length of 6 months.

For DSM1, our analysis of returns of European listed real estate stocks does not indicate any significant relation between degree of debt diversification and total excess return. For DSM2 and DSM3, we find a negative relationship between our debt diversification measure and returns suggesting that more diversified companies have higher results. These results are however, only at 10% level of statistical significance. Our robustness checks indicate that the results of the estimation are very sensitive to any changes in the model specification, and thus they should be taken with caution.

7 Conclusions

In this paper we evaluate the effects of debt diversification on company cost of debt, investment ratio and stock market returns. Our results suggest that debt diversification is associated with lower cost of debt for REITs. The finding is aligned with our hypothesis that REITs benefit more from debt diversification than REOCs since they rely on external financing given their retained earnings constrains. We continue by testing the effect of debt diversification in presence of credit supply constraints. Our results suggest that having a diversified debt structure during tight credit supply periods is associated with lower cost of debt. That is, companies with diversified structures benefit from obtaining cheaper debt in presence of credit supply constraints.

A second important channel through which debt diversification can affect company performance is investment. Listed real estate companies, and especially REITs, are very dependent on debt funding in their acquisitions, and thus having a diversified debt structure could lead to competitive advantages if the companies are able to seize opportunities when their competitors face credit constraints. Our results support this hypothesis. In the presence of credit constraints, companies with more diversified debt structure have economically and statistically significantly higher investment ratios.

Finally, we analyse the effect of debt diversification on the performance of the stock of the company. We find only weak evidence of more diversified companies having higher returns, suggesting that the benefits obtained through lower cost of debt and higher growth prospects do not necessarily translate into higher stock returns.

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Table 1 Summary statistics of the control variables

	count	mean	sd	min	p10	p50	p90	max
Cost of debt	1006	.0395326	.0151902	.0114479	.0192173	.0395799	.0595541	.0711458
Leverage	1055	.4370364	.1349774	.1491738	.2467666	.4465822	.6055716	.6882463
Earnings to assets	997	.0640653	.0472598	-.0480561	.008471	.061055	.1299688	.1709771
Coverage ratio	951	5.922012	7.60842	-3.605573	.4520548	3.709192	13.81028	35.86785
Firm size	1055	14.44061	1.074833	12.21645	13.04439	14.42858	15.99172	16.56816
MTB	1049	1.00093	.1330891	.733139	.8335489	1.001465	1.161293	1.327871
Tangibility	1055	.8665272	.1424856	.3470122	.6865342	.9168167	.9793754	.9892987
Investment ratio	899	.1530458	.28779	-.2757179	-.0909809	.0789871	.4709432	1.167942
Tobin's Q	1049	1.0127	.1316486	.744615	.8455725	1.010826	1.176335	1.337929
Earnings to investments	855	.0933045	.0843951	-.0761499	.0099078	.0777643	.203728	.3542153

Table 2 Summary statistics for debt type usage

	count	mean	sd	min	p10	p50	p90	max
Private borrowing	1055	.7914074	.2686344	0	.3331713	.9179575	1	1
Capital market borrowing	1055	.1369545	.238127	0	0	0	.5182236	1
Convertible debt	1055	.0301261	.0842938	0	0	0	.1211086	.9063492
Money market instruments	1055	.0250961	.0802476	0	0	0	.09	.8625273
Obligations under capital leases	1055	.0164158	.0751436	0	0	0	.0343274	1

Table 3 Descriptive statistics of debt specialisation measures

	count	mean	sd	min	p10	p50	p90	max
DSM1	1055	.7446977	.2687366	.2239922	.3443211	.8323514	1	1
DSM2	1055	.759824	.2971621	.1508171	.28	1	1	1
DSM3	1055	.749435	.3611329	.0107901	.1182735	1	1	1

Table 4 Correlation matrix

	DSM1	DSM2	DSM3	Cost of debt	Investment ratio	Leverage	Earnings to assets	Coverage ratio	Firm size	MTB	Tangibility	Tobin's Q	Earnings to investments
DSM1	1												
DSM2	0.904***	1											
DSM3	0.833***	0.901***	1										
Cost of debt	0.124***	0.0864***	0.0447	1									
Investment ratio	0.0588*	0.0608*	0.0604*	-0.192***	1								
Leverage	-0.0281	-0.0230	-0.0435	0.0475	0.00476	1							
Earnings to assets	-0.0822***	-0.0497	-0.0299	0.00718	0.233***	-0.253***	1						
Coverage ratio	0.0147	0.0432	0.0584*	-0.403***	0.189***	-0.576***	0.560***	1					
Firm size	-0.551***	-0.602***	-0.587***	0.0164	-0.0741**	0.0474	0.0810**	-0.0617*	1				
MTB	0.00706	0.0923***	0.0594*	-0.152***	0.133***	-0.0196	0.377***	0.290***	-0.0951***	1			
Tangibility	-0.120***	-0.0576*	-0.0691**	-0.0874***	-0.00448	-0.0479	0.117***	0.113***	0.0420	-0.0273	1		
Tobin's Q	-0.0386	0.0467	0.0172	-0.169***	0.148***	-0.000274	0.377***	0.284***	-0.0216	0.977***	-0.0378	1	
Earnings to investments	-0.0170	-0.00136	0.0163	0.00368	0.482***	-0.186***	0.829***	0.495***	0.0158	0.375***	-0.199***	0.382***	1

* p < 0.10, ** p < .05, *** p < .01

Table 5 Determinants of debt diversification

Table 5 reports estimation results of the equation, where dependent variable is one of the debt specialisation measures (DSM1, DSM2 or DSM3). The sample period is 2001-2016. Here, PT denotes property type fixed effects, C denotes country fixed effects, T denotes time fixed effects and F denotes firm fixed effects. All of the control variables are standardized and one year lagged. Columns 1-3 report results of a pooled cross-section regression and columns 4-6 results of a panel fixed effects regression. All standard errors are clustered at the firm-level and reported in parentheses. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)	(4)	(5)	(6)
	DSM1	DSM2	DSM3	DSM1	DSM2	DSM3
REIT	-0.09730**	-0.1452***	-0.1328**			
	(0.04531)	(0.05164)	(0.06211)			
Earnings to assets$_{t-1}$	-0.003211	-0.0004115	0.001615	0.002938	0.001824	0.003352
	(0.01218)	(0.01217)	(0.01679)	(0.009067)	(0.01093)	(0.01420)
Coverage ratio$_{t-1}$	0.01754	0.01819	0.03149*	-0.01654	-0.007984	-0.008561
	(0.01888)	(0.01583)	(0.01698)	(0.01430)	(0.01724)	(0.01885)
Leverage$_{t-1}$	0.01919	0.02206	0.03034	0.006099	-0.0009617	0.0005652
	(0.01761)	(0.01822)	(0.02286)	(0.01710)	(0.01831)	(0.02150)
Firm size$_{t-1}$	-0.1564***	-0.1793***	-0.2308***	-0.07148**	-0.09176**	-0.07895*
	(0.01481)	(0.01541)	(0.02038)	(0.03499)	(0.04033)	(0.04329)
MTB$_{t-1}$	-0.01206	0.009076	0.006805	0.01238	0.02067	0.02533
	(0.01381)	(0.01443)	(0.02068)	(0.01359)	(0.01512)	(0.01890)
Tangibility$_{t-1}$	-0.006361	-0.002432	0.006252	-0.04326**	-0.04439**	-0.04741**
	(0.01782)	(0.01852)	(0.02416)	(0.01694)	(0.02003)	(0.02214)
Constant	1.0039***	0.8983***	0.7837***	0.9406***	0.9523***	0.9642***
	(0.08116)	(0.1145)	(0.1508)	(0.04843)	(0.05403)	(0.05155)
Observations	861	861	861	861	861	861
R^2	0.509	0.539	0.499	0.314	0.337	0.296
adj. R^2	0.483	0.515	0.473	0.298	0.321	0.279
Fixed effects	PT, C, T	PT, C, T	PT, C, T	F, T	F, T	F, T

Table 6 Debt diversification and leverage

Table 6 reports estimation results of the equation, where the dependent variable is the leverage ratio of the company. The sample period is 2001-2016. Here, PT denotes property type fixed effects, C denotes country fixed effects, T denotes time fixed effects and F denotes firm fixed effects. All of the control variables are standardized and 1-year-lagged. Columns 1-3 report results with book leverage as dependent variable and columns 4-6 results with market leverage as dependent variable. All standard errors are clustered at the firm-level and reported in parentheses. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	Book leverage	Book leverage	Book leverage	Market leverage	Market leverage	Market leverage
$DSM1_{t-1}$	-0.005492			-0.008441		
	(0.005433)			(0.006600)		
$DSM2_{t-1}$		-0.006846			-0.009477	
		(0.004632)			(0.006443)	
$DSM3_{t-1}$			-0.009088			-0.009826
			(0.005761)			(0.007498)
Firm $size_{t-1}$	0.006793	0.006486	0.006949	0.03548*	0.03529*	0.03634*
	(0.01427)	(0.01457)	(0.01456)	(0.01893)	(0.01908)	(0.01908)
MTB_{t-1}	0.0002082	0.0005069	0.0005620	-0.03391***	-0.03354***	-0.03365***
	(0.004675)	(0.004634)	(0.004639)	(0.008141)	(0.008022)	(0.008037)
Earning to $assets_{t-1}$	-0.006466	-0.006538	-0.006237	-0.003401	-0.003521	-0.003213
	(0.007431)	(0.007363)	(0.007310)	(0.007222)	(0.007178)	(0.007191)
Coverage $ratio_{t-1}$	-0.03437**	-0.03408**	-0.03420**	-0.03149***	-0.03107***	-0.03125***
	(0.01347)	(0.01326)	(0.01302)	(0.01142)	(0.01122)	(0.01100)
$Tangibility_{t-1}$	0.006429	0.006300	0.005915	0.009731	0.009675	0.009542
	(0.008074)	(0.008109)	(0.008166)	(0.008376)	(0.008410)	(0.008314)
Constant	0.4387***	0.4392***	0.4399***	0.5277***	0.5279***	0.5276***
	(0.01743)	(0.01742)	(0.01727)	(0.02151)	(0.02129)	(0.02118)
Observations	861	861	861	861	861	861
R^2	0.267	0.268	0.270	0.430	0.431	0.431
adj. R^2	0.249	0.250	0.252	0.416	0.417	0.417

Table 7 Debt diversification and cost of debt for REITs and non-REITs

Table 7 reports estimation results of the equation, where dependent variable is company cost of debt. The variables of interest are the main effects of DSM1, DSM2 and DSM3 in column 1,2 and 3, respectively, as well as their interaction with REIT dummy. The sample period is 2001-2016. All of the control variables are standardized and one year lagged. Here, T denotes time fixed effects and F denotes firm fixed effects. The set of controls includes the leverage ratio, earnings to assets, coverage ratio, firm size, market-to-book-ratio and tangibility ratio. All standard errors are clustered at the firm-level and reported in parentheses. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)
Dependent variable	Cost of debt	Cost of debt	Cost of debt
$DSM1_{t-1}$	-0.0006509		
	(0.001276)		
$DSM2_{t-1}$		-0.001341	
		(0.001270)	
$DSM3_{t-1}$			-0.001828
			(0.001192)
$REIT \times DSM1_{t-1}$	0.002934**		
	(0.001451)		
$REIT \times DSM2_{t-1}$		0.003374**	
		(0.001391)	
$REIT \times DSM3_{t-1}$			0.003110**
			(0.001448)
$Leverage_{t-1}$	0.004167***	0.004244***	0.004105***
	(0.0007916)	(0.0008039)	(0.0008049)
$Earnings\ to\ assets_{t-1}$	0.002107***	0.002121***	0.002101***
	(0.0006152)	(0.0005977)	(0.0006064)
$Coverage\ ratio_{t-1}$	-0.003375***	-0.003436***	-0.003472***
	(0.0006833)	(0.0006429)	(0.0006397)
$Firm\ size_{t-1}$	0.002024	0.001874	0.001825
	(0.001819)	(0.001808)	(0.001808)
MTB_{t-1}	-0.001369	-0.001370	-0.001212
	(0.0008754)	(0.0008695)	(0.0008797)
$Tangibility_{t-1}$	0.001226	0.001154	0.001049
	(0.0009950)	(0.0009601)	(0.0009495)
Constant	0.05432***	0.05444***	0.05481***
	(0.001859)	(0.001796)	(0.001852)
Observations	856	856	856
R^2	0.380	0.381	0.376
adj. R^2	0.364	0.365	0.359
Fixed effects	F, T	F, T	F, T

Table 8 Debt diversification and cost of debt, effect of credit supply

Table 8 reports estimation results of the equation, where dependent variable is company cost of debt. The variables of interest are the main effects of DSM1, DSM2 and DSM3 in column 1,2 and 3, respectively, as well as their interaction with the Tight dummy that depicts periods of restricted credit supply. The sample period is 2003-2016, due to absence of BLS data before 2003. All of the control variables are standardized and one year lagged. Here, T denotes time fixed effects and F denotes firm fixed effects. The set of controls includes the leverage ratio, earnings to assets, coverage ratio, firm size, market-to-book-ratio and tangibility ratio. All standard errors are clustered at the firm-level and reported in parentheses. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)
Dependent variable:	Cost of debt	Cost of debt	Cost of debt
$DSM1_{t-1}$	0.001020		
	(0.0007915)		
$DSM2_{t-1}$		0.0005742	
		(0.0007513)	
$DSM3_{t-1}$			-0.0003177
			(0.0008288)
Tight	0.01466***	0.01488***	0.01580***
	(0.002973)	(0.002986)	(0.003101)
Tight × $DSM1_{t-1}$	0.001198**		
	(0.0005570)		
Tight × $DSM2_{t-1}$		0.001889***	
		(0.0005208)	
Tight × $DSM3_{t-1}$			0.002002***
			(0.0005193)
$Leverage_{t-1}$	0.003848***	0.003864***	0.003761***
	(0.0008448)	(0.0008584)	(0.0008486)
$Earnings\ to\ assets_{t-1}$	0.002067***	0.002008***	0.001984***
	(0.0006407)	(0.0006350)	(0.0006475)
$Coverage\ ratio_{t-1}$	-0.003488***	-0.003524***	-0.003513***
	(0.0006975)	(0.0006706)	(0.0006754)
$Firm\ size_{t-1}$	0.002176	0.002069	0.001847
	(0.001861)	(0.001856)	(0.001869)
MTB_{t-1}	-0.001285	-0.001324	-0.001235
	(0.0009333)	(0.0009307)	(0.0009340)
$Tangibility_{t-1}$	0.001132	0.001109	0.0009870
	(0.001067)	(0.001047)	(0.001032)
Constant	0.03275***	0.03265***	0.03221***
	(0.001382)	(0.001419)	(0.001420)
Observations	832	832	832
R^2	0.337	0.339	0.337
adj. R^2	0.320	0.322	0.319
Fixed effects	F, T	F, T	F, T

Table 9 Debt diversification and investment, effect of REIT-status

Table 9 reports estimation results of the equation, where dependent variable is the investment rate. The variables of interest are the main effects of DSM1, DSM2 and DSM3 in columns 1,2 and 3, respectively, as well as their interaction with the REIT dummy. The sample period is 2001-2016. All of the control variables are standardized and one year lagged. Here, T denotes time fixed effects and F denotes firm fixed effects. The set of controls includes Tobin's Q, earnings to investments, firm size and leverage ratio. All standard errors are clustered at the firm-level and reported in parentheses. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)
Dependent variable	Investment rate	Investment rate	Investment rate
$DSM1_{t-1}$	-0.02750		
	(0.02064)		
$DSM2_{t-1}$		-0.03534	
		(0.02187)	
$LDSM3_{t-1}$			-0.02298
			(0.02071)
REIT × $DSM1_{t-1}$	0.01478		
	(0.02496)		
REIT × $DSM2_{t-1}$		0.02302	
		(0.02555)	
REIT × $DSM3_{t-1}$			0.01890
			(0.02444)
Tobin's Q_{t-1}	0.04798***	0.04831***	0.04788***
	(0.01443)	(0.01430)	(0.01436)
Earnings to $investments_{t-1}$	0.06700***	0.06707***	0.06722***
	(0.01636)	(0.01633)	(0.01636)
Firm $size_{t-1}$	-0.2940***	-0.2960***	-0.2897***
	(0.04088)	(0.04063)	(0.04063)
$Leverage_{t-1}$	-0.02039	-0.02206	-0.02064
	(0.02434)	(0.02420)	(0.02449)
Constant	0.03330	0.03273	0.02750
	(0.05721)	(0.05663)	(0.05816)
Observations	762	762	762
R^2	0.288	0.288	0.287
adj. R^2	0.269	0.270	0.269
Fixed effects	F, T	F, T	F, T

Table 10 Debt diversification and investment, effect of credit cycle

Table 10 reports estimation results of the equation, where dependent variable is the investment rate. The variables of interest are the main effects of DSM1, DSM2 and DSM3 in column 1,2 and 3, respectively, as well as their interaction with the Tight dummy that depicts tightness of credit supply. The sample period is 2003-2016, due to absence of BLS data before 2003. All of the control variables are standardized and one year lagged. Here, T denotes time fixed effects and F denotes firm fixed effects. The set of controls includes Tobin's Q, earnings to investments, firm size and leverage ratio. All standard errors are clustered at the firm-level and reported in parentheses.
* p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)
	Investment rate	Investment rate	Investment rate
$DSM1_{t-1}$	-0.01064		
	(0.01374)		
$DSM2_{t-1}$		-0.01261	
		(0.01359)	
$DSM3_{t-1}$			-0.006667
			(0.01323)
Tight	-0.1819**	-0.1817**	-0.1894**
	(0.07472)	(0.07404)	(0.07634)
Tight × $DSM1_{t-1}$	-0.03136**		
	(0.01486)		
Tight × $DSM2_{t-1}$		-0.03009*	
		(0.01557)	
Tight × $DSM3_{t-1}$			-0.02359
			(0.01628)
Tobin's Q_{t-1}	0.04895***	0.04928***	0.04849***
	(0.01450)	(0.01456)	(0.01464)
Earnings to $investments_{t-1}$	0.06652***	0.06741***	0.06781***
	(0.01607)	(0.01628)	(0.01643)
Firm $size_{t-1}$	-0.2924***	-0.2934***	-0.2895***
	(0.04125)	(0.04120)	(0.04105)
$Leverage_{t-1}$	-0.02118	-0.02366	-0.02215
	(0.02455)	(0.02424)	(0.02404)
Constant	0.2201***	0.2174***	0.2197***
	(0.03067)	(0.03054)	(0.03180)
Observations	762	762	762
R^2	0.290	0.290	0.288
adj. R^2	0.272	0.272	0.270
Fixed effects	F, T	F, T	F, T

Table 11 Effect of debt diversification on the stock returns

Table 11 reports estimation results of the equation, where the dependent variable is cumulative excess six-month return. Explanatory variables include the debt specialisation measures, past cumulative six-month returns, logarithm of market capitalisation, logarithm of the ratio of book equity to market capitalisation, the ratio of funds from operations to market capitalisation, and logarithm of shares turnover ratio. The equation is estimated using Fama-Macbeth two-step procedure. Standard errors are adjusted for serial correlation and heteroscedasticity. * p < 0.10, ** p < .05, *** p < .01.

	(1)	(2)	(3)
	Cumulative excess return	Cumulative excess return	Cumulative excess return
DSM1	-0.0006246		
	(0.001728)		
DSM2		-0.02518*	
		(0.01510)	
DSM3			-0.04588*
			(0.02475)
Past cumulative excess return	0.01938	0.01975	0.01860
	(0.02546)	(0.02579)	(0.02653)
Firm size	-0.04944*	-0.02860	-0.02688
	(0.02771)	(0.02643)	(0.02615)
Book equity to market equity	0.003890	0.001051	0.003255
	(0.01129)	(0.01054)	(0.01096)
Earnings to price	0.004874*	0.002991	0.004379
	(0.002769)	(0.002710)	(0.002996)
Shares turnover	0.001483	-0.009700	-0.01326
	(0.02171)	(0.02396)	(0.02674)
Constant	0.05405**	0.05634**	0.05430**
	(0.02231)	(0.02247)	(0.02259)
R^2	0.202	0.190	0.205
Observations	12712	12712	12712

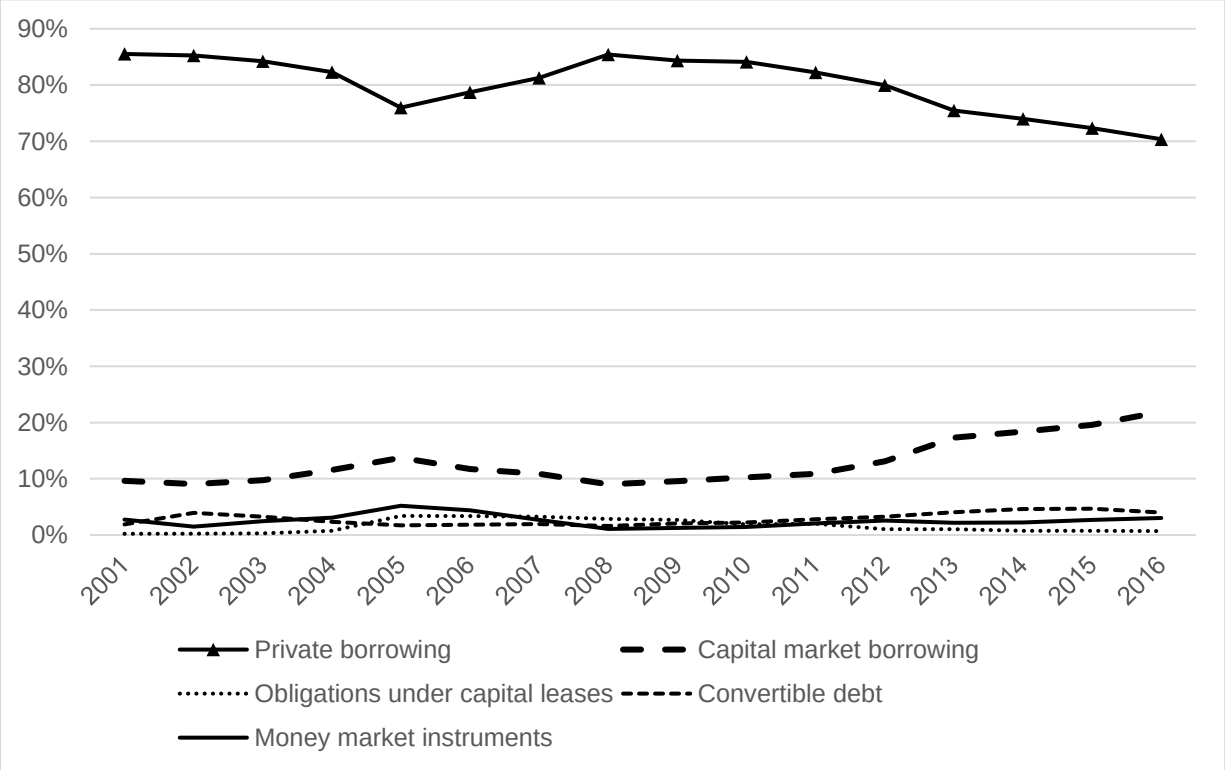

Figure 1 Use of different debt types over time

The figure illustrates the sample mean of the use of different debt types over time. The sample period is 2001-2016.

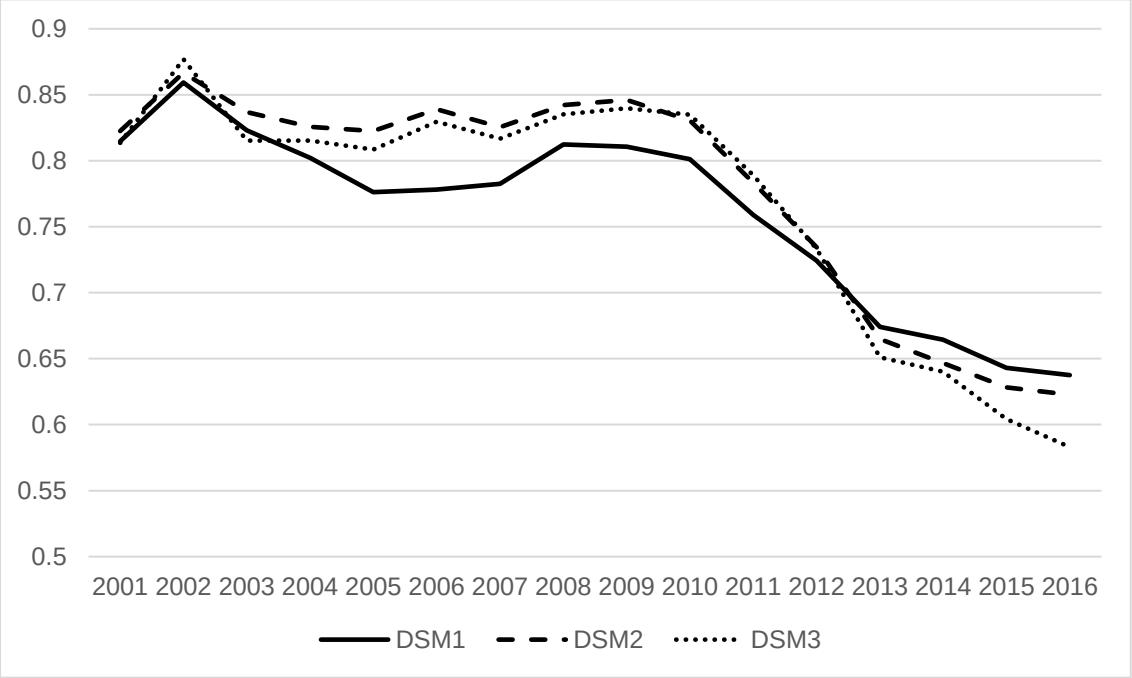

Figure 2 Development of debt specialisation measures over time

The figure illustrates the sample mean of the three debt specialisation measures over time. The sample period is 2001-2016