Taxes, Governance, and Debt Maturity Structure: International Evidence

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Abstract

We provide a cross-country evidence on the impact of corporate and personal income taxes, and corporate governance systems on debt maturity structures and leverage using a comprehensive sample of 212,642 firm-year observations based on a sample of 19,573 firms from 24 OECD countries over the period 1990 to 2015. We find longer debt maturities, higher leverage, and, in a dynamic setting, a greater propensity to decrease short-term debt, in countries with high investor protection and where the potentials for debt tax shields and after-tax return of investors are high. Our results imply that when investors are protected, firms tend to have optimal debt maturities to maximise the gains from tax shields and minimise the tax cost of equity. In contrast, in low protection countries, investors prefer their firms to opt for low debt that is mainly short-term to mitigate the risk-shifting and debt overhang problems even if this entails forgoing the debt tax shields. Our results hold for various robustness checks including the hierarchical linear model specification, which corrects for a number of OLS biases.

JEL classification: G32

Keywords: Debt maturity; Debt overhang; Risk-shifting; Signalling; Classical and imputation tax systems

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1. Introduction

Despite the large body of literature on corporate debt maturity structures, the extent to which firms consider fully the costs and benefits of their debt maturity profiles is still not well understood. On the one hand, when firms face limited availability of long-term financing sources, their reliance on predominantly short-term debt exposes them to rollover risk and reduces the present value of their tax shields and their growth potentials (e.g., Diamond, 1991). On the other hand, short-term debt is valuable as it reduces the power of the managers and controlling shareholders (Ben-Nasr et al., 2015) because it is less sensitive to risk shifting in the firm's underlying assets (Barnea et al., 1980), and mitigates debt overhang as it matures sooner than the realisation of investment returns (Myers, 1977).[1] Long-term debt amplifies these conflicts when the refinancing risk is high due to rollover losses (Almeida et al, 2011; Li, 2013), but increases the ongoing tax shields (e.g., Scholes and Wolfson, 1992).

However, Diamond and He (2014) argue that short-term debt can increase or decrease debt overhang depending on the timing of the investment. More specifically, debt overhang is reduced by short-term debt for assets in place, while it is increased for future investment opportunities, as this impact depends on the extent to which the value of short-term debt is sensitive to the value of the firm. The equity value becomes more volatile and debt overhang increases when less risk is shared with existing short-term debtholders. Such problems can be reduced by national culture and institutional settings (Zheng et al., 2012, Turk-Ariss, 2016), restrictive covenants (Billet et al., 2007) and a selection of higher-quality auditors (El Ghoul et al., 2016). However, short-term debt can still mitigate them, despite the tax loss and the rollover risk, when they are severe and the firm is in financial distress (Eisdorfer, 2008).

[1] Risk shifting occurs when shareholders have incentives to increase the riskiness of the firm's existing assets, even when this would reduce the value of their firm (Jensen and Meckling, 1976; Warga and Welch, 1993). Debt overhang arises when they have a disincentive to commit new equity capital to be invested in projects that would make debt safer, even if these projects were value creating (Myers, 1977). These conflicts between shareholders and debtholders exacerbate the underinvestment and asset substitution problems when leverage is high and risky.

We contribute to this extensive debate by assessing empirically the impact of various cross-country and firm-level tax, governance proxies, and rollover risk measures on debt maturity structures. We expect firms to opt for longer debt maturities when they are healthy, and when they operate in strong investor protection where rollover risks, risk-shifting incentives, and debt overhang problems are relatively low. They will also do so if they are in classical tax system countries to minimise their shareholder tax cost, and maximise the interest tax shields. In contrast, debt maturities in weak governance countries will be shorter to reflect the investors' reluctance to trust the management even if this entails higher tax costs, and the possibility that firms evade taxes because their credit information-sharing systems and branch penetration are low (Beck et al., 2014). We control for other drivers of debt maturity predicted by the signalling (Diamond, 1991; Flannery, 1986; Gopalan et al., 2014; Goyal and Wang, 2013), matching (Morris, 1976), and macro-economic (Diamond, 1984; Fan et al., 2012) theories to account for the funding availability and its access.

We use a comprehensive sample of 212,642 firm-year observations based on a sample of 19,573 firms from 24 OECD countries over the period 1990 to 2015 to test our hypothesis. We split our firms into strong and weak investor and creditor protection countries, following Djankov et al. (2008), and into classical and imputation tax systems, following Alzahrani and Lasfer (2012) to assess both the corporate and personal tax impacts. We use Z-score to measure firms' financial distress risk. Our tests account for the simultaneous choice of debt maturity and leverage, in line with Johnson (2003) and Datta et al. (2005), as Barclay et al. (2003) suggest that firms endogenously choose leverage and debt maturity.

We show that firms located in strong investor countries exhibit significantly longer debt maturities. However, within these countries, the maturities are significantly higher in classical tax systems and when the tax advantage of debt relative to equity is high. We find comparable results when we analyse leverage. These findings suggest that in strong investor countries, firms prefer

long-term debt when the debt tax benefits are high, and when shareholders are faced with a higher tax cost on equity financing. In contrast, in weak investor protection countries, the impact of taxation on the choice of debt maturity is not consistent with our expectations. We find that maturities are higher in imputation compared to the classical tax system, and the relationship is relatively weak when we account for all control variables.

We assess the joint effects of governance and taxation on debt maturity by including an interaction variable between investor protection and classical tax system. We find that even after accounting for the stand-alone investor protection, the classical tax system, and the tax discrimination variables, the interaction between investor protection and tax variables are positive and significant. These results support the notion that firms do not set debt maturities because of governance and tax systems separately; the combination of tax optimisation and investor protection drives their decision to opt for more long-term debt. The tax discrimination effect is apparent although Graham (2006) argues that it is difficult to estimate the shareholders' personal income and capital gains taxes and Dyreng et al. (2017) report that US effective corporate tax rates are significantly lower than the standard rates.

We then focus on the agency conflict of debt. In line with Myers' (1977) arguments that firms use shorter maturity debt to minimize the underinvestment problem, we find a negative relationship between long-term debt maturity and growth opportunities as measured by the market-to-book ratio, used as a proxy for risk shifting (Barnea et al, 1980; Barclay and Smith, 1995; Guedes and Opler, 1996). However, the abnormal earnings variable is positive and significant, consistent with Flannery (1986) and Diamond (1991), but only for healthy firms. For distressed companies, its impact is insignificant, probably because they are more concerned with their survival than underinvestment and/or signalling. These results suggest that short-term debt mitigates the debt overhang problem, as suggested by Myers (1977), but only in good times, in line with Diamond and He (2014). We find a homogeneous significant effect of firms'

fundamental variables, such as size, leverage, and asset maturity across all our specifications, consistent with previous evidence (e.g., Smith and Watts, 1992; Barclay and Smith, 1995; Diamond, 1991).

In a dynamic setting, we find that the probability of firms increasing their debt maturity is positively related to the strong investor protection and creditors' rights, in classical tax system and when the personal tax cost is low. However, this effect is more pronounced when firms are healthy and have high growth opportunities and low leverage, i.e., when the potential cost of risk shifting is low, in line with Barclay and Smith (1995) and Guedes and Opler (1996). For distressed firms, we find that the interaction between investor protection and our tax discrimination variable, rather than the tax *per se*, affects strongly the decision to decrease the debt maturity. Using various financial constraints measures (Farre-Mensa and Ljungqvist, 2016), we report that constrained firms have shorter maturities and lower leverage. Our results suggest that the rollover risk limits their access to corporate debt market to borrow and to refinance expiring debt externally (Acharya, et al., 2011; Choi et al., 2017). Consequently, this unavailability of external funding opportunities is likely to lead firms to liquidate assets inefficiently and/or forgo profitable investment opportunities.

We subject our results to various robustness checks. Our findings are not sensitive to other classifications and definitions of the proxy variables. We find similar results when we account for all firm and country characteristics and when we exclude US firms. We also observed the impact of the severity of distress on debt maturity when we account for all the control variables, as healthy firms appear to have significantly lower short-term debt throughout our analysis. Interestingly, in both governance systems, the relationship between taxation and maturity is more pronounced in healthy rather than distressed firms, whose main concern is survival.

We contribute to the extensive previous literature by assessing the combined and dynamic effects of taxes and governance on debt maturities. We focus on the differences in tax systems

following Graham's (2006) plea that it would be helpful if there were more studies that exploit the rich variation in tax codes around the world. Scholes and Wolfson (1992) argue that under the tax clientele hypothesis, the greater marginal tax rates facilitate firms to use the on-going interest tax shields, and thus firms are more likely to commit to long-term debt. However, Alzahrani and Lasfer (2012) show that the tax effect on financial policies is more relevant in strong protection countries, where managers are expected to maximise the after-tax return of their shareholders. In line with these arguments, we find that in strong protection countries and in the classical tax system, where shareholder tax costs are high, firms use longer maturity of debt to maximise their debt tax shields and minimise their shareholders' after-tax returns. Our results suggest that when investors are protected, they weigh the tax benefit of debt against the potential agency conflicts of extended maturities, but, when they are not, they prefer to incur higher tax costs than to trust the management with longer debt maturities.

Overall, in line with previous evidence (e.g., Demirgüç-Kunt and Maksimovic, 1999; El Ghoul et al., 2016; Fan et al., 2012; Turk-Ariss, 2016; Zheng et al., 2012), we assess the influence of legal and institutional environments on debt maturity structures. However, we also exploit the variation over time of the firm and country variables, and provide evidence on the dynamic joint effects of governance and taxation on the firms' propensity to use long-term debt structures. Our results provide an additional perspective to the agency explanation of debt maturity decision and show that the interrelation between agency costs and taxation explains leverage and debt maturity structures across firms and countries.

The rest of the paper is organised as follows. Section 2 provides the review of the literature and the hypotheses tested. Section 3 presents the data and the methodology. Section 4 discusses the empirical results and the conclusions are in Section 5.

2. Theoretical background

There is broad agreement that corporate leverage and debt maturity structures involve a trade-off between the costs and benefits of debt. One of the most important costs of debt financing is the potential agency conflicts between shareholders and bondholders, in the form of free cash flow, underinvestment, and risk shifting problems. Under the Jensen and Meckling (1976) framework, Diamond (1991) argues that, unlike long-term debt, shorter-term debt mitigates these conflicts because it requires frequent renegotiations and monitoring from banks. Stulz (2000) and Rajan and Winton (1995) consider this as a powerful tool to monitor managers with a minimum shareholder effort. Myers (1977) suggests also that short-term debt mitigates the underinvestment problem, because it matures before the growth opportunities are exercised. Similarly, Barnea et al. (1980) link risk-shifting to debt maturity. They argue that since the value of short-term debt is less sensitive to changes in asset volatility, issuing short-term debt can reduce risk-shifting incentives. Burkart et al. (2003) argue that as investor protection worsens, minority expropriation and the incentive of risk-taking behaviour increase, and the dominant shareholders become more prevalent. In this case, short-term debt can be used as a mechanism to mitigate any potential agency conflicts in weak investor protection countries.

However, the use of short-term debt results in a loss of an on-going interest tax shields (Scholes and Wolfson, 1992) and increases renegotiation costs. Despite the theoretical arguments that taxes ought to matter, there is much less agreement on exactly how they affect corporate financial policies. Graham (2013) argues that most studies of the impact of taxes on the firm assume that the problem is fixed as the marginal source of firm finance is equity, and that dividends are fixed exogenously, while in reality, firms can and do adjust debt to taxes on several dimensions in response to taxes on corporate profits, and personal taxes on interest income, dividends, and capital gains. Firms can choose leverage and debt maturity considering corporate as well as personal income taxes to maximise the wealth of their shareholders.

The empirical evidence on these effects is relatively mixed.[2] For example, Newberry and Novach (1999) find that firms issue bonds with longer maturities when the marginal tax rates are higher, but Guedes and Opler (1996) report no tax effect per se, but show that credit-worthy firms whose tax rates happen to be high are found at the very long end of the maturity spectrum. In terms of governance, Lin et al. (2013) find a positive association between the control-ownership wedge of the controlling owner and long-term debt maturity, suggesting that self-interested controlling owners prefer long-term debt to avoid monitoring by lenders. However, this creates conflicts between controlling and minority shareholders over the maturity structure of debt, and Ben-Nasr et al. (2015) show that firms with multiple large shareholders tend to have shorter debt maturities because they limit the ability of controlling owners to extract private benefits, as they lead to more frequent external monitoring.

Across countries, some studies attempt to investigate how institutional differences affect debt maturity to overcome some of these drawbacks. For example, Demirgüç-Kunt and Maksimovic (1999) find that firms in strong creditor rights countries do not use longer debt maturities, but Fan et al. (2012) and Zheng et al. (2012) find that firms located in common law countries use longer maturity of debt. Their results suggest that firms in higher investor protection countries prefer longer maturity of debt, in line with La Porta et al. (1998), who argue that common law countries provide stronger investor protection than civil law countries. However, Turk-Ariss (2016) reports that in developing countries less corruption combined with stronger laws increases the reliance on long-term debt.[3]

[2] For example, López-Gracia and Mestre-Barberá (2010) show that SMEs use shorter maturity of debt when their tax is high. Antoniou et al. (2006) find positive and significant effects of term structure of interest rates on debt maturity in the UK, in line with the tax predictions, but inconsistent with Barclay and Smith (1995), Stohs and Mauer (1996), Guedes and Opler (1996), and Scherr and Hulburt (2001). Barclay and Smith (1995) and Guedes and Opler (1996) show that firms with more growth options (and therefore higher potential agency costs) have more short-term debt in their capital structure. However, the tax and agency costs measures used in single country studies are county invariant.
[3] Awartani et al (2016) show that firms in MENA use less debt partly because of their lack of governance. Belkhir et al (2016) report that firms in countries where labour enjoys a strong protection tend to use more short-term. Akhtar (2017) reports that domestic and multinational firms hold less short- and long-term debt when they operate in an imputation tax system, and when they are located in common law countries, they have less short-term but higher long-term debt. However, the sample is limited to firms from Australia, US, Japan, UK) and Malaysia in 2013.

Other studies focus on alternative controlling mechanisms. El Ghoul et al. (2016) show that the appointment of Big Four Audit firms can serve as a substitute for short-term debt maturity for monitoring purposes as this leads to longer maturities when lenders rely on property rights and creditor rights to protect their interests. Billett et al (2007) report that covenant protection increases in growth opportunities, debt maturities and leverage, suggesting that debt covenants and short-term debt are substitutes in controlling the stockholder-bondholder agency conflicts. These factors increase the supply side effect of debt.

Scholes and Wolfson (1993, 312) propose a tax clientele hypothesis to predict the relationship between debt maturity and taxes. They argue that companies will prefer to issue long-term debt obligation rather than a sequence of short-term debt instruments to mitigate the transaction costs. However, not all firms can afford to issue long-term debt and avoid the more expensive short-term debt securities. They argue that firms with high marginal tax rates form a natural clientele for economical long-term debt financing because they can use the implied ongoing tax shields provided by long-term debt cost-effectively. This tax clientele effect will lead to a positive relation between firms' marginal tax rates and debt maturity structure.

Newberry and Novack (1999) provide evidence on this clientele effect, but other studies ignore tax effects (Fan et al., 2012; Demirgüç-Kunt and Maksimovic, 1999) or provide mixed evidence (Mateus and Terra, 2013; Zheng et al., 2012). For example, Fan et al. (2012) argue that firms in countries with dividend imputation, as opposed to classical, tax system will use less debt. They use the Miller (1977) tax gain from leverage to both the firm and its investors. They find that leverage is higher in countries where the tax gain is positive, but the tax effect is not as strong and pervasive as other influences, and it affects leverage when measured in book, rather than market, value terms. They do not investigate the impact of tax systems on debt maturity.

In our paper, we expect managers to use more long-term debt to maximise firm value and to minimise their investors' after-tax returns when they operate in strong protection countries and

in the classical tax system. We also combine the maturity structure with the firm's choice of debt relative to equity financing. Firms may have a higher long-term debt not only because they have less short-term debt, but also because they prefer to use long-term debt rather than equity to finance their long-term assets. Conversely, their maturity structure may be short-term if their preference is more towards equity than debt. We, therefore, expect firms located in countries with more favourable dividend tax environments (imputation tax systems) to prefer more equity financing and hence use less long-term debt, but more short-term debt.

However, these effects will depend on the level of investor protection. In strong protection countries where agency costs are less severe, firms are more likely to use longer maturity of debt, as managers are more likely to focus on the corporate and the personal income taxes of their investors, and opt for a financing method that will maximise their investors' after-tax returns. In contrast, in weak investor protection countries, their objectives may be other than value creation and the tax system may not be fully functional (Beck et al., 2014). The combination of the agency costs and tax arguments suggests that firms would trade-off the benefit of reducing underinvestment/risk-shifting problems against the opportunity cost of interest tax shields when they consider using shorter maturity of debt. They are expected to consider these effects when they set their target leverage and maturity structures and, in a dynamic setting, when they decide to issue different debt maturities and equity. These arguments motivate the following main testable hypotheses:

H1: Firms will opt for longer debt maturities and higher leverage when they operate in countries with strong investor protection and where the tax benefits are large.

H2: In a dynamic setting, changes in debt maturity structures are more likely to be stronger in countries with high investor protection and large tax advantages.

3. Data and Methodology

We first collect all firms registered in OECD countries from *DataStream*. In line with Alzahrani and Lasfer (2012), we exclude Korea, Czech Republic, Chile, Estonia, Greece, Hungary, Iceland, Slovak Republic, and Slovenia for lack or unreliable data. We also exclude Finland, Japan, Luxemburg, Poland, and Turkey between 1990 and 1999, as we could not classify their tax system due to incomplete data, Germany in 1990-2000, Norway in 1990-1991 and 2006-2015, Mexico 1990-1991, Sweden 1991-1999, and Poland in 2002 because they apply other tax treatments. We also exclude financial firms and firms with negative book equity. Our final sample includes 19,573 firms from 24 OECD countries over the sample period 1990 to 2015, resulting in 212,642 firm-year observations. We collect firm-specific data from DataStream and country-level data from several sources detailed in Appendix 1.

We classify our sample into two broad tax systems (classical and imputation),[4] and tax differential ratios, *TD*, where high (low) TD indicates above (below) average TD. This tax discrimination variables, defined in Appendix 1, following Miller (1977), increases when the corporation tax rate increases, leading to higher potential tax shields, and when the wedge between the income tax on dividends income and that on interest income widens, resulting in higher investor after-tax returns in the form of debt income. Following Alzahrani and Lasfer (2012) and Djankov et al. (2008), we classify firms into strong investor protection group if their country is above the average anti-self-dealing index. We, use Z-score to measure financial distress and consider firms with Z values below 1.80 to be financially distressed, and market to book ratio to account for growth opportunities, in line with Diamond and He (2014).

We base our primary empirical tests on the following simultaneous equations:

[4] We find similar results when we follow Alzahrani and Lasfer (2012) and classify the countries into three tax systems, classical where shareholders pay personal taxes on after corporation tax distributed earnings, and partial (full) imputation systems where they receive tax credit for the corporate taxes paid on earnings partially (fully).

$$Maturity_{i,t} = \beta_0 + \beta_1 Classical_{i,t} + \beta_2 TD_{i,t} + \beta_3 Inv_{i,t} + \beta_4 CR_{i,t} + \beta_5 Inv * Classical_{i,t} + \beta_6 Inv * TD_{i,t} + \beta_7 CR * Classical_{i,t} + \beta_8 CR * TD_{i,t} + \beta_9 Leverage_{i,t} + \sum_{k=1}^{17} \beta_k \ CONTROL_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Leverage_{i,t} = \beta_0 + \beta_1 Classical_{i,t} + \beta_2 TD_{i,t} + \beta_3 Inv_{i,t} + \beta_4 CR_{i,t} + \beta_5 Inv * Classical_{i,t} + \beta_6 Inv * TD_{i,t} + \beta_7 CR * Classical_{i,t} + \beta_8 CR * TD_{i,t} + \beta_9 Maturity_{i,t} + \sum_{k=1}^{16} \beta_k \ CONTROL_{i,t} + \varepsilon_{i,t} \quad (2)$$

where *Maturity* is long-term debt divided by total debt, *Inv* is anti-self-dealing index (Djankov et al., 2008), *CR* is creditor right index (Djankov et al., 2007), *Classical* is a dummy variable equal to 1 if the firm is located in a country adopts classical system and zero otherwise, *TD* is Miller's (1977) tax, and *Leverage* is long-term debt over long-term debt plus equity.[5] We also use the term structure of interest rate to proxy for the tax effects (Brick and Ravid, 1985; Garcia-Teruel and Martinez-Solano, 2007) even though Scherr and Hulburt (2001), Barclay and Smith (1995), Guedes and Oplimer (1996) and Ozkan (2000) cast doubt on the tax effect.

Since the estimation of each equation separately will result in biased and inconsistent estimated coefficients because of simultaneous equation bias, we follow Billett et al. (2007) and use generalized method of moments (GMM) with the exogenous variables as instruments in the moment conditions. Greene (2002) and Kennedy (2003) observe that GMM estimates are more efficient than two-stage least squares (2SLS) estimates when regression errors are heteroskedastic and/ or autocorrelated, and that GMM estimates coincide with 2SLS estimates otherwise. Thus, GMM ensures that the standard errors of the estimates are robust to heteroskedasticity and autocorrelation. Since there is no guarantee that the R^2s reported in GMM estimation techniques lie between zero and one (Goldberger 1991), there is no well-accepted goodness of fit measure for GMM estimations (Billett et al., 2007), and therefore, we do not report the R^2s for our estimated equations.

[5] For the purpose of our hypotheses, we include long-term debt to measure leverage (see section 2).

We use firm-level variables to capture the signalling, tax, agency costs, and matching effects. In the presence of information asymmetries, Flannery (1986) shows that high-quality firms use short-term debt to signal to the market that they are confident they will honour their debt obligations. While both long- and short-term debt are mispriced, only long-term debt is more sensitive to asymmetric information. In this case, high-quality firms will issue short-term debt to signal to the market that they can afford to repay the short-term obligations and to cover the transaction costs of debt renegotiation, while low-quality firms cannot afford to roll over short-term debt, and hence prefer to issue long-term debt. We proxy firms' quality using abnormal earnings as in Stohs and Mauer (1996), and Barclay and Smith (1995).

The asset maturity hypothesis predicts that firms mitigate their financial risk, which arises when their cash flows are not sufficient to cover their commitments, by matching their debt and their assets maturities (Morris, 1976). Debt with maturity longer than the maturity of assets is risky because the assets may not be enough to cover the debt covenants. To proxy for this effect, we use property, plant and machinery over depreciation.

Throughout our analysis we control for the firm's financial constraints, even though Farre-Mensa and Ljungqvist (2016) show that no measure is satisfactory. We first expect firms that pay dividends to have sufficient internal funds at their disposal to honor their contractual obligations, to finance their investments, and to meet their shareholders' expectations, and are, therefore, less likely to be financially constrained (e.g., Fazzari et al., 1988). We consider, however, that the use of payout in our case may be problematic because according to La Porta et al. (2000b) weak governance firms may pay low dividends if payouts emanate from a legal protection of minority shareholders (outcome model), or high dividends if they are substitute for weak shareholder protection (substitute model). We, therefore, use Whited and Wu (2006) index as an alternative measure of financial constraints.

At the country level, Fan et al. (2012) consider the capital suppliers' preferences on the structure of debt maturity.[6] They argue that firms in countries with a developed banking system tend to use more short-term debt as banks hold more short-term liabilities. Conversely, firms in countries with a larger insurance sector are more likely to use long-term debt, because insurance companies, like pension funds, are long-term investors. Unlike Demirgüç-Kunt and Maksimovic (1999), they find a negative impact of the banking sector on debt maturity.

We use banks' deposits over gross domestic product (GDP) to measure the available funds from the banking sector as a proxy for the preferences of the suppliers of the capital. We expect that firms in countries with a bigger banking sector to use more short-term debt. However, banks' risk will also affect their lending and maturity choices. We, therefore, use a number of bank risk measures. The first is banks' credit over their deposits. High-credit banks have a greater ability to pay their debt when it is due, thereby reducing the risk of banks run, implying that firms in countries with low-risk banks to use long-term debt. The second is the insurance sector, as proxied by insurance premium (life and non-life) over GDP. We expect firms in countries with a bigger insurance sector to use higher long-term debt. Finally, to account for liquidity, we use the ratio of gross domestic savings over GDP to measure the amount of funds available for all financial intermediaries. These proxy variables for debt supply imply that firms in countries with a greater supplier of capital use more long-term debt.

Grossman (1976) argues that prices of listed companies transfer information that can be useful for creditors, and hence lending quoted firms to be less risky due to their transparency in the stock market. We expect firms in countries with developed stock markets to have higher access to long-term credit, thus, more likely to use more long-term debt. Demirgüç-Kunt and Maksimovic (1999) show that leverage and debt maturity increase with the size of stock markets. In addition,

[6] Demirg¨uc¸-Kunt and Maksimovic (1999) argue that some country-level data may raise endogeneity problems and hence we follow Fan et al. (2012) and use the selected variables that are less likely to cause endogeneity issue. However, in contrast to Fan et al. (2012), we do not control for bankruptcy code and deposit insurance, as they do not vary across tax system, particularly in our strong protection countries.

higher bond market development provides a better protection for borrowers. Hence, we expect firms in countries with better and diversified bond markets, measured by bond market capitalisations over GDP, international debt issued over GDP, and loans from non-resident banks over GDP, to use more long-term debt.

Finally, we control for the economic and industry effect condition using inflation and yearly industry median of debt maturity, respectively. Inflation makes it costly for firms and investors to contract (Demirgüç-Kunt and Maksimovic, 1999), thus firms will use more short-term debt when the inflation rate, measured by changes in consumer price index, is high.

Table 1 reports summary statistics of the variables used in our analysis. The mean (median) debt maturity 0.58 (0.64), in line with previous evidence (e.g., Fan et al., 2012; Zheng et al., 2012; Dang, 2011), but lower than the 0.78 reported by Datta et al. (2005) and 0.86 for the developing countries reported by Turk-Ariss (2016). The average book leverage of 0.28 is likewise consistent with previous evidence (e.g., Antoniou et al., 2008; Fan et al., 2012). Our sample is relatively evenly distributed across the classical and imputation tax systems and 56% of our sample firms are in strong investor protection countries (see Appendix 2 for details). However, the average (median) TD of 0.06 (0.03) is relatively smaller comparing to, for example, the 0.14 (0.13) reported by Fan et al. (2012), although the standard deviation is the same. The dissimilarities in the countries selected are likely to drive these differences. In particular, while we focus on the 24 OECD countries, Fan et al. (2012) base their analysis on 36,767 firms from 39 different countries from 1991 to 2006. Our extended sample period could also have contributed to this difference as many countries have recently lowered their corporate tax rates. The remaining variables are relatively in line with most previous evidence.

[Insert Table 1 here]

4. Empirical Results

In this section, we first present the univariate results. We then report the regression results on the determinants of the level and changes in debt maturity and leverage. Finally, we test for robustness of our results using different specifications.

4.1. Descriptive Statistics

Table 2 reports the descriptive statistics to assess the impact of financial health, governance, and taxation on debt maturity. We test for differences in means using the t-test. We report the average debt maturity in Panel A, and leverage in Panel B. We find similar results when we use total debt over total assets, and long-term debt over long-term debt *plus* the market value of equity.

The results show that the distribution of maturity structures and leverage across governance, financial health, and tax systems is not homogenous. Debt has longer maturity in strong protection countries across different tax systems, and independently of the firm's financial strength. The economic impact is relatively stronger for healthy firms, particularly in our classification by investor protection. The distribution by tax discrimination variable also indicates that firms that operate in the classical tax system appear to have longer debt maturities than those that are in the imputation system, with the exception of the distressed firms in the strong investor protection group. The distribution by tax discrimination variable indicates that firms that operate in countries where the after-tax return of shareholders is higher have longer maturities. Consistent with the tax hypothesis, firms in strong investor protection have higher debt financing when they operate in imputation tax systems, independently of their financial strength. However, we do not observe this behaviour in other classifications.

The distribution of maturity by growth options, as measured by the market-to-book ratio, provides mixed evidence. As expected, low growth firms appear to have longer debt maturities, but this applies to only the case of distressed firms in strong investor protection countries and in

weak investor protection countries. In other countries, the relationship is either positive or not significant. When we sort our companies by leverage, we find that, as expected, firms with longer maturities are more likely to have high leverage. The results are relatively similar when we use creditor protection. Finally, Panel A. indicates that the impact of distress on debt maturity is relatively mixed across our groupings.

Panel B reports the distribution of leverage by governance, tax, and firms' financial health. The results, not reported, indicate that firms in high governance countries have a relatively similar level of debt than firms in low governance systems. In both systems, the distribution of long-term debt is relatively monotonic across the tax systems and firms' characteristics. Leverage is high for firms that operate in a classical tax system, suggesting that these firms prefer debt rather than equity financing when the potential tax shields are high, in line with Fan et al. (2012), but the Miller (1977) tax differential ratio does not affect significantly leverage, as the results are relatively mixed.

In contrast, the relationship between leverage and market to book is, as expected negative in most cases, suggesting that mature companies have higher leverage. The last two rows indicate that long-term debt maturities appear to lead to significantly higher leverage. Throughout our classifications, the distress factor is predominant: distressed firms appear to have significantly higher leverage than healthy firms.

[Insert Table 2 here]

4.2. Regression Results

In this section, we report the results of our regression tests. We estimate the system of equations by generalized method of moments (GMM) which ensures that standard errors of the estimates are heteroscedasticity and autocorrelation consistent**,** followed by Probit regressions to investigate the impact of taxation and governance on the decision to change debt maturity.

4.2.1. Determinants of Debt Maturity Structure

Table 3 reports the simultaneous equations (1) and (2). The second column indicates that, for the sample as a whole, firms are more likely to have longer debt maturities when they operate in classical tax system and when the tax discrimination variable (*TD*) is high. The economic significance of these results is important. For example, an increase in the tax benefit of debt (*TD*) by one (sample) standard deviation (i.e. using Table 1, an increase in TD of 0.16 points) would increase maturity of debt (in logarithmic) by approximately 69 percentage points [ln(0.16)*0.407/ln(0.34) = 0.69]. Our results imply that firms prefer long-term debt when they can benefit from high recurring tax shields, and when their investors' equity income is taxed at a relatively higher rate than debt income. The results also show that firms located in strong investor protections (*Inv*) and high creditors' right (*CR*) have longer debt maturities. The economic significance of these findings suggests that an increase in investor protection by one (sample) standard deviation (i.e. using Table 1, an increase in *Inv* of 0.19 points) would increase debt maturity (in logarithmic) by approximately 39 percentage points [ln(0.19)*0.261/ln(0.34) = 0.39]. For creditors' right, the economic significance is close to zero.

The interactions between investor protection and tax variables (*Inv*Classical* and *Inv*TD*) are positive and significant suggesting that the tax impact is more observed in strong investor protection countries. These results are in line with Burkart et al. (2003) who argue that in strong investor protection managers have a greater discretion to reduce risk-taking, and, hence, borrowers in less risky businesses have lower incentives to lower agency costs by shortening maturity (Guedes and Opler, 1996). La Porta et al. (2000a) argue that the corporate governance that accompanies broad financial markets is more effective, the supply of capital is more efficient, and the credit market is larger than in weak investor protection countries. Boubakri and Gouma (2010) also show that higher investors' protection reduces bond spreads and increases corporate bond ratings. These arguments suggest that firms have a better access to long-term debt in strong

investor protection countries. The economic impact is also large, as firms which are located in stronger investor protection countries with a higher tax benefit of debt would increase the maturity of debt (in logarithmic) by approximately 78 percentage points.[7] The results are relatively similar for the interaction between creditors' right and tax variables (*CR*Classical* and *CR*TD*). For example, economically, firms which are located in higher creditors' right countries with a higher tax benefit of debt would increase the maturity of debt (in logarithmic) by approximately 32 percentage points.

The control variables are as expected. Firms with low long-term debt are more likely to be high growth (measured by the market-to-book ration, *MB*), financially constrained (measured by WW-index, *WWindex*), large, healthy, and have long asset maturities. Similarly, at the macro level, firms in countries with high bank deposits, high bank credit, and high stock liquidity are more likely to rely on long-term debt financing. We find that firms located in countries with a bigger banking system, as measured by bank deposits, use more long-term debt, suggesting that maturity is affected by the supply of debt, but in contrast with Fan et al. (2012) who find that banks tend to hold more short-term liabilities, and hence offer mainly short-term loans.

Consistent with the preference of capital suppliers, we find that, firms in countries with a bigger insurance sector use long-term debt, inconsistent with Fan et al. (2012). We also measure the amount of funds available for all financial intermediaries by gross domestic saving over GDP and do not find that firms with a greater level of domestic savings have more long-term debt. In line with Demirgüç-Kunt and Maksimovic (1999), active stock markets, measured by stock traded over GDP, promote the use of long-term debt, and the inflation rate is negatively associated with long-term debt, consistent with Fan et al. (2012).

[7]The economic significance for the interaction *Inv*TD* is [ln(0.08)*0.339/ln(0.34) = 0.78]. However, the economic significance for *Inv*TD* is relatively small [ln(0.27)*0.163/ln(0.34) = 0.19]. The standard deviation for interaction variables are not reported in Table 2 for space considerations.

In columns 3 and 4, we assess whether our results are different for healthy and distressed firms. For healthy firms, the results are qualitatively similar and more pronounced, except for the significance of abnormal earnings (*AB*). In contrast, for distressed firms, while growth opportunities (*MB*), abnormal earnings to proxy for firms' quality (*AB*), and *WW index* are not significant. The dummy for dividend payers (*Dividends*) is negatively related to debt maturity structures, suggesting that firms that pay dividends have more short-term debt for monitoring purposes. The impact of country-level variables are relatively similar between healthy and distress firms expect domestic saving (*Savings*) which is insignificant for distressed firms. In addition, the tax discrimination (*TD*) and classical tax dummy (*Classical*) are not significant when firms are distressed, suggesting that the tax effects for financially distressed companies are irrelevant because they are making losses, thus they would not benefit from interest tax shields. The interactions between investor protection and tax variables (*Inv*Classical* and *Inv*TD*) are insignificant while creditors' right and investor protection variables on their own are significant. These results suggest that the tax impact is not observed for distressed firms. This is, however, not the case when we use creditors' rights as the interaction between *CR* and *TD* is positive and significant. Overall, our results imply that, in weak investor protection countries, managers may not consider the tax benefits if their objective is not to maximise shareholder value, or if their tax system is inefficient as reported by Beck et al. (2014). The impact of the term structure of interest rate, *TS*, a proxy for the tax effect (Brick and Ravid, 1985) is weak for distressed firms, in line with Barclay and Smith (1995), and Stohs and Mauer (1996).

In Table 3, columns 5 to 7, we report the results when the dependent variable is leverage. Column 5 indicates that firms in countries with strong investor protection, high creditors' rights, classical tax system, and where *TD* is high, have relatively higher leverage. These firms are more likely to have longer debt maturities, low growth (*MB*), low profitability (*ROA*), but high tangibility of assets (*Tg*). They are also large and less likely to be financially distressed. The

positive relationship between leverage and long-term debt maturity across countries is consistent with Morris (1992), who argues that firms with higher leverage use long-term debt to postpone their probability of bankruptcy, but inconsistent with Dennis et al. (2000), who show that leverage is inversely related to debt maturity.

Firms with higher growth opportunities, as measured by the market-to-book ratio, use shorter debt maturities to mitigate the underinvestment problem, in line with Myers (1977), Barclay and Smith (1995) and Guedes and Opler (1996), but in contrast with Stohs and Mauer (1996). Firms with high leverage are likely to be in countries where bank deposit and inflation is low, but bank credit, bond capital, stock liquidity, and domestic savings are high. The remaining results are relatively similar to the findings for debt maturity. The results indicate that, the interactions between investor protections and classical dummy as well as *TD* are positive and significant, suggesting that firms in countries where shareholders and creditors are protected, and where the tax benefits are high, have a higher level of debt. The results for healthy (Column 6) and distressed (Column 7) firms suggest that these fundamental effects on leverage are mainly observed in strong investor countries and when firms are not distressed.

[Insert Table 3 here]

4.2.2 Changes in Debt Maturity

Table 4 reports the results of the impact of taxation and governance on the decision to change debt maturity and leverage. We follow Rivers and Vuong (1988) econometrics specification and estimate the following simultaneous Probit regressions:

$$\Pr(\Delta\, Maturity_{i,t} = 1) = \beta_0 + \beta_1 Classical_{i,t} + \beta_2 TD_{i,t} + \beta_3\, Inv_{i,t} + \beta_4 CR_{i,t} + \beta_5 Inv * Classical_{i,t} + \beta_6 Inv * TD_{i,t} + \beta_7 CR * Classical_{i,t} + \beta_8 CR * TD_{i,t} + \beta_9 Leverage_{i,t} + \sum_{k=1}^{17} \beta_k\, CONTROL_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$\Pr(\Delta\, Leverage_{i,t} = 1) = \beta_0 + \beta_1 Classical_{i,t} + \beta_2 TD_{i,t} + \beta_3\, Inv_{i,t} + \beta_4 CR_{i,t} + \beta_5 Inv * Classical_{i,t} + \beta_6 Inv * TD_{i,t} + \beta_7 CR * Classical_{i,t} + \beta_8 CR * TD_{i,t} + \beta_9 Maturity_{i,t} + \sum_{k=1}^{16} \beta_k\, CONTROL_{i,t} + \varepsilon_{i,t} \quad (4)$$

where *Pr(Δ Maturity$_{i,t}$=1)* and *Pr(Δ Leverage$_{i,t}$=1)* are indicators of firms in our sample that increase their long-term debt maturity, and leverage, respectively. Following Rivers and Vuong (1988), we use a two-stage estimation procedure. In the first stage, we replace the endogenous variables with their predicted values to control for endogeneity (Wooldridge, 2002). We follow Dang (2011) to select the instruments for the exogenous variables in our model. For Equation (3), we use tangibility and non-debt tax shields, defined as depreciation over total assets, as instruments for leverage as they are not theoretically related to debt maturity (Dang, 2011; Johnson, 2003). For Equation (4), we follow Dang (2011) and use asset maturity (*AM*) and term structure of interest rates (*TS*) as instrumental values for debt maturity. We consider other variables, such as, tax ratio, growth opportunities, and firm quality, are potentially correlated with leverage (e.g., Frank and Goyal, 2009).

The results of the second stage are reported in Table 4.[8] Column 2, shows that, for the full sample, firms in strong investor protection countries with classical tax systems and where tax benefits of debt are higher (*Inv*Classical* and *Inv*TD*) are more likely to increase the maturity structure of their debt. Comparable results are observed for the interaction of *TD* and investor protection and when the dependent variable is defined as maintaining, rather than increasing, debt maturity. The impact of these variables separately is relatively weak, suggesting that a combination of the governance and tax systems that is more likely to affect changes in debt maturity. The results also indicate that the marginal effects (*MEs*) are evident: on average, a unit increase in the tax benefit of debt leads firms to increase their long-term debt by about 10 basis points. The marginal impact of the interaction variables is even more pronounced. The results

[8] We do not report the results of the predicted values in the first stage for space considerations.

indicate that firms in countries that operate the classical tax system and where *TD* is high tend to reduce their short-term debt, and thus, increase their long-term debt. However, the marginal effect of the creditors and investors protection variables is relatively smaller and insignificant. When we split our sample into healthy and distressed firms, the impacts of tax (*Classica*l and *TD*) and governance (*CR* and *Inv*) are more pronounced for healthy firms, while these results become insignificant when firms are distressed.

Firms with high leverage are also more likely to increase their long-term maturity and to opt for long-term debt, in line with Morris (1992). The marginal effect ranges between 0.088 and 0.20, considering the full sample and different clarifications. The impact of asset maturity (*AM*) is also significant, except when firms are financially distressed. The impact of growth (*MB*) is significant, but, only for healthy firms. The effects of the remaining variables are relatively weak. In particular, the results show that larger companies with greater asset maturities and lower growth opportunities are not necessarily more likely to increase their long-term debt, in contrast to our predictions. These results are not in line with Barclay and Smith (1995) and Stohs and Mauer (1996) who show that long-term debt increases with size and asset maturity, and decreases with growth opportunities. However, they are relatively consistent with Guedes and Opler (1996) who find that size has a U-shaped impact on debt maturity, suggesting that firms issue in the middle of the maturity spectrum, while larger firms issue at both extremes of debt maturities.

[Insert Table 4 here]

4.2.3 Robustness Check

In this section, we conduct several robustness checks of our empirical findings to assess further the impact of the interaction between taxation and investor protection on short-term debt maturity and leverage. We report the results in Table 5. The control variables remained relatively the same, thus we do not report them. In Panel A, we test for alternative measures of the investor protection variable by replacing the anti-self-dealing index with the revised anti-directors' rights

of Spamann (2010). The results in Panel A are qualitatively similar. The tax and governance variables (*Inv* and *CR*) and the interaction between these variables are all significant. These results provide further evidence that firms that operate in strong investor protection, classical tax system, and where the investor after-tax return on debt income is higher than equity income, have higher leverage and longer debt maturities. The results are qualitatively similar for healthy firms. However, for distressed firms, the impact is relatively weak and insignificant, except for the interaction between *CR* and *TD*. The results for distressed firms suggest that governance systems and taxes alone do not explain a large proportion of the debt maturity structures.

In Panel B, we follow Mehran and Prestiani (2010) and Bharath and Dittmar (2010), and measure distress using the following bankruptcy time length:

$$h\big(t, X\,(t)\big) = h(t, 0)\; exp^{(B\; X(t))} \qquad (5)$$

where h (t, X(t)) is the hazard rate at time t for a firm with covariates X(t). This model controls for the effects of differences between firms as well as changes over time. We account for related factors. We also assume that there is a probability of bankruptcy every year to satisfy the assumption of proportional hazard in which the explanatory variables are time-invariant. We classify our firms as healthy (distressed) if the hazard rate is below (above) the sample mean. The Hazard ratio is, like Z-score, highly significant and the remaining results are qualitatively similar. The coefficients of the interaction variables of *TD*, *Classical*, and investor protection are more sizable for the sample as a whole. The results are also more robust for healthy firms.

In Panel C, we test for robustness of our estimation techniques. Since our data structure is multilevel, we use the following hierarchical linear models (HLM) specification (Li et al., 2013), where the set of firms within countries forms the base-level observations, while countries are the higher-level observations:

$$Maturity_{i,j} = \beta_0 + \beta_1 Inv\_ctry_j * Classical\_ctry_j + \beta_2 Inv\_ctry_j * TD\_ctry_j + \beta_3 CR\_ctry_j * Classical\_ctry_j + \beta_4 CR\_ctry_j * TD\_ctry_j + \beta_5 CR\_ctry_j + \beta_6 Inv\_ctry_j + \beta_7 Classical\_ctry_j + \beta_8 TD\_ctry_j + \beta_9 Zscore\_crymean_j + \sum_{k=1}^{9} \beta_k \ FirmlevelCONTROL\_firmdev_{i,j} + \sum_{k=1}^{9} \beta_k \ FirmlevelCONTROL\_crymean_j + \sum_{k=1}^{8} \beta_k \ Countrylevel \ CONTROL\_ctry_j + \varepsilon_{i,j} \quad (6)$$

$$Leverage_{i,j} = \beta_0 + \beta_1 Inv\_ctry_j * Classical\_ctry_j + \beta_2 Inv\_ctry_j * TD\_ctry_j + \beta_3 CR\_ctry_j * Classical\_ctry_j + \beta_4 CR\_ctry_j * TD\_ctry_j + \beta_5 CR\_ctry_j + \beta_6 Inv\_ctry_j + \beta_7 Classical\_ctry_j + \beta_8 TD\_ctry_j + \beta_9 Zscore\_crymean_j + \sum_{k=1}^{8} \beta_k \ FirmlevelCONTROL\_firmdev_{i,j} + \sum_{k=1}^{8} \beta_k \ FirmlevelCONTROL\_crymean_j + \sum_{k=1}^{8} \beta_k \ Countrylevel \ CONTROL\_ctry_j + \varepsilon_{i,j} \quad (7)$$

where the dependent variables in Equations (6) and (7) are long-term debt maturity and leverage, respectively. Following Li et al. (2013), we include firm-level deviations (*-firmdev*) and country-level means (*-crymean*) and grand-mean centred country-level deviations (*-ctry*) to account for country-level effects.[9]

This HLM specification allows us to separate the variance in firm-level debt maturity and leverage from the country-level effect in the explanatory variables. It also corrects for the distortion introduced by varying sample sizes across countries, and avoids the OLS bias, as the coefficient on a country-level variable can be spuriously significant simply because of the large sample size at the firm level. This problem is accentuated when countries differ markedly in the number of firms in the sample. Unlike the OLS regression, where each firm-level observation receives equal weight, HLM simultaneously models regressions at both the firm and the country

[9] For Maturity (Leverage) HLM regression, K is the number of control variables. This is 9 (8) for both firm-level deviations, *-firmdev*, and firm-level country means, *-crymean*, and 8 (8) for grand-mean centred country-level deviations, *-ctry*. All variables are defined in Appendix 1. Following Li et al. (2013), we centre the variables to decompose the firm- and country-level variation in the following order: (i) country-level variables by grand mean (i.e., average across countries) and add the suffix "*_ctry*" to each one; (ii) each firm-level independent variable by its grand mean (i.e., average across countries and firms), and (iii) we create country-level mean values (average within a country) on those grand-mean centred variables at the firm level in the previous step, and we add the suffix "*_crymean*" to each transformed firm-level variable; (iv) Finally, we create within-country residuals by taking the grand-mean adjusted variables in step 2 and subtracting the corresponding within-country means in step 3, and we add the suffix "*_firmdev*" which is separated from their corresponding country-level means "*_crymean*".

levels. We weigh the country-level regression by the precision of the firm-level data, which is inversely related to the sample size within a country. Moreover, the HLM specification accurately incorporates cross-level interactions between the firm- and country-level variables.

Our results, reported in Table 5, Panel C, are qualitatively similar. Taxes, governance, and their interaction are significant, suggesting that although governance systems and taxes alone explain long-term debt decisions, the combinations of those factors affect debt maturity structures more significantly. The results for healthy firms are relatively similar, but, in contrast to the distressed sample, when firms are healthy the tax benefit of debt is more evident.

Next, we follow Zheng et al. (2012) and examine the robustness of our findings by controlling further for the corporate governance and institutional settings. Although these additional control variables tend to reduce the sample size significantly due to limited data, we report the results in two stages in Table 5, Panels D and E. In Panel D, we add *Private Credit*, *GINI index*, and Governance Control to control for corruptions. In Panel E, we include the ultimate cash flow rights of the largest shareholders (*Cash flow rights*) to proxy for the alignment effect, and the ultimate voting rights minus ultimate cash flow rights of the largest shareholders (*Diverge*) to proxy for internment effect. In Panel D, we find, but not report for space considerations, that high corruption and high income equality reduce firms' debt maturity and leverage. The results are similar in Panel E. We also find, but not report for brevity, that *Diverge* is associated with shorter maturity of debt, in line with Zheng et al. (2012), while it is insignificant for leverage. The *Cash flow rights* variable is associated with longer debt maturities and leverage. Despite the reduction in our sample size, the main results are relatively similar, suggesting that the impacts of tax and governance are not affected by the inclusion of these additional control variables.[10]

[Insert Table 5 here]

[10] Our results are qualitatively similar when we repeat our regressions for strong and weak protections subsample. For brevity, we did not report the results.

5. Conclusions

Using a sample of 212,642 firm-year observations covering 19,573 firms from 24 OECD countries from 1990 to 2015, we find that both firm and country level factors affect debt maturities. We expand previous studies by providing a relatively deeper analysis of the combined impact of investor protection and taxation on leverage and debt maturity structures. We show that these factors explain a sizeable proportion of the levels and changes in debt levels and maturities, as in countries where investors are protected, firms appear to set optimally these decisions to maximise the gains from tax shields and minimise their investors' tax costs. In contrast, in low protection countries, debt levels are low with shorter maturities and not strongly related to the tax factors. These results suggest that investors prefer their firms to opt for low debt that is mainly short-term as they are likely to be more concerned about the mitigation of the debt overhang and risk-shifting problems than tax gains. We also consider that these decisions are affected by firms' financial health to proxy for debt overhang and risk shifting. We find that healthy firms have significantly lower short-term debt and higher leverage and the relationship between taxation and maturity is more pronounced in healthy rather than distressed firms that are likely to be more concerned with survival rather than tax saving. We find similar results when we test for various robustness checks.

Our results may suffer from limitations inherent in cross-country studies, specifically, if the accounting numbers are not comparable, firms are subject to tax and governance structures in other than their country of registration, face different effective corporate and personal tax rates, and have other internal and external corporate governance mechanisms to mitigate their agency conflicts. Moreover, while we focus only on firm-level aggregate debt levels and maturities, in practice, these decisions encompass different debt types, sources and seniorities. The financial crisis may have also affected leverage and maturity decisions, but we have not accounted for it as its impact is not homogeneous across our countries. These limitations are likely to have an impact on our analysis. Unfortunately, data on these disaggregated considerations is not available and the extent to which they will strengthen or alter our results is the subject of further research.

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Table 1: Summary statistics of firm- and country-level variables

Variables	N	Mean	SD	Minimum	25th percentile	Median	75th Percentile	Maximum
Maturity	212,642	0.58	0.34	0.00	0.29	0.64	0.91	1.00
Leverage	212,642	0.28	0.27	0.00	0.01	0.20	0.47	0.88
Inv	212,642	0.60	0.19	0.17	0.50	0.64	0.76	0.95
CR	212,642	2.00	1.07	0.00	1.00	2.00	3.00	4.00
Classical	212,642	0.49	0.50	0.00	0.00	0.00	1.00	1.00
TD	212,642	0.06	0.16	-0.58	-0.03	0.03	0.17	0.58
MB	212,642	1.39	1.80	0.00	0.01	1.03	1.96	6.72
Size	212,642	9.18	4.34	-4.61	5.65	10.54	12.53	20.05
AB	211,158	-0.26	0.04	-0.09	-0.01	0.00	0.01	0.09
ROA	212,642	0.00	0.08	-0.21	-0.01	-0.01	0.08	0.17
AM	212,642	2.35	4.41	0.02	0.16	0.37	0.90	16.24
Tg	212,642	0.88	0.16	0.45	0.82	0.97	1.00	1.00
Zscore	212,642	1.57	2.89	-4.57	0.18	2.00	3.11	8.34
WW index	212,642	-0.51	0.17	-0.79	-0.64	-0.53	-0.40	-0.16
Dividends	212,642	0.53	0.50	0.00	0.00	1.00	1.00	1.00
Ind. Med	212,642	0.00	0.01	-0.01	0.00	0.00	0.02	0.04
TS	210,716	0.68	1.13	-1.87	-0.03	0.81	1.40	2.56
Bank Dep.	212,642	0.93	0.66	0.00	0.58	0.80	1.07	3.90
Bank Credit	212,642	0.84	0.58	0.00	0.50	0.78	1.27	16.47
Ins. Prem.	212,642	0.07	0.03	0.00	0.05	0.07	0.08	0.18
Bond Cap.	207,787	1.01	0.73	0.00	0.51	0.89	1.43	2.65
Inter. Debt	212,642	0.34	0.29	0.00	0.09	0.30	0.49	2.66
Stock Traded	207,450	0.99	0.68	0.00	0.50	0.78	1.27	2.84
Inflation	212,642	0.02	0.03	-0.04	0.01	0.02	0.03	0.55
Savings	212,642	0.23	0.07	0.00	0.19	0.23	0.27	0.54

The sample includes 212,642 firm/year observations from 24 OECD countries. We define the variables in Appendix 1. N is for number of observations, SD is standard deviation. We winsorized the data at the top and bottom 1%.

Table 2: Tests for Mean Differences

	Strong Investor Protection			Weak Investor Protection			Strong Creditor Protection			Weak Creditor Protection		
	Healthy H	Distressed D	(H-D)	Healthy H	Distressed D	(H-D)	Healthy H	Distressed D	(H-D)	Healthy H	Distressed D	(H-D)
Panel A: Maturity (Long-term debt/ total debt)												
Classical (1)	0.65	0.62	0.03**	0.53	0.56	-0.03**	0.62	0.60	0.02	0.60	0.63	-0.03***
Imputation (2)	0.62	0.65	-0.03**	0.47	0.50	-0.03**	0.50	0.54	-0.04	0.45	0.49	-0.04***
(1) – (2)	**0.03****	**-0.03****		**0.06*****	**0.06*****		**0.12*****	**0.06*****		**0.15*****	**0.14*****	
High TD	0.66	0.63	0.03***	0.48	0.52	-0.04***	0.63	0.60	0.03**	0.57	0.55	0.020*
Low TD	0.63	0.60	0.03**	0.48	0.51	-0.03***	0.58	0.52	0.06***	0.48	0.53	-0.05***
High-Low	**0.03****	**0.03***		**0.00**	**0.01**		**0.05*****	**0.08****		**0.09*****	**0.02***	
High MB	0.65	0.55	0.10***	0.46	0.50	-0.04***	0.63	0.59	0.04**	0.57	0.56	0.01
Low MB	0.62	0.64	-0.02	0.50	0.53	-0.03*	0.58	0.55	0.03*	0.54	0.55	-0.01
High-Low	**0.03****	**-0.09*****		**-0.04****	**-0.03***		**0.05*****	**0.04****		**0.03****	**0.01**	
High Leverage	0.87	0.86	0.01	0.68	0.62	0.06***	0.83	0.79	0.04***	0.78	0.71	0.07***
Low Leverage	0.53	0.38	0.15***	0.41	0.33	0.08***	0.51	0.38	0.13***	0.46	0.34	0.12***
High-Low	**0.34*****	**0.48*****		**0.27*****	**0.29*****		**0.32*****	**0.41*****		**0.32*****	**0.37*****	
Panel B: Leverage (long-term debt/ long-term debt +book value of equity)												
Classical (1)	0.24	0.36	-0.12***	0.18	0.43	-0.25***	0.22	0.44	-0.22***	0.22	0.41	-0.19***
Imputation (2)	0.22	0.37	-0.37***	0.16	0.40	-0.24***	0.17	0.38	-0.16***	0.18	0.36	-0.18***
(1) – (2)	**0.24*****	**-0.01**		**0.02****	**0.03****		**0.05*****	**0.06*****		**0.04*****	**0.05*****	
High TD	0.22	0.35	-0.13***	0.18	0.41	-0.23***	0.15	0.35	-0.20***	0.23	0.38	-0.15***
Low TD	0.20	0.31	-0.11***	0.18	0.42	-0.24***	0.21	0.41	-0.20***	0.20	0.36	-0.16***
High-Low	**0.02****	**0.04*****		**0.00**	**-0.01**		**-0.06*****	**-0.06*****		**0.03*****	**0.02****	
High MB	0.21	0.36	-0.15***	0.17	0.41	-0.24***	0.18	0.38	-0.20***	0.20	0.35	-0.15***
Low MB	0.23	0.37	-0.14***	0.19	0.42	-0.23***	0.21	0.41	-0.20***	0.23	0.38	-0.15***
High-Low	**-0.02****	**-0.01**		**-0.02****	**-0.01**		**-0.03****	**-0.03**		**-0.03****	**-0.03****	
High Maturity	0.51	0.30	0.21***	0.54	0.27	0.27***	0.53	0.28	0.25***	0.51	0.30	0.21***
Low Maturity	0.10	0.06	0.04***	0.32	0.12	0.20***	0.26	0.10	0.16***	0.17	0.08	0.09***
High-Low	**0.41*****	**0.24*****		**0.10*****	**0.15*****		**0.27*****	**0.18*****		**0.34*****	**0.22*****	

This table reports the tests for mean differences of short-term debt maturity, *Maturity*, measured as short-term debt over total debt (Panel A), and long-term book value of leverage, *Leverage* (Panel B). Strong (weak) investor protection is when anti-self-dealing index score reported by Djankov et al. (2008) is above (below) the mean overall scores. Strong (weak) creditor protection is when creditor rights index score reported by Djankov et al. (2007) is above (below) the mean overall scores. High (low) *TD* is when Miller Tax ratio is larger (smaller) than the overall mean. Firms with Z-score below 1.80 are financially distressed. We use the median per country as the benchmark in our market-to-book ratios, *MB*, long-term book value of leverage, *Leverage* and long-term debt maturity, *Maturity*, groups. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

Table 3: Determinants of Debt Maturity Structure and Leverage

	Maturity: *Long-term debt/ total debt*			Leverage: *(Long-term debt/ long-term debt + equity)*		
	All	*Healthy*	*Distressed*	*All*	*Healthy*	*Distressed*
Classical	0.148***	0.178***	0.084	0.050***	0.048**	0.012
	(4.65)	(6.38)	(1.07)	(3.45)	(2.51)	(1.54)
TD	0.407***	0.442***	0.019	0.058***	0.093***	0.025
	(5.89)	(6.36)	(0.57)	(4.11)	(3.21)	(1.05)
Inv	0.261***	0.397***	0.047*	0.027	0.021	0.005
	(8.41)	(11.59)	(1.83)	(1.25)	(1.45)	(0.58)
CR	0.006**	0.005**	0.006*	0.010***	0.008***	0.012*
	(2.41)	(2.06)	(1.81)	(2.89)	(3.17)	(1.75)
Inv*Classical	0.163***	0.270***	0.228	0.010*	0.022**	0.012
	(3.30)	(5.71)	(0.90)	(1.79)	(2.44)	(1.02)
Inv*TD	0.339***	0.311***	0.098	0.029**	0.032**	0.007
	(2.95)	(2.97)	(0.73)	(2.50)	(2.12)	(1.59)
CR*Classical	0.040***	0.022***	0.017	0.012**	0.006	0.010
	(4.66)	(2.68)	(1.09)	(2.51)	(1.51)	(0.08)
CR*TD	0.131***	0.221***	0.202***	0.060***	0.042***	0.003*
	(6.49)	(9.49)	(11.22)	(5.33)	(4.56)	(1.69)
Leverage	0.849***	0.484***	0.576***			
	(7.11)	(5.80)	(8.57)			
Maturity				0.298***	0.305***	0.102**
				(6.52)	(5.21)	(2.47)
MB	-0.015***	-0.013***	-0.002	-0.023***	-0.015***	-0.521*
	(-5.15)	(-5.80)	(-1.05)	(-3.66)	(-2.99)	(-1.85)
Size	0.031***	0.013***	0.017***	0.018***	0.012**	0.002**
	(8.55)	(9.64)	(2.96)	(2.91)	(1.95)	(1.99)
AB	-0.004	-0.005**	-0.001			
	(-1.53)	(-2.40)	(-1.33)			
TS	0.004***	0.007***	0.001			
	(3.20)	(3.88)	(0.97)			
AM	0.052***	0.045***	0.074***			
	(3.25)	(5.20)	(6.32)			
ROA				-0.130***	-0.155***	-0.085**
				(-4.71)	(-3.65)	(-1.99)
Tg				0.062***	0.054***	0.010*
				(3.27)	(4.02)	(1.78)
Zscore	0.022***			0.050***		
	(10.39)			(25.56)		
WW index	-0.010**	-0.012*	-0.002	-0.008***	-0.009**	0.001
	(-2.18)	(-1.75)	(-0.54)	(-2.58)	(-2.11)	(1.25)
Dividends	0.119***	0.039***	-0.043***	0.005*	0.009**	0.003
	(12.64)	(4.66)	(-6.03)	(1.69)	(2.02)	(1.32)
Ind. Med	0.003***	0.038***	0.025***	0.018***	0.010***	0.010**
	(10.84)	(10.13)	(7.84)	(4.25)	(4.99)	(2.42)
Bank Dep.	0.002***	0.001***	0.001***	-0.008*	0.002*	0.000
	(5.76)	(9.56)	(10.21)	(-1.71)	(1.82)	(1.58)
Bank Cred.	0.006***	0.008***	0.001***	0.004***	0.009***	0.001***
	(5.05)	(5.84)	(8.35)	(5.72)	(5.72)	(2.65)
Ins. Prem.	-0.004***	-0.008***	-0.006***	-0.005**	-0.001*	-0.000
	(-6.44)	(-10.96)	(-10.23)	(-2.09)	(1.85)	(1.25)
Bond Cap.	0.005**	0.001**	-0.000	0.009***	0.002***	0.000
	(2.14)	(2.18)	(-0.15)	(2.70)	(2.62)	(1.47)
Inter. Debt	0.011***	0.015***	0.010***	0.005***	0.009***	0.002*
	(6.93)	(5.02)	(5.61)	(3.26)	(3.26)	(1.81)
Stock Traded	0.008***	0.010***	0.005***	0.011**	0.007**	0.002
	(2.62)	(7.68)	(2.76)	(2.05)	(1.95)	(0.45)
Inflation	-0.005***	-0.003**	-0.002**	-0.001*	-0.001*	0.000
	(-3.78)	(-2.26)	(-2.37)	(-1.75)	(-1.82)	(1.54)
Savings	0.002	0.001***	0.005	0.001**	0.002**	0.001
	(0.53)	(2.99)	(1.55)	(2.56)	(2.25)	(1.58)
Constant	0.047*	0.046**	0.072	0.154***	0.135***	0.147**
	(1.74)	(2.21)	(1.04)	(3.25)	(4.64)	(1.98)
N	199,513	125,859	73,654	199,513	125,859	73,654

The table presents the results of the two equations estimated simultaneously (Equations. 1 and 2). The system is estimated by GMM regression approach in which standard errors are clustered the firm level (following Billett et al., 2007). The two dependent variables for which we report the results are *Maturity*, defined as long-term debt over total debt, and *Leverage*, defined as long-term debt over long-term debt plus book value of equity. We use Z-score to measure financial distress and consider firms with Z values below 1.80 to be financially distressed. The remaining variables are defined in Appendix 1. Year dummies are included in all regressions, but not reported for brevity. The *t*-statistics are in parentheses.*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

Table 4: Changes in Maturity and Leverage

	Maturity: *Long-term debt/ total debt*						Leverage: *(Long-term debt/ long-term debt +book value of equity)*					
	All	*marginal*	*Healthy*	*marginal*	*Distressed*	*marginal*	*All*	*marginal*	*Healthy*	*marginal*	*Distressed*	*marginal*
1=increased long-term debt maturity, 0=decreased long-term debt maturity												
Classical	0.060***	0.020***	0.154**	0.040***	0.037	0.024	0.230**	0.207***	0.492***	0.224***	0.316	0.123
	(3.74)	(2.60)	(2.41)	(2.90)	(0.28)	(0.46)	(2.19)	(5.24)	(3.91)	(4.94)	(1.58)	(1.56)
TD	0.211***	0.101**	0.286***	0.150***	0.511	0.347	1.363***	0.327***	0.873***	0.252**	1.977*	0.421
	(2.96)	(2.05)	(3.00)	(3.24)	(1.31)	(0.98)	(5.27)	(3.25)	(2.87)	(2.24)	(1.91)	(1.00)
Inv	0.016	0.061	0.267**	0.094***	0.169	0.045	0.670***	0.084	0.514***	0.069	-0.703	-0.179
	(0.18)	(1.62)	(2.18)	(2.80)	(1.19)	(0.75)	(6.46)	(.48)	(3.83)	(1.48)	(-0.12)	(-1.21)
CR	0.031	0.000	0.039*	0.013***	0.015	0.010	0.012	0.010	0.048**	0.030***	0.043	0.039
	(1.03)	(0.02)	(1.94)	(2.60)	(0.60)	(1.01)	(0.68)	(1.53)	(2.25)	(3.85)	(1.51)	(0.83)
Inv*Classical	0.163**	0.019**	0.267***	0.036**	0.133	0.032	0.598***	0.003**	0.785***	0.050**	0.048	0.054
	(2.22)	(2.03)	(3.49)	(2.49)	(0.62)	(0.97)	(3.34)	(2.14)	(3.59)	(2.25)	(0.15)	(1.31)
Inv*TD	0.588***	0.033***	0.268**	0.112***	1.363*	0.020	1.969***	0.134***	1.773***	0.083***	2.012**	0.167***
	(5.53)	(3.47)	(2.55)	(3.69)	(1.93)	(0.58)	(4.33)	(5.83)	(3.28)	(2.97)	(2.27)	(4.10)
CR*Classical	0.021	0.003	0.063*	0.021	-0.018	-0.019	0.030***	0.093***	0.119***	0.141***	0.149***	0.030
	(0.84)	(0.13)	(1.87)	(0.78)	(-0.45)	(-0.58)	(2.99)	(4.05)	(3.18)	(5.57)	(2.62)	(0.63)
CR*TD	0.045	0.016	0.096	0.133	0.115	0.127	0.139***	0.250***	0.092*	0.121*	0.473*	0.432
	(0.59)	(0.29)	(0.99)	(0.89)	(0.87)	(1.31)	(2.56)	(4.38)	(1.87)	(1.91)	(1.77)	(1.61)
Leverage	0.449***	0.102***	0.958***	0.2208***	0.386***	0.088***						
	(18.02)	(16.61)	(19.36)	(18.23)	(12.00)	(11.07)						
Maturity							1.632***	0.417***	1.528***	0.371***	1.860***	0.483***
							(8.55)	(8.79)	(5.18)	(5.25)	(7.21)	(4.91)
MB	-0.006	-0.002	-0.042***	-0.010***	0.010	0.003	-0.048***	-0.006***	-0.101***	-0.019***	-0.034***	-0.004
	(-1.26)	(-1.36)	(-6.06)	(-5.76)	(1.24)	(1.36)	(-8.56)	(-5.20)	(-14.08)	(-12.54)	(-3.36)	(-1.60)
Size	0.001	0.083	0.0080	0.087	0.011***	0.323***	0.034***	0.065	0.028***	0.079	0.084***	0.085***
	(0.22)	(1.47)	(1.24)	(0.93)	(3.21)	(3.87)	(7.44)	(0.65)	(4.97)	(0.67)	(10.64)	(5.79)
AB	-0.000	-0.000	-0.007	0.002	0.000	-0.000						
	(-1.19)	(-0.89)	(-0.57)	(0.61)	(0.31)	(-1.06)						
TS	0.017**	0.459**	0.007	0.242	0.027**	0.702**						
	(2.31)	(2.54)	(0.71)	(1.02)	(2.24)	(2.39)						
AM	0.152***	0.071**	0.158***	0.105**	0.102	0.087						
	(3.28)	(2.51)	(5.21)	(2.12)	(1.07)	(1.52)						
ROA							-0.850***	-0.032***	-1.270***	-0.084***	-0.794***	-0.068***
							(-9.18)	(-8.78)	(-10.26)	(-10.22)	(-5.60)	(-5.66)
Tg							0.072	0.255*	0.167**	0.564**	0.020	0.803
							(1.27)	(1.89)	(2.26)	(2.43)	(0.20)	(0.88)
Zscore	0.017***	0.004***					0.134***	0.033***				
	(5.79)	(5.00)					(27.83)	(31.50)				
WW index	-0.005	-0.012***	-0.008	-0.010*	-0.000***	-0.001***	-0.052***	-0.014***	-0.025***	-0.051***	-0.012***	-0.008***
	(-1.05)	(-2.80)	(-0.97)	(-1.79)	(-2.48)	(-3.00)	(-7.27)	(-7.25)	(-6.17)	(-6.14)	(-4.29)	(-4.14)

Dividends	0.053***	0.009**	0.041**	0.006**	-0.087***	-0.017***	0.248***	0.055***	0.293***	0.059***	0.207***	0.056***
	(3.59)	(2.57)	(1.97)	(2.18)	(-3.83)	(-3.09)	(12.48)	(12.98)	(11.73)	(12.05)	(6.18)	(6.99)
Ind. Med	0.007	0.002	0.003	0.001	-0.017**	-0.004**	0.044***	0.013**	0.044***	0.012***	0.051***	0.016***
	(1.27)	(1.21)	(0.34)	(0.62)	(-2.28)	(-2.34)	(6.59)	(2.58)	(5.21)	(5.24)	(4.64)	(3.58)
Bank Dep.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(1.34)	(1.54)	(0.71)	(0.72)	(1.00)	(1.21)	(0.27)	(0.25)	(0.91)	(0.91)	(0.44)	(0.96)
Bank Cred.	0.001***	0.001***	0.001***	0.005***	0.000*	0.001**	-0.000	-0.000	0.000	0.000	0.000	0.000
	(3.70)	(4.26)	(3.41)	(3.72)	(1.70)	(2.04)	(-0.88)	(-1.34)	(0.33)	(0.86)	(0.10)	(1.55)
Ins. Prem.	0.004	0.000	0.012***	0.004***	-0.019***	-0.004***	0.035***	0.009***	0.027***	0.006***	0.039***	0.011***
	(1.51)	(0.26)	(2.95)	(3.73)	(-3.87)	(-3.23)	(9.48)	(10.77)	(6.04)	(6.88)	(5.90)	(6.82)
Bond Cap.	0.000	0.000	-0.001**	-0.000***	0.000	0.000	0.002***	0.001***	0.002***	0.001***	0.002***	0.001***
	(0.43)	(1.29)	(-2.09)	(-2.95)	(0.51)	(0.84)	(6.30)	(10.34)	(5.42)	(7.92)	(3.03)	(6.73)
Inter. Debt	0.000	0.000	0.000	0.000	0.000	0.000	-0.003***	0.000***	-0.003***	-0.001***	-0.002***	0.000
	(0.01)	(0.07)	(0.59)	(0.95)	(0.94)	(1.15)	(-8.34)	(-5.32)	(-7.19)	(-5.03)	(-4.07)	(-1.64)
Stock Traded	0.003***	0.000*	0.000	0.000	0.001***	0.000***	-0.001***	-0.000***	-0.000**	-0.000**	-0.001***	-0.000***
	(2.65)	(1.73)	(0.62)	(1.24)	(3.43)	(3.05)	(-4.42)	(-4.96)	(-2.14)	(-2.16)	(-2.41)	(-3.10)
Inflation	0.013**	0.003**	0.001	0.000	0.014*	0.003*	-0.053***	-0.008***	0.046***	0.006***	-0.071***	-0.014***
	(2.46)	(2.49)	(0.17)	(0.03)	(1.78)	(1.72)	(-7.11)	(-4.59)	(4.97)	(2.88)	(-5.50)	(-4.56)
Savings	0.001	0.000	0.003**	0.001**	-0.002	-0.000	0.002*	0.001***	0.002	0.001*	0.002	0.001**
	(1.05)	(0.94)	(1.89)	(1.80)	(-0.88)	(-0.86)	(1.84)	(2.80)	(1.37)	(1.72)	(0.94)	(2.20)
Constant	-0.119*		0.380***		0.008		-0.979***		-1.170***		-0.407**	
	(-1.83)		(4.07)		(0.08)		(-9.08)		(-8.59)		(-2.17)	
1=increased long-term debt maturity, 0=Maintained long-term debt maturity												
Classical	2.272***	0.041***	1.999***	0.050***	1.600*	0.017*	2.320***	0.208***	2.115***	0.195***	3.175***	0.229***
	(4.96)	(4.81)	(3.41)	(3.69)	(1.81)	(1.71)	(9.18)	(10.36)	(7.14)	(8.21)	(6.15)	(6.51)
TD	5.031***	0.088***	7.281***	0.168***	1.120	0.020	3.837***	0.252***	4.500***	0.320***	2.204	0.088
	(3.41)	(3.22)	(4.41)	(4.35)	(0.40)	(0.65)	(5.57)	(4.60)	(5.49)	(4.86)	(1.52)	(0.88)
CR	0.582***	0.011***	0.130*	0.004**	1.009	0.011	0.113**	0.010**	0.176***	0.018***	-0.059	-0.009
	(4.07)	(4.17)	(1.86)	(2.08)	(1.48)	(0.04)	(2.26)	(2.54)	(3.08)	(3.84)	(-0.53)	(-1.20)
Inv	0.252***	0.050***	0.395***	0.085***	0.161*	0.088	0.142***	0.025***	0.129***	0.029***	0.129**	0.077***
	(4.43)	(4.78)	(5.39)	(5.19)	(1.67)	(0.79)	(5.10)	(5.02)	(3.94)	(3.49)	(2.42)	(2.89)
Inv*Classical	0.882***	0.017***	1.100***	0.025***	-0.559	-0.007	1.099***	0.085***	1.103***	0.093***	1.823***	0.114***
	(2.89)	(2.97)	(3.01)	(2.92)	(-1.02)	(-1.10)	(7.98)	(7.72)	(6.94)	(7.19)	(6.23)	(5.69)
Inv*TD	4.040***	0.075***	4.113***	0.094***	3.959***	0.043***	0.555***	0.024*	0.928***	0.062***	0.187	0.011
	(10.78)	(10.90)	(8.25)	(8.14)	(6.30)	(6.28)	(3.53)	(1.94)	(4.94)	(4.08)	(0.64)	(0.54)
CR*Classical	1.812***	0.035***	1.281***	0.033***	1.744***	0.021***	1.275***	0.117***	1.349***	0.132***	1.320***	0.086***
	(6.22)	(5.47)	(3.59)	(3.58)	(3.19)	(2.91)	(8.17)	(8.24)	(7.34)	(7.59)	(4.12)	(3.55)
CR*TD	4.009***	0.072***	5.492***	0.126***	0.104	0.002	1.866***	0.110***	2.333***	0.167***	1.645**	0.049
	(5.94)	(5.71)	(7.03)	(6.90)	(0.07)	(0.11)	(4.73)	(3.49)	(4.81)	(4.27)	(2.05)	(0.90)
Leverage	1.107***	0.016***	0.644***	0.026***	1.473***	0.014***						
	(15.87)	(12.82)	(5.62)	(9.96)	(14.20)	(10.66)						
Maturity							1.526***	0.175***	1.722***	0.183***	0.657***	0.112***

							(6.60)	(4.37)	(5.74)	(9.28)	(8.07)	(9.49)
MB	-0.011*	-0.000**	-0.017**	-0.001**	0.039*	-0.000**	-0.142***	-0.010***	-0.099***	-0.005***	0.126***	0.008***
	(-1.92)	(-2.20)	(-2.06)	(-2.36)	(1.79)	(2.09)	(-18.44)	(-16.45)	(-9.78)	(-6.56)	(9.31)	(8.62)
Size	0.076***	0.142***	0.097***	0.239***	0.095***	0.113***	0.268***	0.021***	0.248***	1.953***	0.284**	1.740
	(10.16)	(10.46)	(9.05)	(9.67)	(7.25)	(7.15)	(5.40)	(4.17)	(7.53)	(6.53)	(2.32)	(1.17)
AB	-0.003	-0.000	-0.014	-0.000	0.004	0.000						
	(-1.06)	(-0.70)	(-1.40)	(-1.33)	(1.20)	(1.22)						
TS	0.038*	0.009**	0.067***	0.015***	0.070*	0.009**						
	(1.87)	(2.32)	(2.69)	(2.60)	(1.84)	(2.20)						
AM	0.110***	0.082**	0.085***	0.125**	0.012**	0.071*						
	(2.88)	(1.98)	(3.22)	(2.20)	(1.99)	(1.74)						
ROA							-0.929***	0-.010***	-1.119***	-0.007***	-0.756***	-0.006***
							(-9.06)	(-7.66)	(-9.25)	(-8.05)	(-5.13)	(-4.51)
Tg							0.228**	0.007***	0.080	0.009	0.391***	0.086***
							(2.53)	(2.87)	(0.68)	(1.14)	(2.75)	(2.93)
Zscore	0.065***	0.001***					0.075***	0.010***				
	(7.36)	(6.37)					(12.51)	(21.80)				
WW index	-0.000***	-0.001***	-0.010***	-0.008***	-0.000**	-0.002**	-0.000*	-0.001**	-0.000*	-0.002**	0.000	0.000
	(-3.85)	(-3.99)	(-6.28)	(-6.54)	(-1.95)	(-2.06)	(-1.92)	(-2.46)	(-1.73)	(-2.11)	(0.63)	(1.07)
Dividends	0.401***	0.007***	0.298***	0.008***	0.723	0.008	0.009**	0.007***	0.056	0.003	0.125**	0.016
	(9.12)	(7.86)	(5.72)	(5.82)	(0.66)	(0.46)	(2.31)	(3.05)	(1.58)	(1.11)	(2.37)	(1.47)
Ind. Med	0.011	0.000	0.045**	0.001**	0.013	0.000	0.106***	0.010***	0.116***	0.011***	0.093***	0.008***
	(0.79)	(0.56)	(2.36)	(2.34)	(0.65)	(1.06)	(8.52)	(10.08)	(7.47)	(8.54)	(4.54)	(5.98)
Bank Dep.	0.001	0.000	0.000	0.000	0.003**	0.012***	0.009***	0.001***	0.009***	0.001***	0.010***	0.001***
	(1.34)	(1.55)	(0.26)	(0.15)	(2.49)	(2.81)	(24.76)	(25.88)	(20.42)	(21.22)	(12.37)	(13.28)
Bank Cred.	0.002***	0.005***	0.002***	0.001***	0.004***	0.000***	0.002***	0.002***	0.001***	0.005***	0.004***	0.001***
	(9.11)	(10.26)	(5.43)	(4.98)	(8.06)	(9.89)	(7.73)	(8.15)	(2.53)	(2.62)	(8.09)	(9.35)
Ins. Prem.	0.099	0.002	0.072	0.002	0.144	0.002	0.029	0.003	0.026	0.003	-0.032	-0.004
	(1.55)	(1.85)	(1.18)	(0.71)	(0.19)	(0.10)	(1.12)	(1.53)	(0.86)	(0.25)	(-1.63)	(-1.33)
Bond Cap.	0.004***	0.014***	0.005***	0.002***	0.004	0.000	0.009***	0.001***	0.007***	0.001***	0.014***	0.001***
	(7.03)	(7.01)	(6.57)	(6.24)	(1.17)	(0.90)	(19.13)	(21.62)	(13.17)	(14.87)	(14.90)	(17.11)
Inter. Debt	0.000	0.000	0.003***	0.000***	0.004	0.000	0.009***	0.001***	0.008***	0.001***	0.011***	0.001***
	(0.58)	(0.59)	(3.21)	(3.15)	(0.42)	(0.60)	(15.08)	(13.24)	(12.08)	(10.52)	(10.06)	(9.33)
Stock Traded	0.004***	0.002***	0.003***	0.0001***	0.004***	0.000*	0.001**	0.000***	0.000	0.000	0.001	0.000
	(9.91)	(9.27)	(5.52)	(5.52)	(5.87)	(1.85)	(2.13)	(3.28)	(0.05)	(0.44)	(1.44)	(1.23)
Inflation	0.000	0.000	0.023	0.001	0.028	0.000	0.142	0.010	0.153	0.011	0.101	0.005
	(0.02)	(0.40)	(1.12)	(1.17)	(1.00)	(0.76)	(1.09)	(1.54)	(0.90)	(0.89)	(1.41)	(0.99)
Savings	0.004	0.000	0.001	0.000	-0.002	-0.000	0.008***	0.001***	0.004*	0.000**	0.018	0.001
	(1.35)	(1.17)	(0.30)	(0.69)	(-0.44)	(-0.30)	(4.40)	(5.01)	(1.72)	(2.08)	(0.34)	(0.98)
Constant	-5.476***		-5.412***		-5.600***		1.250		1.831***		2.562***	
	(-25.27)		(-18.53)		(-14.47)		(1.00)		(8.87)		(8.42)	
N	199,513		116,544		82,969		202,595		128,038		74,557	
Pseudo R2	0.07		0.09		0.06		0.11		0.11		0.07	

This table presents the results for Equations (3) and (4) showing the likelihood of increasing debt maturity, *Maturity*, which is defined as long-term debt over total debt, and leverage, *Leverage*, which is defined as long-term debt over long-term debt plus book value of equity. Following Rivers and Vuong (1988) methodology, we use a two-stage estimation procedure. In the first stage, we replace the endogenous variables with their predicted values to control for endogeneity (Wooldridge, 2002). We follow Dang (2011) to select the instruments for the exogenous variables in our model. Considering Equation (3), we use non-debt tax shields, measured by depreciation over total assets, and tangibility as the instruments for leverage as they are not theoretically related to debt maturity (Dang, 2011; Johnson, 2003). With regard to Equation (4), following Dang (2011) who uses only asset maturity and term structure of interest rates as instrumental values for debt maturity (other variables, tax ratio, growth opportunities, and firm quality, are potentially correlated with leverage, e.g., Frank and Goyal, 2009), we use asset maturity (*AM*) and term structure of interest rates (*TS*) as instruments for debt maturity in Equation (4). The results of the second stage are only reported for brevity. We use Z-score to measure financial distress and consider firms with Z values below 1.80 to be financially distressed. The remaining variables are defined in Appendix 1. Year dummies are included in all regressions, but not reported for brevity. The *t*-statistics are in parentheses.*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

Table 5: Robustness Checks

	Maturity: *Long-term debt/ total debt*			Leverage: *(Long-term debt/ long-term debt +book value of equity)*		
	All	*Healthy*	*Distressed*	*All*	*Healthy*	*Distressed*
Panel A: anti-directors rights from Spamann (2010)						
Inv*Classical	0.124***	0.187***	0.102	0.425**	0.058**	0.017
	(3.51)	(4.05)	(0.87)	(2.54)	(1.99)	(1.48)
Inv*TD	0.264***	0.158***	0.045	0.019***	0.025*	0.015
	(4.21)	(3.58)	(1.52)	(2.88)	(1.78)	(1.11)
CR* Classical	0.036**	0.018***	0.002	0.020**	0.025*	0.012
	(2.28)	(3.62)	(1.02)	(1.98)	(1.78)	(0.85)
CR*TD	0.152***	0.159*	0.105*	0.052**	0.031**	0.005*
	(3.42)	(1.93)	(1.86)	(2.25)	(2.00)	(1.92)
CR	0.010***	0.008**	0.001*	0.017***	0.010***	0.001
	(2.99)	(1.98)	(1.68)	(3.45)	(3.57)	(1.52)
Inv	0.198**	0.225***	0.022*	0.035***	0.098**	0.020
	(4.25)	(3.21)	(1.78)	(3.02)	(2.14)	(0.86)
Classical	0.152***	0.168	0.020***	0.065***	0.045**	0.023
	(6.15)	(0.03)	(4.18)	(2.66)	(2.52)	(1.05)
TD	0.302***	0.312***	0.050	0.066*	0.075**	0.023
	(2.88)	(3.55)	(1.12)	(1.88)	(2.05)	(1.28)
Zscore	0.019***			0.035***		
	(3.99)			(5.04)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	199,513	125,859	73,654	199,513	125,859	73,654
Panel B: Mehran and Prestiani's (2010) and Bharath and Dittmar's (2010) hazard rate						
Inv*Classical	0.124***	0.145***	0.142	0.012***	0.015**	0.009
	(4.25)	(4.21)	(1.00)	(2.97)	(2.50)	(1.02)
Inv*TD	0.232***	0.200**	0.074	0.014***	0.021**	0.003
	(2.99)	(2.32)	(1.12)	(3.54)	(2.45)	(0.81)
CR* Classical	0.025***	0.003***	0.010	0.010***	0.012***	-0.010
	(2.78)	(2.76)	(1.14)	(4.18)	(4.87)	(-1.20)
CR*TD	0.098***	0.119*	0.092*	0.041***	0.040**	0.002*
	(4.65)	(1.78)	(1.94)	(4.23)	(2.54)	(1.80)
CR	0.004**	0.004**	0.003	0.011***	0.008*	0.014*
	(2.22)	(2.12)	(0.75)	(5.32)	(1.78)	(1.78)
Inv	0.250****	0.241***	0.041*	0.030***	0.012***	0.003
	(3.56)	(5.02)	(1.78)	(6.54)	(4.87)	(1.21)
Classical	0.099***	0.100***	0.025	0.056***	0.052**	0.006
	(2.98)	(2.81)	(1.10)	(4.12)	(2.41)	(1.62)
TD	0.357***	0.241***	0.012	0.040***	0.079***	0.014
	(5.45)	(2.99)	(1.15)	(2.98)	(3.52)	(1.09)
Hazard	0.031***			0.030**		
	(3.45)			(1.99)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	190,762	117,897	72,865	190,762	117,897	72,865
Panel C: Hierarchical Linear Model (HLM) specification						
Inv*Classical	0.115*	0.085***	0.105	0.325***	0.203***	0.482
	(1.85)	(2.89)	(1.25)	(5.89)	(4.28)	(1.05)
Inv*TD	0.178**	0.182***	0.059	0.025	0.081**	0.029
	(2.41)	(3.00)	(1.33)	(0.15)	(1.98)	(0.58)
CR* Classical	0.007*	0.008	0.032	0.031***	0.018*	0.058
	(1.74)	(0.45)	(1.07)	(3.58)	(1.71)	(1.19)
CR*TD	0.107***	0.148***	0.058*	0.092***	0.062***	0.081***
	(4.15)	(3.25)	(1.80)	(6.58)	(2.58)	(3.02)
CR	0.061***	0.030*	0.064*	0.005**	0.031**	0.025
	(3.15)	(1.81)	(1.78)	(2.40)	(2.55)	(1.11)
Inv	0.049**	0.027*	-0.108	0.026***	0.012**	-0.052
	(2.53)	(1.88)	(-1.22)	(3.85)	(2.14)	(-1.23)
Classical	0.082	0.892	0.010	0.289***	0.132***	0.289
	(0.15)	(1.28)	(0.07)	(6.00)	(2.88)	(1.02)
TD	0.005**	0.142***	0.125	0.123***	0.118***	0.008
	(2.05)	(2.88)	(1.02)	(2.98)	(3.02)	(1.08)
Zscore	0.029***			0.040***		

	(3.78)			(3.52)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	199,513	125,859	73,654	199,513	125,859	73,654
Panel D: Omitted variables (1)						
Inv*Classical	0.374***	0.355***	0.310	0.167***	0.147**	0.153
	(6.33)	(11.88)	(0.93)	(3.46)	(2.33)	(1.04)
Inv*TD	0.657***	0.722***	0.244	1.117***	1.183***	0.769*
	(10.88)	(9.52)	(1.48)	(10.15)	(7.90)	(1.74)
CR* Classical	0.023***	0.027***	0.017	0.022***	0.012**	0.029
	(7.25)	(6.48)	(1.59)	(2.72)	(2.08)	(1.45)
CR*TD	0.052***	0.045***	0.054***	0.003**	0.068**	0.041
	(4.28)	(2.95)	(2.79)	(2.14)	(2.35)	(1.36)
CR	0.015***	0.014***	0.017*	0.010***	0.019***	0.001
	(7.26)	(5.23)	(1.85)	(3.03)	(4.12)	(0.23)
Inv	0.283***	0.284***	0.251**	0.030	0.029	0.085
	(3.29)	(7.06)	(2.18)	(0.88)	(0.66)	(1.64)
Classical	0.172***	0.170***	0.140	0.005**	0.027***	0.023
	(5.10)	(8.46)	(1.01)	(2.17)	(2.68)	(0.52)
TD	0.345***	0.372***	0.149	0.528***	0.455***	0.413
	(11.89)	(10.08)	(1.18)	(12.14)	(7.85)	(1.10)
Zscore	0.009***			0.007***		
	(14.18)			(10.06)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	101,373	61,996	39,377	102,650	62,884	39,766
Panel E: Omitted variables (2)						
Inv*Classical	0.313***	0.199***	0.338	0.504***	0.457***	0.494
	(8.05)	(10.51)	(1.29)	(4.11)	(11.40)	(1.04)
Inv*TD	0.534***	0.347***	0.469	0.954***	0.754***	1.014*
	(11.68)	(7.22)	(1.49)	(11.68)	(7.90)	(1.79)
CR* Classical	0.034***	0.020***	0.047	0.035***	0.035***	0.039
	(14.03)	(7.60)	(1.47)	(5.88)	(4.97)	(0.98)
CR*TD	0.079***	0.067***	0.072**	0.024**	0.019**	0.001
	(8.56)	(6.96)	(2.29)	(2.52)	(2.03)	(0.06)
CR	0.014***	0.014***	0.009	0.020***	0.007***	0.037
	(9.04)	(8.33)	(1.51)	(7.96)	(2.61)	(1.13)
Inv	0.140***	0.103***	0.158*	0.195***	0.197***	0.063
	(14.70)	(9.92)	(1.69)	(7.94)	(7.05)	(1.50)
Classical	0.175***	0.104***	0.202*	0.216***	0.215***	0.205
	(15.77)	(11.26)	(1.82)	(9.76)	(8.39)	(1.54)
TD	0.134***	0.058**	0.145	0.516***	0.403***	0.517
	(6.17)	(2.49)	(1.63)	(16.43)	(11.17)	(1.57)
Zscore	0.029***			0.029***		
	(5.82)			(7.64)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	41,885	24,866	17,019	41,885	24,866	17,019
Panel F: Excluding the US						
Inv*Classical	0.614***	0.566***	0.563	0.086***	0.030*	0.086

	(3.19)	(2.76)	(0.96)	(5.76)	(1.81)	(1.46)
Inv*TD	0.959***	0.959***	0.418	0.281***	0.041*	0.123
	(9.52)	(5.46)	(1.19)	(7.23)	(1.91)	(1.65)
CR* Classical	0.004**	(0.004)**	-0.003	0.020***	0.022***	0.037
	(2.46)	(2.16)	(-0.62)	(9.16)	(9.11)	(0.93)
CR*TD	0.032**	0.027**	0.077***	0.073***	0.066***	0.028*
	(3.16)	(2.06)	(4.69)	(9.06)	(7.67)	(1.88)
CR	0.029***	0.026***	0.022***	0.003**	0.003*	0.005**
	(7.48)	(5.60)	(8.87)	(2.53)	(1.82)	(2.37)
Inv	0.445***	0.402***	0.392	0.122***	0.031***	0.105**
	(5.51)	(3.34)	(0.96)	(5.49)	(3.48)	(2.04)
Classical	0.228***	0.214***	0.223*	0.065***	0.043***	0.082*
	(24.98)	(17.55)	(1.70)	(8.90)	(5.26)	(1.68)
TD	0.447***	0.433***	0.263	0.051***	0.069***	0.073
	(9.09)	(4.35)	(1.11)	(2.74)	(3.45)	(1.14)
Zscore	0.009***			0.026***		
	(8.19)			(5.22)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	163,240	100,625	62,615	166,102	102,625	63,477

This table reports robustness checks. Panels A report the results for the system of Equations (1) and (2) when we use an alternative measure for investor protection, namely the revised measure of anti-directors' rights from Spamann (2010) and classify countries into strong (weak) investor protections if its anti-directors rights are above (below) the mean anti-directors rights of the sample. Panel B reports the system of Equations (1) and (2) results when we use the Mehran and Prestiani's (2010) and Bharath and Dittmar's (2010) hazard rate using Equation (5). We classify companies into healthy (distressed) if the hazard rate is below (above) the sample mean. Panel C reports the results for the system of Equations (1) and (2) when we estimate the hierarchical linear model (HLM) specification using Equations (7) and (8) where, for firm-level variables, we consider firm-level deviations and country-level means. For country-level variables, we consider grand-mean centred country-level deviations. Panels D and E report the system of Equations (1) and (2) results when we add additional firm- and country-level controls (Zheng et al., 2012). In Panel D, we add Private Credit, GINI index, and Governance Control. In Panel E, we also added two additional variables to our estimation in Panel D, the ultimate cash flow rights of the largest shareholders (*Cash flow rights*) to proxy for the alignment effect and the ultimate voting rights minus ultimate cash flow rights of the largest shareholders (*Diverge*) to proxy for internment effect. We report these results separately as these two additional variables have reduced the sample size significantly. Panel F reports the system of Equations (1) and (2) results when we exclude the US from our sample. The system of Equations in Panels A, B, D, E, and F are estimated by GMM regression approach in which standard errors are clustered at the firm level (following Billett et al., 2007) Year dummies are included in all regressions, but not reported for brevity. We define the variables in Appendix 1. The t-statistics are in parentheses.*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively.

Appendix 1: Definitions of Variables

Variables	Description	Source
Panel A: Firm-level control variables		
Maturity	Long-term debt/ Total debt	DataStream
Leverage	Long-term debt/ Long-term debt + Book value of equity	DataStream
Inv	The score of anti-self-dealing index. The higher the score, the higher the level of investor protection	Djankov et al. (2008)
CR	Creditor rights index	Djankov et al. (2007)
Classical	A dummy variable equal to one if the firm located in a country that adopts classical tax system	Alzahrani and Lasfer (2012), OECD tax database
TD	Tax discrimination based on Miller (1977), computed as =1-[(1-stautory corporate tax)*(1-highest effective personal tax rate on equity)/(1-highest statutory personal tax rate on interest)]	OECD tax database www.oecd.org/ctp/taxdatabase World's Highest Marginal Tax Rate on Global Finance website
MB	Market to book ratio	DataStream
Size	Log of market capitalisation	DataStream
AB	Abnormal earnings = $(EPS_{t+1} - EPS_t)/ SP_t$	DataStream
ROA	Return on assets = EBIT/Total Assets	DataStream
AM	Asset Maturity = PPE/ Depreciation	DataStream
Tg	Tangibility= Fixed Assets/ Total Assets	DataStream
Z-score	1.2*(working capital/total assets)+1.4*(retained earnings/total assets)+3.3*(earnings before interest and taxes/total assets)+0.6*(market value of equity/ book value of total liabilities)+0.999*(sales/total assets)	Eisdorfer (2008) and DataStream
WW index	We follow Whited and Wu (2006) and compute WW index as: *-0.091Cash Flow-0.062Div+0.021LTDTD-0.044Size-0.0102ISG-0.035SG*, where *WW-Cash Flow* is operating income plus depreciation divided by beginning-of-period total assets. *WW-Div* is an indicator equal to one if the firm pays cash dividend. *WW-LTDTD* is the ratio of long-term debt over total assets. *WW-Size* is the natural logarithm of total assets. *WW-ISG* is the firm's 3-digit industry sales growth. *WW-SG* is firm sales growth	DataStream
Dividends	A dummy variable equal to 1 if firm pays dividends, 0 otherwise	DataStream
Ind. Med	Yearly industry median of debt maturity	DataStream
Panel B: Country-level control variables		
TS	Term structure = $BY_{10y} - BY_{3m}$ where BY is treasury bill or interbank rate if data not available	DataStream
Bank Dep.	Bank deposits to GDP	World Bank, FSD
Bank Credit	Bank credit to bank deposits	World Bank, FSD
Ins. Prem.	Life and non-life insurance premium volume to GDP	World Bank, FSD
Bond Cap.	Public and private bond market capitalisation to GDP	World Bank, FSD
Inter. Debt	International debt issues to GDP	World Bank, FSD
Loans	Loans from non-resident banks to GDP	World Bank, FSD
Stock Traded	Total value of stock traded to GDP	Economic and Social Data Service, International Financial Statistics
Inflation	Annual rate of change on consumer price index	Economic and Social Data Service, International Financial Statistics
Savings	Gross domestic saving to GDP	Economic and Social Data Service, International Financial Statistics
Panel C: Variables for Robustness Checks		
Cash flow rights	Ultimate cash flow rights of the largest shareholder, as a percentage of total outstanding shares (at the 10% cut-off)	Zheng et al. (2012), Faccio and Lang (2002)
Diverge	Ultimate voting rights minus ultimate cash flow rights of the largest shareholder (at 10% cut-off)	Zheng et al. (2012), Faccio and Lang (2002)
Private Credit	The ratio of private credit by deposit money banks to the sum of private bond market capitalization and public bond market capitalization	Zheng et al. (2012), World Bank, FSD
GINI	GINI index	Zheng et al. (2012), World Income Inequality Database
Governance Control	An index that captures perceptions of the extent to which public power is exercised for private gain. A higher value implies less corruption.	World Governance Indicators (available over 1996-2016), Kaufmann et al. (2008), Zheng et al. (2012)

This table shows the definitions and data sources of firm-level control variables in Panel A, country-level control variables in Panel B, and robustness check variables in Panel C. FSD is for Financial Structure Database. All variables are measured in US dollars.

Appendix 2: Distribution of firm specific variables by governance and tax systems

Country	N	Maturity	Leverage	Inv	TD	CR	MB	Size	AB	ROA	AM	Tg	Zscore	Dividends	WW index	Ind. Med
Panel A: strong investor protection countries																
1. Classical tax system																
Ireland	536	0.69	0.34	0.79	0.15	1.00	1.76	10.50	0.01	0.01	2.37	0.79	1.47	0.59	-0.55	0.62
United States	36,493	0.64	0.27	0.65	0.24	1.00	1.73	8.41	-0.20	-0.04	1.61	0.84	1.68	0.25	-0.49	0.58
2. Partial imputation tax system																
Canada	4,570	0.67	0.26	0.64	0.20	1.00	2.27	12.27	0.01	-0.01	0.46	0.88	2.86	0.47	-0.59	0.20
Ireland	185	0.64	0.28	0.79	0.19	1.00	2.37	12.21	0.02	0.06	0.35	0.91	3.23	0.73	-0.57	0.28
Kingdom	15,280	0.57	0.22	0.95	0.10	4.00	1.64	9.32	-0.04	0.01	2.07	0.82	1.63	0.59	-0.52	0.50
3. Full imputation tax system																
Australia	47,876	0.60	0.24	0.76	0.00	3.00	1.57	9.32	-0.04	-0.02	2.41	0.85	1.44	0.45	-0.55	0.51
Canada	13,314	0.62	0.25	0.64	0.03	1.00	0.26	4.80	-0.16	-0.01	6.80	0.89	-0.17	0.31	-0.44	0.78
New Zealand	1,264	0.61	0.25	0.95	-0.01	4.00	1.47	9.36	0.01	0.03	2.61	0.87	1.52	0.72	-0.52	0.43
Panel B: weak investor protection countries																
1. Classical tax system																
Austria	1,694	0.56	0.35	0.21	-0.06	3.00	1.43	10.33	0.01	0.04	1.77	0.91	1.67	0.68	-0.52	0.46
Belgium	1,664	0.57	0.34	0.54	-0.12	2.00	1.71	10.42	0.01	0.04	1.33	0.86	1.82	0.66	-0.53	0.41
Denmark	1,950	0.57	0.29	0.46	-0.02	3.00	1.56	9.99	0.00	0.03	1.44	0.89	2.33	0.59	-0.52	0.50
Germany	4,128	0.59	0.37	0.28	0.02	3.00	0.83	7.71	-0.04	0.01	3.23	0.84	0.75	0.57	-0.43	0.46
Japan	43,858	0.43	0.28	0.50	0.00	2.00	0.92	9.82	0.00	0.02	3.05	0.98	1.87	0.85	-0.49	0.13
Netherlands	1,340	0.65	0.34	0.20	0.03	3.00	2.17	11.99	-0.15	0.06	1.22	0.83	2.14	0.71	-0.60	0.40
Poland	3,909	0.45	0.19	0.29	-0.04	1.00	1.19	7.79	0.01	0.03	3.58	0.91	1.67	0.38	-0.42	0.43
Portugal	633	0.57	0.43	0.44	0.06	1.00	1.40	10.28	0.01	0.03	0.59	0.82	0.73	0.67	-0.28	0.41
Spain	1,218	0.58	0.39	0.37	0.00	2.00	1.18	9.96	-0.03	0.03	3.27	0.86	0.80	0.65	-0.51	0.75
Sweden	3,977	0.59	0.24	0.33	-0.14	1.00	1.50	8.18	-0.04	-0.03	1.60	0.77	1.18	0.48	-0.46	0.45
Switzerland	3,186	0.63	0.33	0.27	0.15	1.00	1.79	11.40	0.00	0.04	1.66	0.90	2.17	0.73	-0.56	0.38
2. Partial imputation tax system																
Denmark	40	0.61	0.27	0.46	0.00	3.00	1.24	10.90	0.01	0.09	0.34	0.98	2.48	0.85	-0.53	0.20
Finland	1,195	0.60	0.35	0.46	-0.15	1.00	1.36	9.56	0.00	0.04	2.03	0.81	1.38	0.76	-0.48	0.45
France	6,484	0.58	0.33	0.38	0.12	0.00	1.19	8.63	0.01	0.09	1.94	0.81	1.21	0.56	-0.48	0.75

Germany	2,914	0.54	0.25	0.28	0.11	3.00	2.12	11.72	0.00	0.02	0.26	0.86	2.58	0.46	-0.55	0.01
Italy	2,293	0.51	0.34	0.42	-0.10	2.00	1.24	9.95	-0.01	0.02	2.62	0.81	0.86	0.60	-0.48	0.63
Luxembourg	303	0.61	0.32	0.28	0.05	1.00	1.43	9.88	0.00	0.06	2.50	0.85	1.19	0.63	-0.55	0.44
Norway	63	0.80	0.43	0.42	-0.15	2.00	1.72	11.77	-0.01	-0.01	0.42	0.93	1.90	0.51	-0.57	0.45
Portugal	139	0.57	0.43	0.44	0.07	1.00	1.99	12.04	0.03	0.03	0.35	0.81	1.13	0.63	-0.31	0.27
Spain	862	0.51	0.26	0.37	0.11	2.00	2.37	12.96	0.01	0.08	0.36	0.92	2.41	0.74	-0.62	0.10
Turkey	3,160	0.35	0.18	0.43	0.03	2.00	1.23	9.22	0.01	0.05	3.58	0.96	1.76	0.38	-0.43	0.34
3. Full imputation tax system																
Finland	437	0.66	0.26	0.46	-0.15	1.00	2.08	11.84	0.00	0.06	0.31	0.89	3.22	0.80	-0.57	0.16
France	4,286	0.54	0.27	0.38	0.13	0.00	2.39	11.84	-0.08	0.07	0.20	0.87	2.56	0.67	-0.58	0.04
Italy	1,177	0.47	0.28	0.42	0.13	2.00	1.88	12.58	0.87	0.05	0.27	0.90	1.94	0.68	-0.57	0.04
Mexico	1,496	0.65	0.27	0.17	0.00	0.00	1.29	11.54	-0.05	0.06	2.69	0.91	1.96	0.50	-0.53	0.39
Norway	718	0.76	0.38	0.42	-0.04	2.00	2.12	11.89	0.01	0.04	0.40	0.92	2.35	0.56	-0.60	0.37
All strong	119,518	0.64 ***	0.29*	0.73***	0.10***	2.22***	1.51***	8.66***	-0.10***	-0.02***	2.2***6	0.85***	1.41***	0.40***	-0.53*	0.55***
All weak	93,124	0.50	0.27	0.42	0.01	1.72	1.24	9.85	-0.47	0.03	2.44	0.92	1.77	0.71	-0.50	0.27
All classical	104,586	0.65 a,b	0.28 a,c	0.51 a,c	0.09 a,b,c	1.62 a,b	1.32 b	9.21 a,b,c	-0.08 a,b	0.00 a,b	2.43 a,b	0.90 a,b	1.72 b,c	0.58 b	-0.49 a,b	0.36 a,b,c
All partial	37,488	0.56	0.26	0.65	0.07	2.38	1.63	9.90	-1.19	0.03	1.78	0.84	1.76	0.55	-0.52	0.45
All full	70,568	0.54	0.24	0.69	0.02	2.36	1.38	8.76	-0.05	-0.01	2.57	0.86	1.24	0.45	-0.54	0.51
All sample	212,642	0.58	0.28	0.60	0.06	2.00	1.39	9.18	-0.26	0.00	2.35	0.88	1.57	0.53	-0.51	0.43

This table reports the distribution of firm-specific variables by governance and tax systems. The overall sample included 212,642 firm-year observations from 24 OECD countries from 1990 to 2015. We follow Alzahrani and Lasfer (2012) and classify a country as strong (weak) investor protections if its anti-self-dealing index score, as reported by Djankov et al. (2008), is above (below) the mean anti-self-dealing index score of the sample. The remaining variables are defined in Appendix 1.

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively between strong and weak protection. a, b, c significantly different at 1% level between *Classical* and *Partial* tax system, *Classical* and *Full* tax system, and between *Full* and *Partial* tax system, using two-tailed t-tests.

Appendix 3: Distribution of country-level variables by governance and tax systems

Country	TS	Bank Dep.	Bank Credit	Ins. Prem.	Bond Cap.	Inter. Debt	Stock Traded	Inflation	Savings
Panel A: strong investor protection countries									
1. Classical tax system									
Ireland	1.57	0.83	1.52	0.07	0.60	1.30	0.18	0.02	0.29
United States	0.67	0.74	0.71	0.07	0.93	0.23	2.06	0.02	0.21
2. Partial imputation tax system									
Canada	0.90	1.17	0.96	0.05	0.87	0.27	0.73	0.02	0.25
Ireland	0.44	0.54	1.13	0.08	0.42	0.17	0.30	0.02	0.26
Kingdom	-0.96	0.00	0.00	0.11	0.33	0.75	1.18	0.02	0.20
3. Full imputation tax system									
Australia	0.41	0.82	1.30	0.06	0.76	0.39	0.68	0.03	0.25
Canada	1.17	0.00	0.00	0.05	0.92	0.42	0.75	0.01	0.22
New Zealand	0.57	0.50	0.96	0.03	0.24	0.10	0.13	0.02	0.23
Panel B: weak investor protection countries									
1. Classical tax system									
Austria	1.19								
Belgium	1.61	0.86	0.78	0.06	0.90	0.64	0.24	0.02	0.23
Denmark	0.92	0.55	2.09	0.08	1.87	0.30	0.42	0.02	0.24
Germany	1.19	0.93	0.99	0.05	0.34	0.66	0.44	0.01	0.24
Japan	0.87	2.05	0.52	0.08	2.12	0.08	0.90	0.00	0.21
Netherlands	1.17	0.92	1.91	0.06	0.73	1.03	0.98	0.02	0.24
Poland	0.32	0.46	0.72	0.03	0.21	0.13	0.15	0.02	0.22
Portugal	1.49	0.92	1.41	0.06	0.49	0.60	0.25	0.03	0.21
Spain	1.83	1.11	1.40	0.04	0.46	0.80	0.87	0.02	0.21
Sweden	1.10	0.51	1.69	0.07	0.79	0.73	1.23	0.01	0.25
Switzerland	0.96	1.32	1.22	0.07	0.55	0.51	1.67	0.01	0.26
2. Partial imputation tax system									
Denmark	-0.05	0.52	0.96	0.05	1.52	0.00	0.15	0.03	0.24
Finland	1.00	0.59	1.50	0.04	0.20	0.50	1.18	0.02	0.19
France	1.55	0.75	1.34	0.09	0.56	0.63	0.68	0.01	0.21

Germany	0.90	0.97	1.14	0.05	0.81	0.74	0.70	0.02	0.21
Italy	1.87	0.70	1.40	0.07	0.75	0.53	0.52	0.02	0.20
Luxembourg	2.56	3.42	0.37	0.05	0.01	1.28	0.09	0.02	0.33
Norway	-1.18	0.47	1.45	0.05	0.34	0.22	0.31	0.03	0.17
Portugal	1.63	0.83	1.61	0.07	0.60	0.57	0.18	0.03	0.24
Spain	1.23	0.78	1.31	0.05	0.60	0.38	1.18	0.03	0.25
Turkey	0.07	0.42	0.84	0.01	0.28	0.09	0.43	0.14	0.24
3. Full imputation tax system									
Finland	1.45	0.47	1.27	0.04	0.46	0.36	1.31	0.02	0.27
France	1.24	0.52	1.26	0.08	0.83	0.22	0.50	0.02	0.26
Italy	1.06	0.50	1.34	0.05	1.17	0.18	0.36	0.03	0.23
Mexico	1.81	0.24	0.77	0.02	0.30	0.12	0.14	0.08	0.21
Norway	0.60	0.49	1.37	0.05	0.40	0.09	0.35	0.02	0.24
All strong	0.42***	0.61***	0.79**	0.07	0.77***	0.38**	1.17***	0.02	0.23
All weak	1.01	1.35	0.90	0.07	1.32	0.29	0.76	0.01	0.22
All classical	0.84 a,b,c	1.30 a,b	0.76 b,c	0.07	1.34 a,b,c	0.24 a,b,c	1.26 a,b,c	0.01 a	0.22 b
All partial	0.27	0.50	0.69	0.08	0.49	0.58	0.87	0.03	0.21
All full	0.65	0.62	1.04	0.06	0.78	0.37	0.66	0.02	0.24
All sample	0.68	0.93	0.84	0.07	1.01	0.34	0.99	0.02	0.23

This table reports the distribution of country-level variables by governance and tax systems. The overall sample included 212,642 firm-year observations from 24 OECD countries from 1990 to 2015. We follow Alzahrani and Lasfer (2012) and classify a country as strong (weak) investor protections if its anti-self-dealing index score, as reported by Djankov et al. (2008), is above (below) the mean anti-self-dealing index score of the sample. The remaining variables are defined in Appendix 1.

*, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively between strong and weak protection. a, b, c significantly different at 1% level between *Classical* and *Partial* tax system, *Classical* and *Full* tax system, and between *Full* and *Partial* tax system, using two-tailed t-tests.

Appendix 4: Correlation Matrix

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Maturity	1.00																
2	Inv	0.13***	1.00															
3	CR	0.02*	0.54***	1.00														
4	Classical	0.12***	-0.44***	-0.35***	1.00													
5	TD	0.05**	0.14***	-0.27***	0.13***	1.00												
6	Leverage	0.48***	-0.04*	-0.01*	0.02*	-0.04**	1.00											
7	MB	0.02*	0.05**	0.02*	-0.04*	0.17***	-0.05**	1.00										
8	Size	0.11***	-0.07**	0.07**	0.01*	0.10***	0.02*	0.56***	1.00									
9	AB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00								
10	ROA	0.01*	-0.01*	0.00	0.00	0.00	0.00	-0.01*	0.01*	0.00	1.00							
11	Tg	-0.16***	-0.12***	-0.02*	0.14***	-0.04*	-0.14***	-0.06**	-0.04*	0.00	0.00	1.00						
12	AM	0.03*	0.00	0.02*	0.02*	-0.21***	0.25***	-0.41***	-0.62***	0.00	0.00	0.11***	1.00					
13	Zscore	-0.03*	-0.03*	0.01*	0.05**	0.11***	-0.23***	0.44***	0.48***	0.00	0.03*	0.07**	-0.39***	1.00				
14	WW index	-0.08**	-0.03*	-0.03*	0.05**	0.01*	-0.10**	-0.01*	-0.09**	0.00	0.00	0.06**	-0.04*	0.08**	1.00			
15	Dividends	0.06**	-0.14***	0.09**	0.09**	-0.15***	0.19***	-0.04*	0.28***	0.00	0.02*	0.07**	0.03*	0.05**	-0.10**	1.00		
16	TS	-0.01*	-0.38***	-0.35***	0.15***	-0.02*	0.07**	-0.15***	-0.13***	0.00	0.00	0.07**	0.05**	-0.08**	-0.01*	0.06**	1.00	
17	Bank Dep.	-0.16***	-0.36***	-0.05**	0.54***	-0.19***	0.05**	-0.12***	0.07**	0.00	0.00	0.24***	0.10**	0.03*	0.04*	0.27***	0.17***	1.00
18	Bank Cred.	0.08**	-0.21***	0.02*	-0.13***	-0.11***	0.05**	0.13***	0.14***	0.00	0.00	-0.10**	-0.10**	0.05**	-0.03*	-0.03*	0.10**	0.02*
19	Ins. Prem.	-0.03*	0.23***	0.18***	0.05**	0.02*	0.01*	0.08**	0.07**	0.00	0.00	-0.04*	-0.01**	0.05**	0.00	0.10**	-0.09**	0.07**
20	Bond Cap.	-0.16***	-0.19***	-0.10**	0.45***	-0.21***	-0.03*	0.04*	0.18***	0.00	0.00	0.21***	0.02**	0.12***	0.07**	0.18***	-0.09**	0.68***
21	Inter. Debt	0.09**	0.13***	0.26***	-0.35***	-0.13***	0.01*	-0.01*	-0.08**	0.00	0.00	-0.28***	0.01*	-0.12***	-0.07**	-0.13***	-0.21***	-0.39***
22	Stock Trad	0.04*	0.17***	-0.26***	0.39***	0.30***	-0.02*	0.12***	0.00	0.00	-0.01	-0.12***	-0.08**	0.04*	-0.01*	-0.16***	-0.17***	-0.03*
23	Inflation	0.02*	0.07**	0.06**	-0.26***	0.07**	-0.04*	0.12***	0.09**	0.00	0.00	-0.04*	-0.06**	0.06**	0.00	-0.11***	-0.28***	-0.32***
24	Saving	0.03*	0.01*	0.07**	-0.13***	-0.02*	0.01*	0.05**	0.03*	0.00	0.00	-0.01*	0.00	0.01*	0.00	-0.03*	0.03**	-0.04*
25	Ind. Med	0.07**	0.06**	-0.01*	-0.05**	-0.05**	0.07**	-0.10**	-0.11***	0.00	0.00	-0.11***	0.11***	-0.10**	0.00	-0.04*	-0.02*	-0.08**

		18	19	20	21	22	23	24	25
19	Ins. Prem.	-0.16***	1.00						
20	Bond Cap.	-0.13***	0.14***	1.00					
21	Inter. Debt	0.13***	0.11***	-0.38***	1.00				
22	Stock Trad	-0.17***	0.32***	0.08**	0.02*	1.00			
23	Inflation	0.08**	-0.23***	-0.24***	0.03*	-0.05**	1.00		
24	Saving	0.18***	0.03*	0.02*	-0.01*	-0.12***	0.07**	1.00	
25	Ind. Med	0.00	-0.02*	-0.09**	0.15***	0.08**	0.00	-0.04*	1.00

The table presents the Pearson correlation coefficients across our variables. The sample includes 212,642 firm-year observations from 24 OECD countries from 1990 to 2015**.** The variables are defined in Appendix 1. *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. The data is winsorized at the top and bottom 1%.