ESSAYS ON CAPITAL STRUCTURE AND DIVIDEND POLICIES

By

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SYNOPSIS

Chapters

1. Leverage, Unemployment Risk and Employee Compensation

Abstract:

Firm's leverage may have both positive and negative effects on employee compensation. High leverage results in higher financial constraints thereby restricting firm's ability to pay workers, i.e. compensation decreases with leverage. On the other hand, high leverage exacerbates firm's bankruptcy risk, against which employees require higher compensation *ex-ante*. In sum, compensation increases with leverage. I show that unemployment risk – employees not being able to find another comparable job in the event of job-loss – plays a key role in determining the effect of leverage on wages. When unemployment-risk is low, compensation decreases with leverage; as this risk becomes more prominent, compensation increases with leverage.

2. Exogenous Information Shock and Dividend Payout Policies: Evidence from IFRS Adoption

Abstract:

We study changes in firms' dividend policies in response to improved information environment between investors and firms, enabled by IFRS adoption. We document that the relation between information asymmetry reduction and dividend payout policy is not monotonic, and in fact depends on firm's underlying growth opportunities. Following mandatory adoption of IFRS, firms with low growth opportunities exhibit higher propensity of paying dividends. On the other hand, those with high-growth opportunities exhibit reduced propensity of paying dividends. These results are consistent for dividend payout ratio as well. These, in conjunction, suggest firm's growth rate play a key role in determining the impact of improved information environment on firm's dividend policies.

Leverage, Unemployment Risk and Employee Compensation

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Abstract

Firm's leverage may have both positive and negative effects on employee compensation. High leverage results in higher financial constraints thereby restricting firm's ability to pay workers, i.e. compensation decrease with leverage. On the other hand, high leverage exacerbates firm's bankruptcy risk, against which employees require higher compensation *ex-ante*. In sum, compensation increases with leverage. I show that unemployment risk – employees not being able to find another comparable job in the event of job-loss – plays a key role in determining the effect of leverage on wages. When unemployment-risk is low, compensation decrease with leverage. As this risk becomes more prominent, compensation increase with leverage.

Keywords: leverage, unemployment risk, product-market competition, wage

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I. Introduction

Capital and labor represent two critical components of a firm's production function. Therefore, the interactions between these two components are of particular interest to researchers in corporate finance. The firm's capital structure, especially its financial leverage, significantly impacts the capital it can employ for production. Also, unemployment risks faced by employees and the compensation they receive affects the risk-return trade-off faced by labor. Given these motivations, I study the interdependence between unemployment risk, financial leverage and employee compensation. Specifically, I study how unemployment risks faced by workers influences the relationship between firm leverage and employee compensation.

The theoretical motivation for studying the above relationship is compelling. Extant literature has documented evidence for both increasing as well as decreasing effect of leverage on wages. One strand of the literature argues that debt disciplines firms (Grossman and Hart, 1982) and firm's financial constraints imposed by high leverage restricts its ability to pay its workers and thus high debt results in lower wages (Bronars and Deere 1991; Hanka 1998; Matsa 2010).[2] In contrast, theoretical arguments of Titman (1984) and Berk, Stanton, and Zechner (2010) posit that higher debt ratios lead to higher wages. Specifically, these studies argue that highly levered firms are more likely to undergo capital restructuring and/or face bankruptcy. Thus, employees in such firms face greater risk of job-loss.[3]

Unlike investors, employees invest specialized human capital in the firm and thereby hold undiversified portfolios. As a result, the risks arising from firm-distress are particularly elevated for employees (Zingales, 2000). Thus, employees of highly levered firms demand higher wages *ex-ante* as a compensation for bearing such risk. Consistent with these arguments, Chemmanur, Cheng, and Zhang (2013) find a positive relation

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[2] For example, Nobel Automotive, in order to meet its interest obligation arising from high levels of debt, froze employee salaries and eliminated bonus, among other things. [Source: *Automotive News, May, 2009*]

[3] AMR Corp, after filing for bankruptcy Chapter 11, reduced its workforce by 15-percent, i.e. laid off more than 13,000 workers. [Source: *The Deal, Dec 2011; BBC*] In another incidence, New Jersey based drug-maker, Merck & Co., almost halved its workforce, i.e. laid off 36,450 employees, during its two-phases of restructuring over a span of five years [Source: *International Herald Tribune, Oct, 2013*].

between leverage and wages. The overall effect of financial leverage on employee compensation is, therefore, unclear.

To resolve this theoretical tension, it is important to exploit conditions where one effect of leverage on wages dominates the other. In this paper, I examine how workers' unemployment risk moderates the effect of firm's capital structure on wages. The above theoretical arguments suggest that unemployment risk should affect the latter margin, i.e. the higher wages demanded by workers for assuming greater unemployment risk, but not the former margin, i.e. the use of leverage as a bargaining chip by firms. Therefore, we expect the effect of leverage on wages to be positive when unemployment risk is high. Conversely, we expect the effect of leverage on wages to be negative when unemployment risk is low.

To test these predictions, it is important to distinguish loss of employment from unemployment risk. While loss of employment represents an *ex-post* measure, unemployment risk represents an *ex-ante* measure. Furthermore, a high likelihood of losing the current job does not necessarily translate into high unemployment risk, particularly if workers can easily find a comparable job. In other words, for human capital to bear substantial costs of bankruptcy, employees must be unable to find an alternative job or be forced to take another job at a substantially lower wage. I define this lack of alternative job opportunities for workers as their "unemployment risk".

I use import competition to proxy workers' unemployment risk. Increased exposure to import competition results in severe employment losses in the manufacturing sector (Revenga 1992; Autor, Dorn, and Hanson 2012; Pierce and Schott 2012). These employment losses are either permanent or stretch over the long-term (Gray 1985; Layton, Robinson, and Tucker 2011). Therefore, in industries where import-competition is high, workers' unemployment risk is high. I restrict the sample only to manufacturing industries for two reasons. First, financial leverage is more common among manufacturing firms. Second, the adverse effect of import competition on employment manifests primarily for manufacturing firms. The sample includes annual data for U.S. manufacturing firms from 1989 to 2013 from Compustat. The firms are classified into

21 industries using the NAICS 3-digit classification. Following Bertrand (2004), I measure import competition using the import penetration index, which is defined as the ratio of gross import values to the sum of gross import and domestic production values.

Consistent with the theoretical arguments, I find that in industries where import competition is low higher leverage results in lower wages. On the other hand, in industries where import competition is high, higher leverage results in higher wages. These results are statistically and economically significant. In industries where import competition is low, one standard deviation increase in book leverage decreases employee wages by almost 19%. On the other hand, in industries where import competition is high, one standard deviation increase in book leverage increases employee wages by more than 11%. The moderating effects of high import competition are even stronger for alternative measures of leverage.

Crucially, I find contrasting results for domestic product-market competition. Unlike import competition, domestic competition does not lead to an increase in unemployment risk. In fact, researchers have documented positive effect of product market competition on job-creation and employment (Nickell 1999; Gersbach 1999; Chen and Funke 2008). Should a firm operating in high domestic-competition industry liquidate, it leads to frictional or temporary unemployment. Moreover, while both domestic and import competition increases firms' cash-flow volatility and hence exacerbates its bankruptcy risks (Valta 2012), only import competition increases unemployment risk. Therefore, above contrasting effects of import and domestic competition stem primarily from the effect of unemployment risk on the cost of bankruptcy and not from other sources of bankruptcy risk. Apart from establishing that the above results stem from unemployment risk, these tests also represent placebo tests that suggest that my results are not driven by omitted variables.

In my next set of tests, I address concerns that the above results are influenced by firm leverage being potentially endogenous. For instance, some industry characteristics may affect a firm's leverage as well as workers' wages. Also, a firm may raise debt to pay its workers. These phenomena can potentially confound the causal effect of leverage on wages. To overcome this issue and to establish causal effect of leverage on wages, I run instrument variable regressions. I use state highest-corporate tax rate to instrument leverage (Heider and Ljungqvist 2015); these tax rates affect neither a firm's bargaining power nor the unemployment risk of its workers. Also, to my knowledge, there is no theoretical or empirical work that suggests that corporate tax-rate directly influences employee compensation. Therefore, state corporate tax-rate variable satisfies relevance criterion as well as exclusion restriction for a valid instrument. Results using the IV regressions confirm my earlier findings.

In addition, existing literature helps us understand why firms are willing to pay workers more when workers' outside opportunities are limited. Autor, Dorn, and Hanson (2012) document that increasing import competition, the main proxy of unemployment risk, results in reduced labor supply. Brown, and Matsa (2015) find that employees are able to estimate firm's true financial condition, which in turn, effects workers' willingness to work in a firm and their wage demand. Therefore, in order to continue its operations in an uninterrupted manner, firm needs to pay its workers a premium ex-ante for bearing high risk of bankruptcy. In fact, researchers also document that workers concerns about becoming unemployed affects firms' policies on wage setting even when they are far from bankruptcies (Li 1984, Topel 1986).

To the extent, labor supply constraint affects all the firms in a high import penetration industry equally, it does not explain the differential impact for levered firms. However, based on import penetration alone, I cannot rule out the possibility that workers may be withdrawing labor supply more from levered firms within the high import penetration industry and thus creating an upward pressure on wages. This is why I use state unemployment insurance to measure worker's unemployment risk. Gruber (1997) document that unemployment insurance provides significant consumption smoothing benefits to workers. Although unemployment insurance reduces the unemployment risk for workers, it may also result in lower labor supply if workers wait longer for the right job.

In sum, if labor supply constraint affects all firms equally, it does not explain the interaction effect of unemployment insurance and leverage. On the other hand, if workers withdraw supply more from the levered firms in the presence of high unemployment insurance, the interaction effect of leverage and unemployment insurance should be positive. I find that the interaction effect of leverage and unemployment insurance on wages is negative, which is not consistent with the supply constraint channel. This result, however, is consistent with the risk premium channel – more generous unemployment insurance reduces the risk of being unemployed and hence the demand for risk premium by the workers. Furthermore, I use other proxies of workers unemployment risk, *viz*. industry layoff rate and employees' firm-specific investment to verify the strength of these hypotheses for other industries as well.

This paper contributes to the growing literature on labor and finance. Extant literature is ambiguous about the effect of leverage on employee compensation. Bronars and Deere (1991), Hanka (1998) and Matsa (2010) find that higher leverage lowers employee wages, while Chemmanur, Cheng, and Zhang (2013) find the opposite. My study solves this puzzle. I highlight the importance of distinguishing workers' unemployment risk from risk of job-loss in order to determine the impact of firm's capital structure on employee compensation. The paper identifies the circumstances where leverage strengthens firm's bargaining position against its workers and lowers wages and distinguishes them from the circumstances where worker's demand for risk-premium (for bearing unemployment risk) leads to a positive relationship between leverage and employee wages .

Also, to the best of my knowledge, this is the first paper that disentangles the moderating effects of two types of product-market competition, i.e. domestic competition and import competition, on employee compensation. I argue if it were firms' proximity to bankruptcy alone that motivates workers' compensation, then the effect of domestic and import competition should have been similar. But if it is workers' unemployment risk that determines the effect of leverage on wages, then domestic and import competition will have opposite effects on wages.

The rest of the paper has been organized as follows. Section II lays out two main hypotheses development in detail and reviews predicted relations between explanatory variables and wages. Section III describes data and descriptive statistics, whereas section IV presents main empirical model used in the paper and discusses results that showing how unemployment risk moderates the impact of leverage on wages. Finally, sections V and VI tests robustness of the empirical results and concludes main findings of the paper, respectively.

II. Hypotheses Development

A firm's surplus is divided between its investment opportunities and various stakeholders; and firm's debt plays a critical role in determining how this surplus is distributed amongst them. This paper focuses on the effect of firm's capital structure on employee compensation. Literature documents opposite effects of firm's debt on employee compensation. In other words, high leverage might result in lower wages by strengthening firm's bargaining power or higher wages by increasing workers' unemployment risk.

II.1 Decreasing effect of leverage on wages

High debt levels resulting in high debt obligation imposes financial restrictions on the firm, which in turn results in causing disciplining effects (Grossman and Hart, 1982; Jensen, 1986). Hanka (1998) argues for disciplining effect of leverage on employees and finds that high debt is associated with lower wages and reduced pension funding. He suggests debt may increase shareholders' wealth by reducing labor cost. Furthermore, debt is used as a tool by firm to increase its bargaining power against its workers. Presence of labor union is often associated with workers' high bargaining power against firms. In support of this, Lewis (1986) finds that labor unions are widely associated with wage increment and imposing other costs on firms.

Firms respond to this higher workers' bargaining power by increasing their debt levels. Since a union cannot extract more than present value of future net cash flows, debt obligations limit the revenues available for union extraction without driving firm to bankruptcy (Bronars and Deere 1991). In addition, Matsa (2010) and Myers and Saretto (2010) document that leverage reinforces firm's relative bargaining power and that firms strategically use leverage to strengthen their stand while with workers. In sum, higher debt results in higher firm-bargaining power against workers and, thus, wages decreases with leverage.

II.2 Increasing effect of leverage on wages

On the other hand, firms run a high risk of capital restructuring and/or bankruptcy, arising from high levels of debt. Firm's liquidation imposes large costs on its various stakeholders, hence appropriate selection of capital structure assures that incentives are well aligned (Titman, 1984). These costs are particularly pronounced for employees because they, unlike other stakeholders of the firm, are not well diversified (Zingales 2000). For instance, firm distress often results in lower wages (Graham, Lemmon, and Schallheim 1998), and average wage declines by 50-percent or more around firm's bankruptcy filing (Hotchkiss 1995). Since workers are able to accurately assess firm's true financial health (Brown and Matsa 2016), their demand for wages increase with firm's leverage, for bearing higher risk of unemployment and wage-cut in future.

Providing further support to the above argument, Topel (1984) and Li (1986) find that workers concerns about becoming unemployed affects firms' policies on wage setting, even when they are far from bankruptcies. Also, recent works in the literature align with above findings as well. Berk, Stanton and Zechner (2010) find that firm's optimal capital structure depends on the trade-off between human-capital costs and tax benefits of debt. Hence employee compensation rises in tandem with firm's leverage (Chemmanur, Cheng, and Zhang 2013).

II.3 Importance of workers' unemployment risk

Helliwell (2003) finds that job-loss has significant detrimental effect on people's happiness, and severely impacts their well-being. In sum, unemployment might leave a significant impact on workers, and their unemployment costs can arise from a wide range of factors, *viz*. expensive job search (Diamond 1982; Mortensen 1986; Mortensen and Pissarides 1994), limited supply of match-specific job opportunities (Lazear 2009), imperfect information about worker's productivity (Harris and Holmstrom 1982) and/or other market frictions. Building on this, I distinguish *unemployment-risk* from the *loss-of-employment*.

I argue that if workers can find a comparable job easily, firm's bankruptcy will translate only into a temporary unemployment. In other words, employees incur significant cost of firm's bankruptcy only if they do not find an alternative job, or find another job at substantially lower pay. I define this lack of alternative job opportunities for workers as "unemployment risk". And, I hypothesize it is workers' unemployment risk that determines whether it's firm's bargaining power or worker's risk-premium that dominates the directionality of firm's capital structure on employee compensation.

In the industries where workers have a lot of outside job opportunities, adverse effect of firm liquidation on workers is not significant. As a result, workers' demand for risk-premium is not significant either. Hence in these settings, firm's bargaining power plays the dominating role for wage, i.e. wage decreases with firm's debt ratio. In contrast, as the unemployment risk becomes more prominent – i.e. workers' likelihood of finding an alternate job in the event of firm's liquidation and/or financial distress is little – workers' demand for risk-premium supersedes firm's bargaining power. Consequently, wage increases with firm's leverage. Above lines of argument can be summarized in following two hypotheses:

<u>Hypothesis 1</u>*: When unemployment risk is low, workers do not demand a substantial risk-premium. Thus, financial constraint arising from high debt ratio play the dominating role on determining workers' wage, i.e. wages reduce with leverage in industries with low unemployment risks.*

<u>Hypothesis 2</u>*: As unemployment risk increases, employees bear increasingly high cost of firm's bankruptcy. Hence, their demand for risk-premium play the dominating role on the effect of leverage on wage, i.e. wages increase with leverage in high unemployment-risk industries.*

It, however, might be a little puzzling why a firm with higher financial constraint pays more to its employees, especially when employees have limited alternative outside the firm. Researchers find that compensation play a key role in determining workers' willingness to work in a firm. For instance, Li (1986) finds that workers with more human-capital prefer safer jobs. Since they are able to accurately estimate firm's financial well-being of firms, an increase in firm's distress adversely impacts the quality of firm's job-applicants (Brown and Matsa 2016). Along similar lines, Autor, Dorn, and Hanson (2012) find that increased exposure to import competition reduces labor-force participation. These, in conjunction, suggest that if workers are faced with significant unemployment risks firms are not be able to hire quality human-capital, unless workers are compensated for bearing such risk *ex-ante*.

III. Data and Sample Description

In this study I use both firm-level parameters as well as macroeconomic variables to test the robustness of the hypotheses presented above. I have collected these parameters from various sources.

III.1 Firm Level Parameters

The firm-level parameters come from Compustat North American Industrial Annual database. The sample includes a little over 58,600 firm-year observations for USA manufacturing firms spanning from 1989 to 2013. There are 21 manufacturing industries, as tabulated in Table A2. Table 1 summarizes the descriptive statistics of firm-level parameters. Although the sample of manufacturing is quite big, as reported in Panel B, the sample that report employee expense is quite a small fraction, i.e. 6% as reported in Panel A. As can be seen from mean of total asset, market capitalization etc. it is mainly large firms that report wages.

I remove small firms – those with less than USD 10mm of total assets – from the sample. I drop the observations for which return on asset, i.e. ratio of net income to total asset, is less than -100% or greater than 100%. All the ratios, i.e. market-to-book, physical capital intensity (PCI), and adjusted RoA (Return on Assets) are winsorized at 1% and 99% level. I use three measures of leverage viz. book leverage, alternate book leverage and alternate market leverage (Welch, 2011). For definition of all variables, please refer to Table A1. I use North American Industry Classification System (NAICS) three-digit-code for classification of manufacturing industries, broadly classified into durable and non-durable goods.

III.2 Import Competition

Following Bertrand (2004), I use import penetration index (IPI) to measure import competition in an industry, where IPI is defined as the ratio of gross import value to the sum of gross import value and gross domestic production value. I gather industry-wise gross domestic production value from Bureau of Economic Analysis of the US Department of Commerce. Industry level annual gross import value comes from two sources. For 1989-2006, I obtain the import data from National Bureau of Economic Research Trade Database (For description I refer to Feenstra, 1996); whereas for 2007-2013 I refer to US Government Import-Export portal.

III.3 Firm's State Headquarter (HQ) & Other Macroeconomic Variables

As has been pointed by Heider and Ljungqvist (2015) firm's state HQ data provided by Compustat is quite static in nature and hence is not very reliable to capture state-level variation. I, therefore, use EDGAR to get firm's state HQ data, precisely I obtain the state mentioned under "Business Address" for SEC filing and I backfill this data from until 1989. Firms for which EDGAR doesn't provide state HQ data, I retain Compustat data; and where I do not have either I fill firm's state of incorporation. While some of these firms don't have their state HQ data, most of unreported states HQ arise because the firms have business address filed outside USA.

I use state highest corporate tax rate to instrument leverage in order to address potential endogeneity concerns. Heider and Ljungqvist (2015) provide changes in state corporate income tax rate from 1989 to 2012. For the states that have not changed their corporate tax rates during this period, hence not reported in the paper, I refer to Tax Foundation[4]. It provides state-wise corporate tax data from 2000-2013. For the states that do not feature in tax-increase and/or tax-cut list provided by Heider and Ljungqvist (2015), I backfill state's top tax rate until 1989.

I obtain state unemployment insurance from US Department of Labor. The data is available for all the states from 2000 onwards. It reports maximum and minimum weekly wage benefit allowance given to workers in an average state-year (Agrawal and Matsa, 2013). It also provides the maximum and minimum number of weeks for which claimants received the allowance. I collect layoff rate from the database of Job Openings and Labor Turnover Survey (JOLTS) provided by US Bureau of Labor Statistics. Layoff rate is seasonally adjusted rates of laid and/or *discharged* employees as a percent of annual average employment during a year. The data is available from 2001 onwards for industries based on North American Industry Classification System (NAICS) super-sectors. Industry layoff rate is reported in Table A4.

IV. Empirical Framework and Results

I mainly use log-linear model to estimate the effect of workers' unemployment risk and firm's leverage on workers' compensation. I use average employee expense (AEE) – ratio of firm's total employee expense to number of employees – as the response variable. Firm's total employee expense, as reported by Compustat, include salaries, pension costs, payroll taxes, incentive compensation, profit sharing and other benefit plans for its payroll workers. This is well-suited for this setting, since I intend to estimate the effect of leverage on total labor expense. Equation (1) lays out the main empirical model used in this paper.

$$\log\left(\mathrm{AEE}_{\mathrm{ijt}}\right) = \alpha_{\mathrm{j}} + \alpha_{\mathrm{t}} + \beta_1 * \mathrm{Leverage}_{\mathrm{ijt}} + \beta_2 * \mathrm{Leverage}_{\mathrm{ijt}} * \mathrm{UnemploymentRisk}_{\mathrm{jt}} + \beta_3 * \mathrm{UnemploymentRisk}_{\mathrm{jt}} + \boldsymbol{\omega} * \mathbf{Z}_{\mathbf{ijt}} + \epsilon_{\mathrm{ijt}} \quad \ldots (1)$$

In the above equation, α_j and α_t refer to industry and year fixed effects, respectively. I use industry fixed effects so that I can compare effects of leverage on wage for firms operating within the same industry. To

[4] The data can be found at http://taxfoundation.org/

control for effect on wages arising from economy-wide changes, I include year fixed effects. I cluster standard errors at the firm-level. In above equation, $UnemploymentRisk_{jt}$ refers to workers' unemployment risk in an industry *j* in year *t*. I use three measures of leverage, *viz*. book leverage, alternate book leverage and alternate market leverage. Book leverage is ratio of sum of long-term debt and debt in current liabilities to sum of long-term debt, debt in current liabilities and book-value of firm. Debt in current liabilities includes short-term notes and debt due in one-year. Welch (2011) suggests that the liabilities that are nonfinancial debt should not be included in the computation of leverage ratio. Therefore, alternate book and market leverage use debt-due in one year instead of debt in current liabilities.

In order to ascertain other firm characteristics do not spuriously confound the results, I control for a number of relevant firm attributes. For instance, firm size might play an important role in determining its worker's wage, i.e. average wage for larger firms might be higher. I control for firm size by including natural log of firm's total assets. To control for growth opportunities I use market-to-book ratio. To measure labor productivity I use ratio of net sales to number of employees. Perotti and Spier (1993) recommend a firm will not be able to use leverage as a bargaining tool if their profits from existing assets are significant.

Matsa (2010) finds unions target their organizing efforts on the most profitable firms, thus, I control for firm's profitability. In equation (1) employee expense is the response variable and firm's net income is obtained after discounting for employee expense, which might temper with the results. Hence, instead of using classical return on asset, i.e. ratio of net income to total asset, to measure firm's profitability, I use ratio of sum of Net Income and Employee Expense to Total Asset, say, adjusted RoA. In addition, firm's inherent value and volatility might have substantial effect on firm's ability to pay its workers. Since volatility of equity significantly influence firm's value and volatility (Merton 1974; Bharath and Shumway 2008), I add it as a control variable. It is estimated by annualized standard deviation of monthly returns.

I use import competition as the main proxy of workers' unemployment risk and to establish the role of unemployment risk on determining the effect of firm's leverage on wages. In addition, to corroborate the underlying theory of these findings I use additional parameters, *viz*. domestic product-market competition, state unemployment insurance, industry layoff rate, etc. as well. These additional measures allow me to test these hypothesis for industries other than manufacturing industries.

IV.1 Import Competition

Competition from imported goods is a potential cause of structural unemployment, i.e. a long-term or possibly permanent unemployment of workers (Gray 1985; Layton, Robinson, and Tucker 2011). Literature also documents that increased exposure to import competition results in significant losses in employment and reduces labor force participation in manufacturing sector (Revenga 1992; Autor, Dorn, and Hanson 2012; Pierce and Schott 2012). Consequently, in high import-competition industries, firm's bankruptcy or financial distress has high likelihood of resulting in workers' permanent or long-term unemployment. It is, thus, befitting to use import competition to proxy workers' unemployment risk.

Given import competition is consequential for manufacturing firms, I restrict the sample only to manufacturing industries. Following (Bertrand 2004), I measure import competition using import penetration index (IPI) – defined as the ratio of gross import values to the sum of gross import and domestic production values. To test Hypotheses 1 and 2 empirically, I modify equation (1) for import competition as follows.

$$\log(\mathrm{AEE}_{ijt}) = \alpha_j + \alpha_t + \beta_1 * \mathrm{Leverage}_{ijt} + \beta_2 * \mathrm{Leverage}_{ijt} * \mathrm{High\ IPI}_{jt} + \beta_3 * \mathrm{High\ IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt} \quad \ldots (2)$$

where, $$\mathrm{High\ IPI}_{jt} = \begin{cases} 1, & \text{if IPI of industry 'j' is above median at time 't'} \\ 0, & \text{otherwise} \end{cases}$$

Based on two hypotheses proposed in section II, I predict β_1 should be negative and β_2 as well as $(\beta_1 + \beta_2)$ should be positive. I check whether leverage across low and high IPI industries are different to begin with. Table A3 summarizes univariate t-test result for book and alternate book leverage across two groups. The null hypothesis cannot be rejected, i.e. these two distributions of leverage in high and low import competition industries are not statistically different. Further, the estimates of equation (2) are summarized in Panel A of Table 2. I find that in low import competition industries, higher leverage results in a lower wage. This supports Hypothesis 1, i.e. when workers have outside job alternatives, firm's bankruptcy or distress doesn't impost significant cost on workers. Thus, workers' demand for risk-premium is not significant and hence firms' financial constraints play the dominating role in determining compensation. However, compensation increase with leverage in high import competition industries. I test statistical significance of the sum of $\beta_1$and β_2 in Panel B of Table 2 to test the effect of leverage on compensation for high import competition industries. This provides support for Hypothesis 2, i.e. as workers' unemployment risk increases, their demand for risk-premium surpasses firm's bargaining power.

These results are both statistically and economically significant. Within low import-competition industries, an increase in alternate book leverage by one standard deviation (0.22) is associated with 19.06% reduction in average employee expense, a statistically and economically significant number. On the other hand, within industries facing intense competition of imported goods, employee compensation increases with firm's debt ratio. For these industries, a one-standard-deviation increase in alternate book leverage results in 11.09% of increase in average employee expense. These effects are stronger for alternative measures of leverage.

IV.2 Instrument Variable Regression

Nonetheless, a major concern in the analyses is the likelihood of estimates summarized in Table 2 suffering from endogeneity bias. This bias might result from either simultaneity bias and/or omitted variables, unaccounted for here; or maybe both. For instance, it's likely that workers' demand for wages and benefits might influence firm's capital structure. In such cases, estimates reported in Table 2 do not help us establish causal impact of leverage on wages. In order to correct for potential endogeneity bias, I use instrument variable (IV) regression, where I use one-period lagged state highest corporate tax-rate (CTR) as an instrument for firm's leverage.

CTR neither affects firm's bargaining power, nor workers unemployment risk, hence it doesn't seem to have any direct effect on wages, thereby satisfying the exclusion restriction of the tax-rate as the instrument. There is no theoretical or empirical work that suggests that corporate marginal tax-rate directly influences employee compensation. In sum, CTR satisfies both relevance as well as exclusion-restriction criterion of a valid instrument. As a result, I use one-period lagged CTR to instrument leverage. Graham (1996b) argues that net operating losses carried forward (NOL_{CF}) plays a critical role in determining firm's tax rate. Following Graham (1996b) I use following variable as an instrument for leverage.

$$\text{State CTR} = \begin{cases} \text{Top statutory tax rate} & \text{if} \quad \text{EBT} \geq 0 \text{ and } \text{NOL}_{\text{cf}} = 0 \\ 0.5 * \text{Top statutory tax rate} & \text{if} \quad (\text{EBT} \geq 0 \text{ and } \text{NOL}_{\text{cf}} > 0) \\ 0, & \text{otherwise} \end{cases}$$

where, EBT refers to earning before tax.

However, firm's state headquarter data is not very well populated. Since I could use state CTR only for a subsample of firms, I use marginal tax-rate (MTR) to instrument leverage as an additional test. Spurious relation between firm's financing decisions and its effective tax-rates might make the variable to be endogenous to firm's capital structure. Graham (1996a) suggests simulated corporate MTR exhibits substantial variation and addresses such shortcomings; thus it can be used to examine impact of tax-rate on firm's financing decisions. However, estimating simulated MTR incorporates complex tax-code and forecasting 18 years of taxable income, and is fairly difficult to estimate. He compares various measures of corporate MTR and recommends statutory MTR (as defined below) is one of the best proxies of simulated MTR (Graham 1996b).

$$Statutory\ MTR = \begin{cases} \dfrac{Tax}{EBT - NOL_{cf}} & if \quad EBT > 0 \\ 0 & if \quad EBT \leq 0 \end{cases}$$

One-period lagged statutory MTR is a valid instrument for leverage, since it is measured before the effect of the current year's financing decision and thus not endogenously affected by firm's debt-ratio (Graham, Lemmon, and Schallheim 1998). To further ascertain that both tax-rates I use here are valid instruments, I statistically test for endogeneity of instruments as well as for weak-instrument test. The results are consistent using both instruments, reinforcing the causal relation between interaction of competition and leverage on employee compensation. To instrument interaction of import competition dummy and leverage in equation (2), I use interaction of one-period lagged tax-rate and import competition dummy[5].

I run following IV regression, equation (3), where I have two first stage regressions, each for leverage and (leverage*High IPI). In the second stage, I use estimated value of leverage and (leverage*High IPI) thus obtained in the first stage. I use industry and year fixed effects along with firm-level controls as suggested in equation (1).

First Stage:
$$\text{Leverage}_{ijt} = \alpha_j + \alpha_t + \delta_1 * \text{Tax Rate}_{j,t-1} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

$$\text{Leverage}_{ijt} * \text{High IPI}_{jt} = \alpha_j + \alpha_t + \delta_2 * \text{Tax Rate}_{j,t-1} * \text{HighIPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

Second Stage:
$$\log(\text{AEE}_{ijt}) = \alpha_j + \alpha_t + \beta_1 * \widehat{\text{Lev}_{ijt}} + \beta_2 * \text{Lev}_{ijt} \widehat{* \text{High}} \text{ IPI}_{jt} + \beta_3 * \text{High IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt} \quad \ldots (3)$$

Table 3 and 4 summarizes estimates for equation (3) for State CTR and statutory MTR, respectively. For brevity, I report estimates only for book and alternate book leverage. In columns (2) and (5) of these tables, we find that both instruments have significant positive effect on firm's leverage. This is consistent with both theoretical as well as empirical findings (Graham 1996a; Graham 1996b; Graham, Lemmon, and Schallheim 1998, etc.), and thus validates the relevance criterion of these instruments.

As we can see in columns (1) and (4) of these tables, the results are consistent with those of equation (2). Therefore, we can draw the inference about causal impact of leverage on wages. In other words, we can conclude for low import competition industries, high leverage results in lower wages, whereas for high import competition industries high leverage causes wages to go up. I also test for validity of both the proxies in terms of endogeneity and weak-instrument tests. As has been tabulated, both tests are rejected for tax-

[5] If *x* is an endogenous variable with instrument *z*, and *w* is exogenous variable, then *z**w* can be instrument for *x**w*

rate (t-1) as well as State CTR (t-1) at 99% confidence level, thereby validating these instruments in this context. This underpins the causal impact of firm's leverage on worker's wage.

IV.3 Domestic Product-Market Competition

In addition to leverage, industry characteristics might also affect firm's probability of bankruptcy. Gaspar and Massa (2006) and Irvine and Pontiff (2009) argue that product-market competition exacerbates firm's probability of bankruptcy by enhancing cash-flow volatility. Similarly, Valta (2012) suggests product-market competition reduces pledgeable income and increases cash-flow risk, which can lead to higher firm-default-risk. Therefore, it is possible I observe positive effect of leverage on wages in high-import competition not because of high unemployment risk posed to workers, but because of exacerbated bankruptcy risk of firms because of high competition. In order to rule out this channel and substantiate aforementioned hypotheses, I use domestic product-market competition.

However, OECD[6] and World Bank[7] reports document that labor market interaction with increased product market competition can result in diminishing structural unemployment – permanent or long-term unemployment. Nicoletti et al. (2001) find a significant positive effect of product-market regulatory reforms on employment rate, as shown in Fig. A1. This graph plots country-level employment rate in all business sectors, except agriculture, on y-axis and anti-competitive product-market regulation on x-axis. Furthermore, Nickell (1999), Gersbach (1999) and Chen and Funke (2008) find that more intense domestic product-market competition results in more job opportunities for workers.

Given both import as well as domestic product market competition exacerbates firm's bankruptcy risks, I argue had an individual firm's bankruptcy risk independently determined the effect of leverage on wage, the moderating effect of both these competitions would be similar. However, if it is the unemployment risk that plays the critical role, as suggested, then domestic and import competition should have opposite

[6] Nicoletti, Giuseppe, Andrea Bassanini, Sébastien Jean, Ekkehard Ernst, Paulo Santiago, and Paul Swaim. 2001. "Product and Labour Market Interactions in OECD Countries."
[7] http://blogs.worldbank.org/psd/does-competition-create-or-kill-jobs

moderating effects. In sum, unlike high import competition, in high domestic-competition industries unemployment risk is little, thus firm's bargaining power dominates the effect of leverage on employee compensation. Drawing on similar rationale, for low domestic competition, human bankruptcy cost is relatively higher. In such industries, leverage has positive effect on wages.

To empirically test the role of domestic competition in this context, I use equation (4). Herein, I use HHI (Herfindahl-Hirschman Index) as a measure of market concentration, which is calculated as $\Sigma_{i=1}^{N} s_i^2$, where s_i is the market share of *i-th* firm operating in an industry.

$$\log(\mathrm{AEE_{ijt}}) = \alpha_j + \alpha_t + \beta_1 * \mathrm{Leverage_{ijt}} + \beta_2 * \mathrm{Leverage_{ijt}} * \mathrm{DomComp_{jt}} + \beta_3 * \mathrm{DomComp_{jt}} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt} \quad \ldots (4)$$

where, $$\mathrm{DomComp_{jt}} = \begin{cases} 1, & \text{if HHI of industry j is below } \mathrm{HHI_{median}} \text{ in year t} \\ 0, & \text{otherwise} \end{cases}$$

The estimates of equation (4) are summarized in Table 5. We find that within less competitive industries, high leverage results in higher wages, i.e. as workers have limited alternative jobs and hence their demand for risk-premium supersedes firm's bargaining power arising from debt. On the other hand, with increasing domestic competition firms high leverage results in lower wages. In sum, in high domestic competition industries workers have less probability of permanent unemployment, if laid off. Thus their demand for risk-premium is not significantly high. These findings provide support for Hypotheses 1 and 2.

IV.4 State Unemployment Insurance (UI)

As discussed above, worker's unemployment risk effect their willingness to work for a risky firm (Autor, Dorn, and Hanson 2012; Brown and Matsa 2016). Therefore, based on product-market competition alone, I cannot distinguish whether positive impact of leverage on employee compensation arises from labor supply constraint or workers' demand for risk-premium for bearing firm's bankruptcy risk. To distinguish the effects of these channels, I now use state unemployment insurance benefits.

Each state's unemployment insurance benefits have three key features: eligibility, wage benefit amounts and duration. Typically, all private sector workers who are involuntarily unemployed and actively seeking new employment are eligible for benefits. A state's wage benefit formula typically calculates the highest earnings realized by the worker in four of the last five quarters and seeks to replace approximately 50% of those wages through weekly payments (Agrawal and Matsa 2013). Both unemployment insurance amount as well as number of weeks for which the beneficiary receives benefit is subject to minimum and maximum bounds.

I use variation in unemployment insurance (UI) across states to test robustness of the results. UI provides substantial benefits to its recipients. For instance, Gruber (1997) finds that UI provides significant consumption smoothing benefits to workers; in the absence of unemployment insurance consumption could fall by one-third. Also, Topel (1984) finds that availability of state unemployment insurance reduces the magnitude of wage differential given for bearing different unemployment risk. In other words, increment in unemployment insurance reduces the cost of unemployment for workers. Therefore, demand for risk-premium reduces with unemployment insurance. On the other hand, unemployment insurance may also result in higher reservation utility, thereby lowering labor supply if workers wait longer for the right job

To estimate the moderating effect state UI in this context, I use equation (5):

$$\begin{aligned}\log\left(\mathrm{AEE}_{ijt}\right) = {} & \alpha_s + \alpha_j + \alpha_t + \beta_1 * \mathrm{Leverage}_{ijt} \\ & + \beta_2 * \mathrm{Leverage}_{ijt} * \mathrm{UnempInsurnace}_{st} + \beta_3 * \mathrm{UnempInsurnace}_{st} + \boldsymbol{\omega} * \mathbf{Z}_{\mathbf{ijt}} + \epsilon_{ijt} \qquad \ldots (5)\end{aligned}$$

In above equation $\mathrm{UnempInsurnace}_{st}$ is calculated as natural logarithm of average UI benefit for a state in year t, where average UI is the product of average week and average UI benefit. Here, β_2 is my main coefficient of interest. If high UI results in high reservation utility, hence reduced labor supply, then β_2 should be positive. But if high UI reduces workers' unemployment cost, then β_2 should be negative.

Since UI is a state level parameter, it allows me to the test the hypotheses for all industries. Estimates of equation (5) are tabulated in Table 6. Columns (1) to (3) summarizes results for manufacturing firms, where columns (4) to (6) reports estimates for all industries. As we can see from this table in absence of UI, wage increases with firm's debt-ratio, as given by β_1. This supports the argument that workers' demand for risk-premium is significant when they have high cost of unemployment. Nonetheless, a significant negative β_2 suggests that as UI increases, it mitigates workers' unemployment cost and hence reduces workers' demand for risk premium. The results hold true for manufacturing as well as all industries. To further ascertain the consistency of two hypotheses for all industries, I use layoff rates.

IV.5 Industry Layoff Rate

To test the two hypotheses, I use industry layoff-rate as a moderator to the effect of leverage on employee compensation. I collect layoff rate from the database of Job Openings and Labor Turnover Survey (JOLTS) provided by US Bureau of Labor Statistics. Layoff rate is seasonally adjusted rates of laid and/or discharged employees as a percent of annual average employment. I argue that when an industry exhibit high layoff rate, it might result in workers' higher unemployment cost, hence higher demand for risk-premium *ex-ante*.

The data is available from 2001 onwards for NAICS super-sectors, thus offer a little variation. For instance, all twenty-one manufacturing industries are divided in durable and non-durable manufacturing goods. Layoff rate is tabulated in detail in Table A4. One advantage, however, I have here is layoff-rate is available for entire gamut of industries. This not only helps me carry out analysis for a larger sample, but also enables me to check whether aforementioned effect of workers' unemployment risk holds true beyond manufacturing firms. I run following model to estimate moderating effect of industry layoff rate on leverage and employee compensation.

$$\log(\mathrm{AEE}_{\mathrm{ijt}}) = \alpha_{\mathrm{j}} + \alpha_{\mathrm{t}} + \beta_1 * \mathrm{Leverage}_{\mathrm{ijt}} + \beta_2 * \mathrm{Leverage}_{\mathrm{ijt}} * LR_{\mathrm{jt}} + \beta_3 * LR_{\mathrm{jt}} + \boldsymbol{\omega} * \mathbf{Z}_{\mathbf{ijt}} + \epsilon_{\mathrm{ijt}} \quad \ldots (6)$$

In above equation LR is a binary variable that takes one if industry layoff rate is above median and zero otherwise. The results for equation (6) are summarized in Table 7. These estimates show that within industries with low layoff-rate, high leverage results in lower wage, whereas within high layoff industries, high leverage results in higher wages. These estimates are consistent with earlier findings and holds true for all industries.

IV.6 Diverse versus Standalone Firms

Workers' unemployment risk mainly an industry attribute. If a firm operates in more than one business segment, then its classification might not capture true effects arising from that industry. In other words, the effects arising from industry attributes is stronger for firms operating in single industry, i.e. standalone firms, vis-à-vis diverse, i.e. conglomerate, firms. In addition, unlike standalone firms, diverse firms have access to internal capital market (Scharfstein and Stein 2000; Gopalan, Nanda, and Seru 2014), thereby mitigating the effects of higher leverage. In other words, same level of leverage might pose higher threat for standalone firms in comparison with diversified firms.

In addition, Faccio and O'Brien (2017) document that conglomerate firms display less pronounced fluctuations in employment than standalone firms. Therefore, not only bankruptcy risk arising from leverage but unemployment risk arising from industry characteristics are mitigated for diverse firms. I obtain industry segment files from Compustat. I identify a firm as standalone if it operates in single segment and if the sum of the segment sales is not within 1% of the total net sales and if the sum of segment assets is not within 25% of the firm assets (Berger and Ofek 1995). In order to test these predictions, I run equation (2) for subsample of standalone and diversified firms. These estimates are reported in Table 8. Columns (1)-(3) summarize estimates for standalone firms whereas columns (4) to (6) summarize that for diverse firms. Consistent with above proposition, results are stronger for undiversified firms.

V.1 Demanding risk-premium ex-ante

Numerous incidences indicate that firm's high levels of debt increases its likelihood of financial distress and bankruptcy. Both firm distress as well as bankruptcy filings leads to substantial wage cut (Hotchkiss 1995; Graham et al. 2015) and layoff. Along similar lines, Perotti and Spier (1993) argue that firms are able to use leverage strategically when current profits are low and future investment is necessary to guarantee full payment of the union's claims. However, *ex-post* relation between leverage and wage does not align with *ex-ante* relation between the two. Risk-averse workers, in anticipation of high risk of unemployment arising from high debt, demand high risk-premium from firms *ex-ante.* That is, wages increases with firm leverage (Berk, Stanton, and Zechner 2010; Chemmanur, Cheng, and Zhang 2013) if firm is not financially distressed.

In order to establish *ex-ante* relation between firm's bankruptcy risk and wage, I divide the sample of manufacturing firms in two subsamples, one with Altman Z-score of less than 1.8, which are considered to be financially distressed, and the other with Altman Z-score of higher than 1.8. I estimate equation (2) for these sub-samples and these are summarized in Panel A of Table 9. Columns (1) – (3) report results for firms with Altman Z-score of higher than 1.8 and columns (4)-(6) report that for firms with Altman Z-score of less than equal to 1.8. Panel B of Table 9 test the statistical significance of effect of leverage on compensation for high IPI industries. As is evident workers' demand for risk premium is not met for financially distressed firm, thereby underpinning the mechanism of demanding a risk premium *ex-ante*.

V. Robustness Tests

In this section, I run more tests to test robustness of the results to other variation and also to rule out other explanations that might explain above results. In particular, I check robustness of above results with additional tests, *viz*. firm's proximity to bankruptcy, controlling for impact of state labor laws on wages, serial correlation and self-selection bias.

V.1 Variation in Labor Laws across States

Labor laws across various states of USA might vary significantly and hence might play an important role in determining the dynamics between firms' bargaining power and workers' demand for wages against bearing unemployment risk. Therefore, in order to determine whether above results are robust to labor laws in different states, I include state fixed effects in equation (1). Also, these laws are likely to change with changing economy and governments. In second variation, to control for time-changing laws across states I run regression model (1) by including state-year fixed effects.

The results with state and state-year fixed-effects are summarized in Table 10. I find that impact of leverage and competition on employee wage fall in line with previous results even after controlling for variation arising from state labor laws as well as time-changing effects of these laws. Firms that operate in low-import-competition industries have positive relation between leverage and workers' wage, whereas this relation inverts for high-competition industries. Also, the estimates do not vary significantly across these two settings, i.e. with state and year fixed-effects and state-year fixed effects. This indicates state labor laws do not vary a lot across time.

V.2 Employees' Firm-Specific Investment

In this section, I test robustness of the results using employee-firm-specific investments within an industry. Titman and Wessels (1988) argue that high employee-firm-specific investments not only make employee become more entrenched in the firm, but it also result in higher switching cost. Also, Barney (1991) document that firm-specific investments made by employees is one of the most important sources of economic rents for firms. Employee firm-specific investments in general include employees' knowledge of firm's operation, key suppliers and customers, as well as their knowledge of how to work efficiently with the other employees. Such investments often generate sustained competitive advantages for the firm (Dierickx and Cool 1989; Barney 1991).

However, the acquiring firm-specific knowledge usually is an expensive investments for employees as it requires key employees to make specialized human capital investments. These firm-specific skills might not be easily reused and replaced under different settings. Given high risk arising from firm-specific investments, employees might be reluctant to invest in acquiring such skills in the absence of appropriate compensation and/or effective safeguards (Wang, He, and Mahoney 2009). Therefore, high firm-specific specific investments might temper with the probability of employee finding an alternate job in the event of firm undergoing bankrupt or distress. To estimate the effect of this variable, I estimate following model:

$$\log(\mathrm{AEE_{ijt}}) = \alpha_j + \alpha_t + \beta_1 * \mathrm{Leverage_{ijt}} + \beta_2 * \mathrm{Leverage_{ijt}} * \mathrm{Firm\ Specific_{it}} + \beta_3 * \mathrm{Firm\ Specific_{it}} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt} \quad \ldots (7)$$

R&D expense alone might not capture how active a firm's research profile is and hence the required firm-specificity. Therefore, I use firm's patent citation data to estimate employees' firm-specific investment. Following Kogan et al. (2017), I use dollar value of citations[8] and number of citations corresponding to patents filed by a firm. Since I do not want to lose firm-year observations when no patent was filed by firms and to keep the sample consistent with previous analyses, I use log(1+No. of Patents), log(1+No. of Citations) and log(1+Dollar Value of Citations) to measure $Firm\ Specific_{it}$ in equation (7).

Since manufacturing firms do not tend to have high patent filings, I estimate above equation for all industries. The estimates of equation (7) for book and alternate book leverage are summarized in Table 11; estimates for alternate market leverage are not reported brevity. The moderating role for firm-specific investments is relatively weaker for alternate book and market leverage. As we can see from Table 11, as firm-specific investment – hence worker's unemployment costs – increases, it leads to higher wages with firms' leverage.

[8] I thank Amit Seru for making the data available on his website: http://faculty.chicagobooth.edu/amit.seru/research/data.html

V.3 Robustness to Potential Self-Selection Bias

As can be inferred from Table 1, only 6% of entire sample provides data on employee wage. This raises concerns about generalizability of the results and also whether studying this group of firms calls for merit. To check significance of the sample – in terms of representation – I compare total asset, market capitalization and net sales of firms that report employee expense with manufacturing firms not reporting employee expense as well as entire sample of manufacturing firms. Fig A2 represents year-wise comparison of total assets. That is, it plots total assets of firms reporting employee expense as a percentage of total assets of entire sample of manufacturing firms. It suggests size of firms reporting employee compensation should not be a concern in terms of representation-ability since the ratio on an average stays around 35%. Like total-asset, net sales comparison (please refer to Fig A3) also alleviates our concern.

In Table 12, I summarize these two parameters for entire sample period, i.e. 1989 to 2013. On an average, I find it is the large firms that report total employee expense. This gets translated into firms reporting employee representing a significant portion, i.e. approximately 35 percent of entire sample by total asset as well as net sales. Another caveat of these results arises from potential self-selection bias, if a particular set of firms choose to report employee wage. In order to correct for potential sample-selection bias, I run Heckman (1979) two-stage sample selection model.

The first step estimates a probit model where the response variable, Wage Dummy, takes one if a firm reports employee wage and zero otherwise. Since stocks listed on different exchanges might have different reporting standards, I include exchange dummies in the first-step (Chemmanur, Cheng, and Zhang 2013), in addition to controls mentioned in equation (1). Given adjusted-RoA is the ratio of sum of net income and employee expense to firm's total assets, I do not include this variable as a control in the first step.

The second step is essentially same as equation (1), wherein I use lambda, i.e. inverse Mills Ratio, estimated in first step, as an additional control. This is a log-linear model to estimate relation between leverage and interaction of import competition and leverage on average employee expense. Estimates for Heckman sample selection regression is tabulated in Table 13. I find that lambda is statistically significant for all three measures of leverage, thereby suggesting the estimates in Table 1 could be suffering from self-selection bias.

Nonetheless, after controlling for lambda, the estimates for leverage and leverage*High IPI remain consistent with the two hypotheses enumerated in section III. In other words, in low import competition industries, high leverage results in firm's high bargaining power and hence low wages. On the other hand, in high import competition industries, effect arising from increased bankruptcy risk dominates and hence high leverage results in high employee wages. In sum, the main findings stay robust even after controlling for potential self-selection bias.

VI. Conclusion

Increasing importance of human capital in a firm's operations calls for better understanding of how a firm shares its surplus with its employees, especially given they are the immediate stakeholders in firms' prospects. A firm, acting in the best interest of its shareholders, may use leverage as a bargaining tool to claim external financial constraints and reduce wages. However, leverage is a double-edged sword, as it also increases liquidation risk for the firm and consequently unemployment risk for the employees. In practice, effect of leverage on wages is determined by dynamics between firm's bargaining power and workers' demand for higher wages as a compensation for greater unemployment risk.

Literature documents evidence in support of both effects, i.e. high leverage results in low wages as well as high wages. Higher debt levels leads to lower wages due to the firms claiming restrained cash-flow as a reason to pay less wages. This strand of literature claims that firms use this cash-constraint to strengthen their bargaining power against workers. On the other hand, highly levered firms are more likely to undergo restructuring and/or bankruptcy, thereby resulting in large human-capital cost. Researchers argue that employees, for bearing such high risk of unemployment, demand higher risk-premium *ex-ante*. In support of this they find that wages increase with leverage. In this paper I attempt to solve this puzzle of capital structure having opposite effects on wages. In particular, I distinguish loss-of-employment from worker's unemployment risk, which I define as employees not being able to find another comparable job in the event of job-loss.

I propose unemployment risk is a decisive factor in determining the effect of firm's leverage on wages. I find that in industries, where workers have more alternative job opportunities, wages decrease with firm's debt-ratio, finding support for firm's extracting bargaining power from leverage. However, in industries with prominent unemployment risk, workers' wage increases with firm's debt-ratio. This suggests that when outside job alternatives are limited, firm's liquidation risk results in high human-capital cost. Thus, workers' demand for risk-premium supersedes firm's bargaining power arising from high leverage. I also find that moderating role played by workers' unemployment risk in determining the effect of firm leverage on employee compensation is not industry-specific, i.e. it holds true for all industries.

Appendix

Table A1: Definition of Variables

I have obtained firm-level annual data from Compustat. For macroeconomic variables, I have referred to multiple resources. For instance, USA import data come from NBER Data[9] [1989-2006] and US Government Import Export Portal for the period of 1989-2006 and 2007-2013, respectively. I obtain industry-level domestic production data from Bureau of Economic Analysis (USA). I would like to thank Feenstra for providing data on import values from 1989 to 2006.

	Definition
Average Employee Expense (AEE)	Ratio of employee expense (Data item 42) to number of employees (Data item 29) for each firm
Market Capitalization	Product of fiscal-year closing share price (Data item 199) and number of outstanding shares (Data item 25)
Book Value of Equity	Difference between total asset (Data item 6) and total liabilities (Data item 181)
Book Leverage	Ratio of sum of long-term debt (Data item 9) and debt in current liabilities (Data item 34) to sum of long-term debt, debt in current liabilities and firm's book value of equity
Alternative Book Leverage	Ratio of sum long-term debt (Data item 9) and debt due in one year (Data item 44) to that of long-term debt, debt due in one year and book value of equity (Welch 2011)
Alternate Market Leverage	Ratio of sum long-term debt (Data item 9) and debt due in one year (Data item 44) to that of long-term debt, debt due in one year and market capitalization of firm (Welch 2011)
Market-to-Book	Ratio of market capitalization to book value of equity
Adjusted RoA	Ratio of sum of net income (Data item 172) and employee expense (Data item 42) to firm's total asset (Data item 6)
Equity Volatility	Annualized standard deviation of firm's monthly returns (including dividend) and is estimated from the prior year, collected from CRSP (Bharat and Shumway, 2008)
Import Penetration Index (IPI)	Ratio of gross value of domestic production to sum of gross value of domestic production and imported goods (Bertrand 2004)
High IPI	Indicator variable that takes one if IPI of an industry *j* (defined at three-digit NAICS) is above median at time *t* and zero otherwise
HHI	Herfindahl-Hirschman Index based on market share – as Σs_i^2 where s_i is market share of firm 'i' calculated on the basis of net sales (Data item 12) – at three-digit NAICS level
Dom Comp	Indicator variable that takes one if HHI of an industry is below median at time t and zero otherwise
Unemp Insurance	Log(Average Week*Average Benefit), (Agrawal and Matsa, 2013) where, Average Week = (Max Week + Min Week)/2 and Average Benefit = (Max UI + Min UI)/2
Altman Z-Score	(1.2*A + 1.4*B + 3.3*C +0.6*D + E) Where, A = Working Capital / Total Asset (Data item 6) Working Capital = Current Asset (Data Item 4)- Current Liability (Item 5) B = Retained Earnings (Data item 99) / Total Asset (Data Item 6) C = Earnings before Interest & Tax (Data Item 178)/ Total Asset (Data Item 6) D = Market Capitalization / Total Liability (Data Item 181) E = Net Sales (Data Item 12) / Total Assets (Data Item 6)

[9] The U.S. import and export data have been assembled by Robert Feenstra of the Department of Economics, under a grant from the National Science Foundation to the National Bureau of Economic Research (NBER).

Table A2: NAICS Three-Digit Manufacturing Industry Classification

	NAICS Code	Industry
Durable Goods	321	Wood Products
	327	Nonmetallic Mineral Products
	331	Primary Metals
	332	Fabricated Metal Products
	333	Machinery
	334	Computer & Electronic Products
	335	Electrical Equipment, Appliances & Components
	336	Vehicles & Transportation Equipment
	337	Furniture & Related Products
	339	Miscellaneous manufacturing
Non-Durable Goods	311	Foods
	312	Beverages and Tobacco Product Manufacturing
	313	Textile Mills
	314	Textile Product Mills
	315	Apparel
	316	Leather
	322	Paper Products
	323	Printing & Related Activities
	324	Petroleum & Coal Products
	325	Chemical Products
	326	Plastics & Rubber Products

Table A3. t-test for Leverage Between High and Low Import Competition Industries

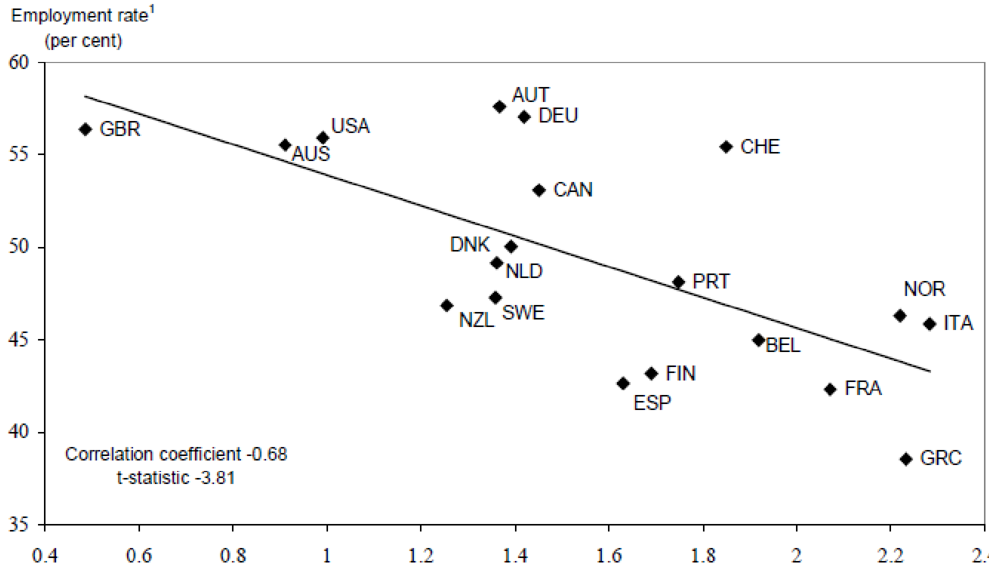
	N	Mean	S.D	Min	Max	t-test	
Panel A: Low Import Competition						**Difference**	**p-val**
Book Leverage	2541	0.319159	0.217366	0	0.995992		
Alternate Book Leverage	2541	0.260611	0.217182	0	0.995992		
Panel B: High Import Competition							
Book Leverage	2147	0.326192	0.229846	0	0.997081	-0.00703	0.2824
Alternate Book Leverage	2147	0.270946	0.225955	0	0.990459	-0.01033	0.1123

Table A4. Annual Layoff Rates

I collect layoff rate from the database of Job Openings and Labor Turnover Survey (JOLTS) provided by US Bureau of Labor Statistics. The data is available from 2001 onwards. The layoff rate is seasonally adjusted rates of laid and/or discharged employees as a percent of annual average employment during a year. The industry classification is based on North American Industry Classification System (NAICS) super-sectors. Seasonal adjustment is the process of estimating and removing periodic fluctuations caused by events such as weather, holidays, and the beginning and ending of the school year. Seasonal adjustment makes it easier to observe fundamental changes in the level of the series, particularly those associated with general economic expansions and contractions.

Industry	Layoff Rate												
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Construction	47.3	46.2	48.2	41.9	39.2	34.1	37.3	47.3	62.2	57.2	51.8	49	39.7
Mining and logging	17.3	17.8	18.2	14.2	12.4	10.7	12.2	14.6	26.8	13.5	10.5	16.9	15.9
Manufacturing													
Nondurable goods manufacturing	21.7	17.6	15.4	14.1	12.9	15	14.9	16.3	21.8	16.1	13.2	10.6	9.9
Durable goods manufacturing	19.2	17	15.7	12.8	12.2	11.2	13.3	17	25	13.6	10.2	10.4	9.8
Trade, transportation, and utilities													
Retail trade	19.4	19.3	20	20.1	18.7	18.9	18	19.8	19.7	16.1	14.7	15.2	15.4
Wholesale trade	14.9	14.1	14.3	13.6	12.6	11.2	12.9	15.9	17.7	13.5	10.6	11.3	9
Transportation, warehousing, and utilities	14	15.1	16.2	18.2	18.9	13.2	13.7	15.3	22.3	13.1	13.5	13.8	14.1
Information	15.9	13.9	13.8	11.5	8.6	8.1	9.5	11.7	13.6	10.9	10.3	10.3	11.3
Financial activities													
Finance and Insurance	7.7	8.4	6.8	7.1	7	7.4	9.3	10.3	12	8	6.2	5.8	6.9
Real estate and rental and leasing	14.8	15.6	16.4	16.8	18.3	18.6	21.9	20	29	16.4	15.8	14.6	15.5
Professional and business services	29.3	29.1	30.8	29.4	29.9	24.7	25.8	28	29.9	25.8	27.8	28	25.2
Education and health services													
Educational services	9.8	9.8	10.3	9.3	9.1	9.2	9.4	10.5	11.4	10.7	9.3	9.4	9.1
Health care and social assistance	9.6	9.9	10	9.2	9	8.8	8.8	10.1	10.8	10.2	8.8	9	8.6
Leisure and hospitality													
Accommodation and food services	25.3	21.7	22.8	23.4	21.3	19.9	19.4	19.2	21.9	18.1	19.1	18.6	17.7
Arts, entertainment, and recreation	53.5	42.2	55.6	55.8	47.1	42	43.7	45.3	42.6	41.3	48.2	45.5	43.4
Other services	12.4	14.5	16.4	14.8	15.4	14.5	14.5	17.1	21.3	16	19.6	18.4	15.8

Fig A1. Anti-Competitive Product-market Regulation and Employment



1. Non-agricultural business sector.

Source: Nicoletti *et al*. (2001)

Fig A2. Aggregate Asset Comparison of Manufacturing Industry Firms

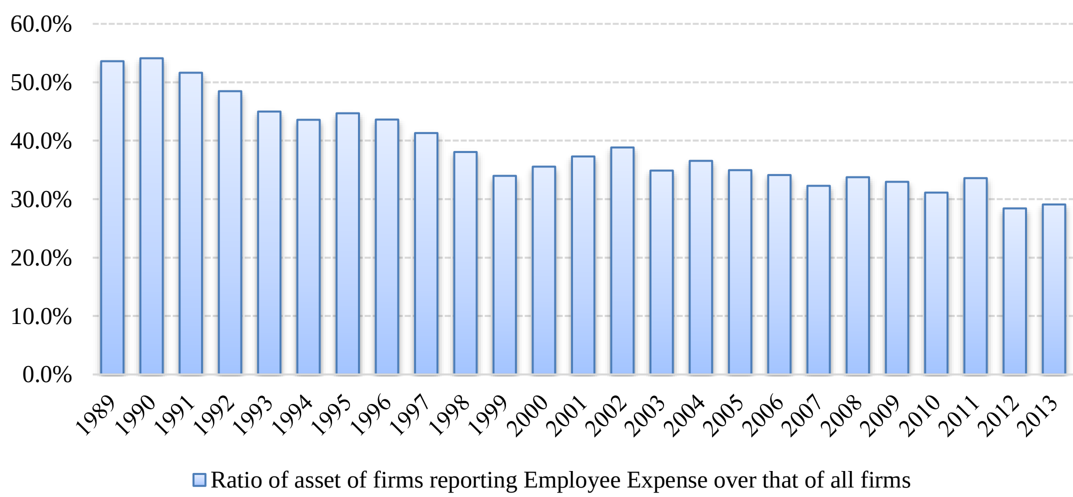


Fig A3. Aggregate Net Sales Comparison of Manufacturing Industry Firms

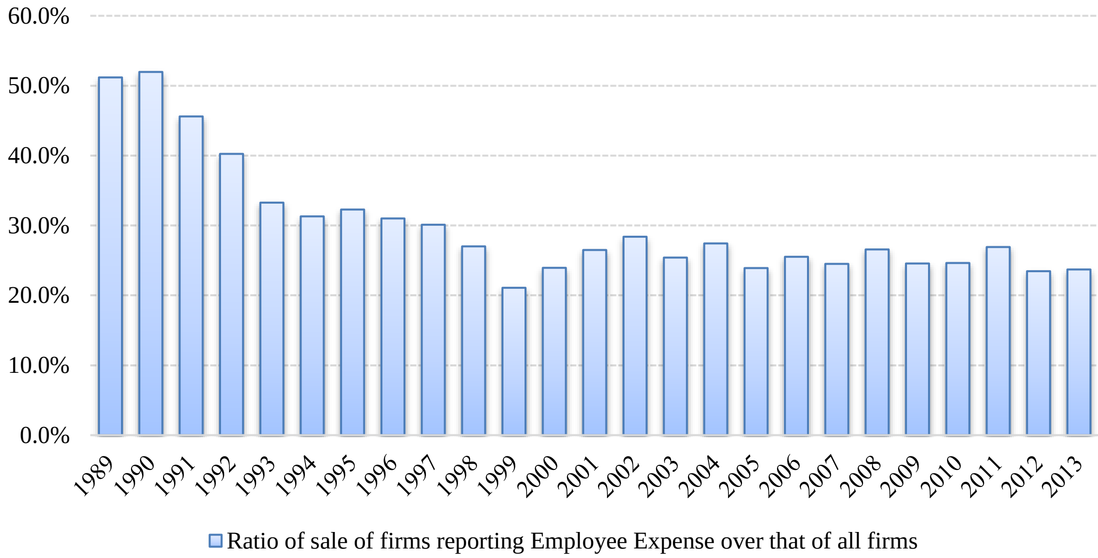


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Table 1. Descriptive Statistics

	N	Mean	S.D.	Median	p1	p99
Panel A: Manufacturing firms reporting wages						
log(Average Employee Expense)	3056	3.71	0.9	3.84	0.57	5.61
Employee Expense (In mm)	3056	2123.48	4814.11	594.26	0.66	22337.06
No. of Employees (In ‘000)	3056	40.24	76.54	13.58	0.02	389.45
Book Leverage	3056	0.33	0.22	0.32	0.00	0.91
Alternate Book Leverage	3056	0.27	0.21	0.26	0.00	0.86
Alternate Market Leverage	3056	0.18	0.18	0.14	0.00	0.78
Net Sales (In mm)	3056	16624.76	43339.79	3097.28	0.03	222032.6
Total Assets (In mm)	3056	19039.41	45503.88	3548.16	12.1	250772
Market Capitalization (In mm)	3056	15776.34	33617.33	2773.3	8.14	178766.1
Market to Book	3056	3.04	3.23	2.09	0.30	20.62
Adjusted RoA	3056	0.21	0.19	0.20	-0.36	0.68
Equity Volatility	3056	0.40	0.31	0.30	0.06	1.59
Panel B: All manufacturing firms						
No. of Employees (In ‘000)	48713	8.76	29.88	1.01	0.02	125.00
Book Leverage	49777	0.26	0.24	0.22	0.00	0.9
Alternate Book Leverage	49777	0.23	0.23	0.17	0.00	0.88
Alternate Market Leverage	49777	0.17	0.20	0.09	0.00	0.81
Net Sales (In mm)	49777	2895.23	15043.61	188.41	0.00	51325
Total Assets (In mm)	49777	3242.76	16365.93	189.91	11.06	59305
Market Capitalization (In mm)	49777	3440.73	16103.27	221.05	4.91	68735.13
Market to Book	49777	2.99	3.24	1.99	0.29	20.62
Equity Volatility	49777	0.5	0.33	0.43	0.07	1.68
Import Penetration Index (IPI)	49777	0.4	0.16	0.42	0.11	0.87

Table 2. Import competition, leverage and employee expense

Table summarizes results of the following equation:

$$\log(\mathrm{AEE}_{ijt}) = \alpha_j + \alpha_t + \beta_1 * \mathrm{Leverage}_{ijt} + \beta_2 * \mathrm{Leverage}_{ijt} * \mathrm{High\ IPI}_{jt} + \beta_3 * \mathrm{High\ IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z}_{ijt} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. In above equation High IPI is an indicator variable that takes one if IPI, i.e. import penetration index, of an industry is above median at time t and zero otherwise. My main coefficients of interest here are $\beta_1$and β_2. The former reflects upon the effect of leverage on employee compensation for low import-competition industries, whereas sum of the two coefficients captures the impact of firm's leverage on employee compensation in high-competition industries. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) log(AEE)	(2) log(AEE)	(3) log(AEE)
Panel A: OLS Results			
Book Leverage	-0.961***		
	(0.197)		
Book Leverage * High IPI	1.439***		
	(0.302)		
Alternate Book Leverage		-0.546***	
		(0.166)	
Alternate Book Leverage * High IPI		1.425***	
		(0.343)	
Alternate Market Leverage			-0.491**
			(0.238)
Alternate Market Leverage * High IPI			1.221***
			(0.360)
log(Total Asset)	0.0763***	0.0574***	0.0611***
	(0.0180)	(0.0157)	(0.0166)
Avg Sale Per Employee	0.000610***	0.000628***	0.000621***
	(0.000111)	(0.000112)	(0.000111)
Market-to-Book	0.0393***	0.0328***	0.0304***
	(0.00825)	(0.00778)	(0.00834)
Adjusted RoA	0.359*	0.396**	0.373**
	(0.184)	(0.185)	(0.189)
Equity Volatility	0.0893	0.0779	0.0876
	(0.0805)	(0.0818)	(0.0830)
High IPI	0.0461	0.124	0.268**
	(0.15)	(0.151)	(0.134)
Constant	2.621***	2.606***	2.528***
	(0.170)	(0.164)	(0.181)
Observations	3,056	3,056	3,056
R-squared	0.314	0.312	0.300
Adj-Rsq	0.302	0.300	0.289
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Panel B: Effect of leverage in High IPI Industries			
Leverage+ Leverage*High IPI	0.477**	0.878***	0.731***
Estimated s.e.	(0.210)	(0.281)	(0.279)

Table 3. Instrumental Variable Specification Using State CTR Variable

First Stage: $\text{Leverage}_{ijt} = \alpha_j + \alpha_t + \delta_1 * \text{Tax Rate}_{j,t-1} + \boldsymbol{\omega} * \mathbf{Z}_{ijt} + \epsilon_{ijt}$ and $\text{Leverage}_{ijt} * \text{High IPI}_{jt} = \alpha_j + \alpha_t + \delta_2 * \text{Tax Rate}_{j,t-1} * \text{High\_IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z}_{ijt} + \epsilon_{ijt}$

Second Stage: $\log(\text{AEE}_{ijt}) = \alpha_j + \alpha_t + \beta_1 * \widehat{\text{Lev}_{ijt}} + \beta_2 * \widehat{\text{Lev}_{ijt} * \text{High IPI}_{jt}} + \beta_3 * \text{High IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z}_{ijt} + \epsilon_{ijt}$

Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. In this table I use one-period lagged state CTR as an instrument in the first stage regressions. State CTR takes state's highest corporate tax rate (CTR) if taxable earning before tax (EBT) is positive and net operating loss carried-forward (NOLCF) is zero; takes half of highest CTR if both EBT and NOLCF are positive; and zero otherwise. Column (1) and (4) summarize the output of second stage regression of IV specification. Columns (2) and (5) report estimates for first-stage regression for leverage. Columns (3) and (6) report estimates for first-stage regression for leverage*High IPI. Main coefficients of interest here are β_1 and β_2, where the former reflects upon effect of leverage on wages for low-competition industry and the sum of two captures effect of leverage on wages in high-competition industry. Standard errors are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) Second Stage log(AEE)	(2) First Stage Leverage	(3) First Stage Lev*High IPI	(4) Second Stage log(AEE)	(5) First Stage Leverage	(6) First Stage Lev*High IPI
Book Leverage	-3.100***					
	(1.086)					
Book Leverage * High IPI	9.316***					
	(2.252)					
Alternate Book Leverage				-3.739**		
				(1.608)		
Alternate Book Leverage * High IPI				9.541***		
				(1.850)		
State CTR (t-1)		0.00752***	-0.00195***		0.00437**	-0.00264***
		(0.00161)	(0.000665)		(0.00174)	(0.000680)
High IPI * State CTR (t-1)		-0.00243	0.00656***		0.000985	0.00758***
		(0.00234)	(0.00183)		(0.00246)	(0.00188)
log(Total Asset)	0.0179	0.0350***	0.0221***	0.0103	0.0340***	0.0243***
	(0.0730)	(0.00280)	(0.00233)	(0.0705)	(0.00299)	(0.00229)
Avg Sale Per Employee	0.000616**	0.000107***	6.18e-05***	0.000642***	9.74e-05***	6.10e-05***
	(0.000260)	(2.96e-05)	(2.09e-05)	(0.000246)	(3.40e-05)	(2.17e-05)
Market-to-Book	0.0406**	0.0141***	0.00289***	0.0422*	0.0121***	0.00283***
	(0.0206)	(0.00190)	(0.00107)	(0.0225)	(0.00236)	(0.00106)
Adjusted RoA	0.997**	-0.167***	-0.147***	0.815***	-0.111***	-0.114***
	(0.440)	(0.0347)	(0.0264)	(0.314)	(0.0345)	(0.0250)
Equity Volatility	0.0213	0.0210	0.0277*	-0.0617	0.0168	0.0355**
	(0.132)	(0.0234)	(0.0142)	(0.129)	(0.0232)	(0.0141)
High IPI	-3.333***	0.0773***	0.394***	-2.794***	0.0860***	0.337***
	(0.966)	(0.0280)	(0.0263)	(0.705)	(0.0328)	(0.0266)
Constant	3.327***	0.183***	-0.0299	3.745***	0.0936**	-0.0958**
	(0.416)	(0.0458)	(0.0469)	(0.435)	(0.0454)	(0.0392)
Observations	1,370	1,370	1,370	1,370	1,370	1,370
Uncentered Rsq	0.931			0.935		
F-stat	9.065			7.760		
p-val	0.000			0.000		
Endogeneity (Chi-sq)	32.71			37.22		
p-val	7.87e-08			8.26e-09		
Weak Instrument Robust test (Chi-sq)	53.42			53.42		
p-val	0.000			0.000		
Industry, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4. Instrumental Variable Specification Using Statutory Marginal Tax Rate

First Stage: $Leverage_{ijt} = \alpha_j + \alpha_t + \delta_1 * \text{Tax Rate}_{j,t-1} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$ and $Leverage_{ijt} * \text{High IPI}_{jt} = \alpha_j + \alpha_t + \delta_2 * \text{Tax Rate}_{j,t-1} * \text{High\_IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$

Second Stage: $\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * \widehat{Lev_{ijt}} + \beta_2 * \widehat{Lev_{ijt} * \text{High IPI}_{jt}} + \beta_3 * \text{High IPI}_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$

Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. In this table In this table I use one-period lagged statutory MTR variable to instrument leverage. Statutory MTR is the ratio of contemporary taxes to earning before tax (EBT) net of net operating losses carried forward (NOLCF) and zero if EBT is negative. Columns (1) and (4) summarize the output of second stage regression; columns (2) and (5) report estimates for first-stage regression for leverage. Columns (3) and (6) report estimates for first-stage regression for leverage*High IPI. Main coefficients of interest here are $\beta_1$and β_2, where the former captures effect of leverage on wages for low-competition industry and sum of two captures effect of leverage on wages in high-competition industry. Standard errors are reported in parentheses. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) Second Stage log(AEE)	(2) First Stage Leverage	(3) First Stage Lev*High IPI	(4) Second Stage log(AEE)	(5) First Stage Leverage	(6) First Stage Lev*High IPI
Book Leverage	-2.713***					
	(0.727)					
Book Leverage * High IPI	9.149***					
	(3.052)					
Alternate Book Leverage				-4.032***		
				(1.065)		
Alternate Book Leverage * High IPI				8.765***		
				(1.876)		
Statutory Marginal Tax Rate (t-1)		0.00895***	-0.00114*		0.00686***	-0.000807
		(0.00236)	(0.000661)		(0.00235)	(0.000588)
High IPI * Statutory Marginal Tax Rate (t-1)		0.0164	0.0241*		0.0282**	0.0330**
		(0.0128)	(0.0129)		(0.0128)	(0.0128)
log(Total Asset)	-0.0216	0.0355***	0.0211***	0.0122	0.0341***	0.0228***
	(0.0773)	(0.00197)	(0.00162)	(0.0429)	(0.00196)	(0.00157)
Avg Sale Per Employee	0.000704***	-1.64e-05**	-1.59e-05***	0.000745***	-4.65e-06	-1.83e-05***
	(8.11e-05)	(7.65e-06)	(4.13e-06)	(6.72e-05)	(7.59e-06)	(4.14e-06)
Market-to-Book	0.0506***	0.0141***	0.00191**	0.0601***	0.0108***	0.00151
	(0.0156)	(0.00162)	(0.000920)	(0.0137)	(0.00193)	(0.000936)
Adjusted RoA	0.945**	-0.153***	-0.110***	0.640***	-0.124***	-0.0901***
	(0.414)	(0.0247)	(0.0194)	(0.214)	(0.0243)	(0.0187)
Equity Volatility	-0.175	0.0128	0.0290***	-0.155	0.0228	0.0345***
	(0.125)	(0.0153)	(0.00971)	(0.0986)	(0.0153)	(0.00976)
High IPI	-2.334**	0.0136	0.309***	-1.675***	0.0453***	0.264***
	(0.963)	(0.0157)	(0.0160)	(0.493)	(0.0160)	(0.0160)
Constant	4.035***	0.137***	-0.147***	4.030***	0.0513*	-0.172***
	(0.468)	(0.0266)	(0.0175)	(0.397)	(0.0282)	(0.0180)
Observations	2,731	2,731	2,731	2,731	2,731	2,731
Uncentered Rsq	0.916			0.927		
F-stat	13.23			13.57		
p-val	0.00			0.00		
Endogeneity (Chi-sq)	6.540			6.521		
p-val	0.0380			0.0384		
Weak Instrument Robust test (Chi-sq)	53.71			53.71		
p-val	0.000			0.000		
Industry, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 5. Domestic product-market competition, leverage and employee compensation

Table summarizes results of the following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * DomComp_{jt} + \beta_3 * DomComp_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. In above equation, DomComp is a binary variable that takes 1 if domestic product-market competition is high, i.e. HHI (Herfindahl-Hirschman Index) of industry j is below median at time t and zero otherwise. My main coefficients of interest here are β_1 and β_2. The former reflects upon the effect of leverage on employee compensation for low industries with low domestic product-market competition, whereas sum of the two coefficients reflects upon the impact of firm's leverage on employee compensation in high domestic-competition industries. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) log(AEE)	(2) log(AEE)	(3) log(AEE)
Book Leverage	0.452**		
	(0.220)		
Book Leverage*Dom Comp	-1.148***		
	(0.304)		
Alternate Book Leverage		0.585***	
		(0.212)	
Alt Book Leverage*Dom Comp		-0.806**	
		(0.321)	
Alternate Market Leverage			0.536**
			(0.244)
Alt Market Leverage*Dom Comp			-0.638*
			(0.378)
log(Total Asset)	0.0826***	0.0696***	0.0662***
	(0.0193)	(0.0173)	(0.0174)
Avg Sale Per Employee	0.000561***	0.000560***	0.000561***
	(0.000107)	(0.000107)	(0.000108)
Market-to-Book	0.0294***	0.0279***	0.0319***
	(0.00834)	(0.00788)	(0.00868)
Adjusted RoA	0.360*	0.357*	0.364*
	(0.185)	(0.184)	(0.190)
Equity Volatility	0.114	0.0975	0.0873
	(0.0818)	(0.0829)	(0.0833)
Dom Comp	0.556***	0.398***	0.300***
	(0.126)	(0.119)	(0.105)
Constant	2.322***	2.425***	2.491***
	(0.188)	(0.173)	(0.180)
Observations	3,056	3,056	3,056
R-squared	0.301	0.293	0.289
Adj-Rsq	0.289	0.281	0.277
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 6. State Unemployment Insurance, Leverage and Employee Compensation

Following table summarizes results of following equation:

$$\log(\mathrm{AEE}_{ijt}) = \alpha_j + \alpha_t + \alpha_s + \beta_1 * \mathrm{Leverage}_{ijt} + \beta_2 * \mathrm{Leverage}_{ijt} * \mathrm{Unemp\ Insurance}_{st} + \beta_3 * \mathrm{Unemp\ Insurance}_{st} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j α_t and $\alpha_s$are industry, year and state fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. The table summarizes results for average unemployment insurance (UI), calculated as the product of average number of weeks (for which benefit was received) and average benefit for a state. Main coefficients of interest here are $\beta_1$and β_2. The former reflects upon the effect of leverage on employee compensation in the absence of any state UI, whereas the latter indicates the incremental role of UI on the effect of firm's leverage on employee compensation in high-competition industries. Columns (1)-(3) presents result for manufacturing firms, where columns (4) to (6) summarizes results for all industries. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Manufacturing Industries			**All Industries**		
	(1)	(2)	(3)	(4)	(5)	(6)
	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)
Book Leverage	9.993**			1.696**		
	(4.910)			(0.862)		
Book Leverage * Unemp Insurance	-1.217**			-0.214**		
	(0.594)			(0.104)		
Alternate Book Leverage		7.010			1.278**	
		(4.284)			(0.629)	
Alt Book Leverage * Unemp Insurance		-0.846			-0.160**	
		(0.520)			(0.0758)	
Alternate Market Leverage			12.64***			1.256**
			(4.763)			(0.630)
Alt Mkt Leverage * Unemp Insurance			-1.501***			-0.156**
			(0.577)			(0.0756)
log(Total Asset)	0.0700***	0.0650**	0.0600**	0.0376***	0.0354***	0.0346***
	(0.0253)	(0.0250)	(0.0242)	(0.00556)	(0.00545)	(0.00553)
Avg Sale Per Employee	0.000501**	0.000504**	0.000504**	0.000530***	0.000528***	0.000528***
	(0.000237)	(0.000242)	(0.000239)	(4.77e-05)	(4.77e-05)	(4.79e-05)
Market-to-Book	0.0139	0.0130	0.0142	-0.00194	-0.00210	-0.00311
	(0.00928)	(0.00914)	(0.00883)	(0.00399)	(0.00394)	(0.00409)
Adjusted RoA	0.164	0.149	0.182	0.411***	0.418***	0.419***
	(0.211)	(0.209)	(0.208)	(0.0710)	(0.0704)	(0.0705)
Equity Volatility	0.169**	0.168**	0.172**	0.0224	0.0191	0.0207
	(0.0799)	(0.0799)	(0.0810)	(0.0206)	(0.0205)	(0.0208)
Unemp Insurance	1.034***	0.880***	0.875***	0.0961	0.0550	0.0486
	(0.362)	(0.333)	(0.299)	(0.0669)	(0.0561)	(0.0551)
Constant	-5.844**	-4.548*	-4.574*	2.454***	2.781***	2.833***
	(2.960)	(2.715)	(2.445)	(0.555)	(0.471)	(0.462)
Observations	1,392	1,392	1,392	16,969	16,969	16,969
R-squared	0.500	0.496	0.500	0.654	0.654	0.654
Adj-Rsq	0.468	0.463	0.468	0.651	0.651	0.650
Industry, Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 7. Industry layoff-rate, leverage and employee compensation

Table summarizes results of the following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * LR_{jt} + \beta_3 * LR_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. In above equation, LR is a binary variable that takes 1 if Layoff Rate is above median and zero otherwise. Layoff Rate is seasonally adjusted rates of laid and/or discharged employees as a percent of annual average employment during a year. This data is available at two-digit NAICS industry level. My main coefficients of interest here are $\beta_1$and β_2. The former reflects upon the effect of leverage on employee compensation for industries with low layoff rate of workers, whereas sum of the two coefficients reflects upon the impact of firm's leverage on employee compensation in industries with high layoff-rates. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) log(AEE)	(2) log(AEE)	(3) log(AEE)
Book Leverage	-0.287***		
	(0.0703)		
Book Leverage*LR	0.227*		
	(0.120)		
Alternate Book Leverage		-0.194***	
		(0.0486)	
Alt Book Leverage*LR		0.269**	
		(0.108)	
Alternate Market Leverage			-0.171***
			(0.0477)
Alt Market Leverage*LR			0.304***
			(0.111)
log(Total Asset)	0.0207**	0.0135*	0.0126
	(0.00844)	(0.00800)	(0.00802)
Avg Sale Per Employee	0.000542***	0.000545***	0.000544***
	(3.91e-05)	(3.89e-05)	(3.88e-05)
Market-to-Book	0.0276***	0.0257***	0.0262***
	(0.00624)	(0.00616)	(0.00627)
Adjusted RoA	0.534***	0.570***	0.575***
	(0.109)	(0.109)	(0.109)
Equity Volatility	0.150***	0.141***	0.142***
	(0.0308)	(0.0305)	(0.0309)
LR	-0.0809	-0.0780	-0.0605
	(0.0658)	(0.0608)	(0.0556)
Constant	3.394***	3.373***	3.358***
	(0.0683)	(0.0680)	(0.0692)
Observations	12,774	12,774	12,774
R-squared	0.389	0.388	0.388
Adj-Rsq	0.387	0.386	0.386
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Table 8. Firm's Diversity, Leverage and Employee Compensation

Table summarizes results of the following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * High\ IPI_{jt} + \beta_3 * High\ IPI_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. In above equation High IPI is an indicator variable that takes one if IPI, i.e. import penetration index, of an industry is above median at time *t* and zero otherwise. My main coefficients of interest here are $\beta_1$and β_2. The former reflects upon the effect of leverage on employee compensation for low import-competition industries, whereas sum of the two coefficients captures the impact of firm's leverage on employee compensation in high-competition industries. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	Standalone Firms			**Diversified Firms**		
	(1)	(2)	(3)	(4)	(5)	(6)
	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)
Panel A:						
Book Leverage	-1.038***			-0.0412		
	(0.222)			(0.297)		
Book Leverage*High IPI	1.365***			0.587		
	(0.323)			(0.405)		
Alternate Book Leverage		-0.649***			0.253	
		(0.197)			(0.251)	
Alternate Book Leverage *High IPI		1.041***			0.863**	
		(0.309)			(0.430)	
Alternate Market Leverage			-0.711**			0.550*
			(0.294)			(0.314)
Alternate Market Leverage *High IPI			1.015***			0.436
			(0.389)			(0.421)
log(Total Asset)	0.0679***	0.0563***	0.0555***	0.127***	0.108***	0.117***
	(0.0185)	(0.0186)	(0.0189)	(0.0336)	(0.0294)	(0.0308)
Avg Sale Per Employee	0.000376***	0.000377***	0.000378***	0.000804***	0.000811***	0.000811***
	(7.59e-05)	(7.43e-05)	(7.36e-05)	(0.000155)	(0.000155)	(0.000155)
Market-to-Book	0.0310***	0.0237***	0.0158**	0.0244*	0.0195	0.0382**
	(0.00809)	(0.00808)	(0.00763)	(0.0146)	(0.0133)	(0.0149)
Adjusted RoA	0.196	0.186	0.148	1.319***	1.393***	1.455***
	(0.232)	(0.234)	(0.234)	(0.324)	(0.320)	(0.330)
Equity Volatility	0.168*	0.172*	0.187**	-0.141	-0.147	-0.173
	(0.0906)	(0.0933)	(0.0942)	(0.129)	(0.127)	(0.127)
High IPI	-0.442**	-0.309	-0.222	0.409**	0.354**	0.514***
	(0.197)	(0.195)	(0.201)	(0.178)	(0.160)	(0.138)
Constant	3.064***	3.018***	2.998***	1.549***	1.603***	1.427***
	(0.177)	(0.182)	(0.189)	(0.393)	(0.348)	(0.375)
Observations	1,513	1,513	1,513	1,543	1,543	1,543
R-squared	0.401	0.386	0.380	0.399	0.417	0.411
Adj-Rsq	0.381	0.366	0.359	0.379	0.399	0.392
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 9. Distinguishing ex-ante Channel of Risk-Premium Demand

Table summarizes results of the following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * High\ IPI_{jt} + \beta_3 * High\ IPI_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. In above equation High IPI is an indicator variable that takes one if IPI, i.e. import penetration index, of an industry is above median at time *t* and zero otherwise. My main coefficients of interest here are β_1 and β_2. The former reflects upon the effect of leverage on employee compensation for low import-competition industries, whereas sum of the two coefficients reflects upon the impact of firm's leverage on employee compensation in high-competition industries. Columns (1) to (3) report results for Altman Z-score higher than 1.8, i.e. financially stable firms. Columns (4) to (6) report results for firms in distress zone, i.e. firms with Altman Z-score less than 1.8. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)
Panel A: OLS Results		**Alt Z Score >1.8**			**Alt Z Score <=1.8**	
Book Leverage	-1.083***			-1.631***		
	(0.207)			(0.430)		
Book Leverage * High IPI	1.591***			1.759***		
	(0.315)			(0.608)		
Alternate Book Leverage		-0.631***			-0.893**	
		(0.178)			(0.412)	
Alternate Book Leverage * High IPI		1.508***			1.693***	
		(0.347)			(0.625)	
Alternate Market Leverage			-0.812***			-1.279***
			(0.262)			(0.404)
Alternate Market Leverage * High IPI			1.579***			2.085***
			(0.391)			(0.659)
log(Total Asset)	0.0767***	0.0588***	0.0623***	0.0537	0.0238	0.0282
	(0.0166)	(0.0150)	(0.0156)	(0.0382)	(0.0369)	(0.0355)
Avg Sale Per Employee	0.000567***	0.000580***	0.000576***	0.00172***	0.00180***	0.00184***
	(0.000107)	(0.000107)	(0.000106)	(0.000413)	(0.000410)	(0.000416)
Market-to-Book	0.0387***	0.0316***	0.0252***	0.0774***	0.0585***	0.0576***
	(0.00821)	(0.00782)	(0.00810)	(0.0177)	(0.0187)	(0.0183)
Adjusted RoA	0.377*	0.392*	0.357*	0.949**	0.926**	0.993**
	(0.198)	(0.200)	(0.204)	(0.410)	(0.442)	(0.423)
Equity Volatility	0.0113	0.0219	0.0333	0.183**	0.146	0.160*
	(0.0949)	(0.0956)	(0.0965)	(0.0880)	(0.0998)	(0.0912)
High IPI	0.0378	0.134	0.241*	-0.478	-0.250	-0.341
	(0.152)	(0.151)	(0.136)	(0.358)	(0.317)	(0.288)
Constant	2.844***	2.789***	2.822***	3.175***	2.991***	3.110***
	(0.199)	(0.197)	(0.204)	(0.334)	(0.336)	(0.320)
Observations	2,638	2,638	2,638	418	418	418
R-squared	0.328	0.323	0.313	0.460	0.445	0.452
Adj-Rsq	0.315	0.310	0.300	0.392	0.375	0.382
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Panel B: Effect of leverage in High IPI Industries						
Leverage+ Leverage*High IPI	0.508**	0.878***	0.767***	0.128	0.800	0.807
Estimated s.e.	(0.220)	(0.277)	(0.294)	(0.422)	(0.495)	(0.523)

Table 10. Controlling for effect on wage arising from labor law-variation across states

Following table summarizes results of following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \alpha_s + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * High\ IPI_{jt} + \beta_3 * High\ IPI_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j α_t and $\alpha_s$are industry, year and state fixed effects, respectively. I measure firm's leverage using book, alternate book and alternate market leverage. High IPI is an indicator variable that takes one if IPI, i.e. import penetration index, of an industry is above median at time *t* and zero otherwise. Column (1) to (3) summarizes the output of above equation. Columns (4) to (6) report estimates with additional control of state-year fixed effects, i.e. $\alpha_s * \alpha_t$, which controls for effect on wages arising from changes in state's labor-law across time. Main coefficients of interest here are $\beta_1$and β_2. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)	log(AEE)
Book Leverage	-0.960***			-0.913***		
	(0.236)			(0.277)		
Book Leverage * High IPI	1.755***			1.692***		
	(0.385)			(0.462)		
Alternate Book Leverage		-0.702***			-0.537*	
		(0.238)			(0.292)	
Alternate Book Leverage * High IPI		1.588***			1.421***	
		(0.394)			(0.492)	
Alternate Market Leverage			-0.737**			-0.672*
			(0.306)			(0.367)
Alternate Market Leverage * High IPI			1.559***			1.407***
			(0.429)			(0.529)
log(Total Asset)	0.0570**	0.0499**	0.0551**	0.0362	0.0280	0.0347
	(0.0240)	(0.0236)	(0.0228)	(0.0264)	(0.0270)	(0.0255)
Avg Sale Per Employee	0.000590**	0.000560**	0.000585**	0.000760**	0.000728**	0.000751**
	(0.000251)	(0.000242)	(0.000246)	(0.000317)	(0.000306)	(0.000314)
Market-to-Book	0.0226**	0.0184**	0.0121	0.0236**	0.0163	0.00792
	(0.00875)	(0.00900)	(0.00874)	(0.0118)	(0.0118)	(0.0103)
Adjusted RoA	0.234	0.204	0.150	0.344	0.293	0.200
	(0.207)	(0.216)	(0.216)	(0.241)	(0.248)	(0.246)
Equity Volatility	0.145*	0.127	0.154*	0.0758	0.0596	0.0888
	(0.0782)	(0.0806)	(0.0818)	(0.0954)	(0.0979)	(0.0980)
High IPI	-0.414**	-0.270	-0.103	-0.166	0.0516	0.214
	(0.169)	(0.176)	(0.147)	(0.196)	(0.205)	(0.173)
Constant	3.210***	3.126***	3.088***	3.039***	2.995***	2.900***
	(0.636)	(0.676)	(0.744)	(0.220)	(0.221)	(0.220)
Observations	1,494	1,494	1,494	1,494	1,494	1,494
R-squared	0.513	0.507	0.495	0.671	0.665	0.659
Adj-Rsq	0.484	0.477	0.464	0.484	0.475	0.465
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	-	-	-
State FE	Yes	Yes	Yes	-	-	-
State*Year FE	-	-	-	Yes	Yes	Yes

Table 11. Employee Firm-Specific Investment and Employee Compensation

Table summarizes results of the following equation:

$$\log(AEE_{ijt}) = \alpha_j + \alpha_t + \beta_1 * Leverage_{ijt} + \beta_2 * Leverage_{ijt} * Firm\ Specific_{jt} + \beta_3 * Firm\ Specific_{jt} + \boldsymbol{\omega} * \mathbf{Z_{ijt}} + \epsilon_{ijt}$$

I use average employee expense (AEE) as a measure of employee wage. Definition of control variables can be found in Table A1. α_j and α_t are industry and year fixed effects, respectively. Employee firm-specific investment refers to log(1+No. of Patents), log(1+ No. of Citations) and log(1+Dollar Value of Citations). My main coefficients of interest here are β_1 and β_2. The former reflects upon the effect of leverage on employee compensation in the absence of firm-specific investments, while the latter captures the moderating effect of employee's firm-specific investment on the effect of leverage on employee compensation. Numbers in parenthesis are standard errors. Standard errors are robust to heteroscedasticity and are clustered at firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively.

	(1) log(AEE)	(2) log(AEE)	(3) log(AEE)	(4) log(AEE)	(5) log(AEE)	(6) log(AEE)
Book Leverage	-0.0739*	-0.0735*	-0.0709*			
	(0.0388)	(0.0389)	(0.0388)			
Book Leverage * log(1+No. of Patents)	0.0629*					
	(0.0332)					
Book Leverage * log(1+ No. of Citations)		0.0529*				
		(0.0273)				
Book Leverage * log(1+ $ Value of Citations)			0.0445**			
			(0.0202)			
Alternate Book Leverage				-0.000277	-0.00129	0.00385
				(0.0324)	(0.0325)	(0.0327)
Alternate Book Leverage * log(1+No. of Patents)				0.0625**		
				(0.0311)		
Alternate Book Leverage * log(1+ No. of Citations)					0.0545**	
					(0.0260)	
Alternate Book Leverage * log(1+ $ Value of Citations)						0.0383*
						(0.0201)
log(Total Asset)	0.0274***	0.0270***	0.0276***	0.0248***	0.0244***	0.0250***
	(0.00515)	(0.00515)	(0.00525)	(0.00496)	(0.00497)	(0.00505)
Avg Sale Per Employee	0.000535***	0.000535***	0.000533***	0.000534***	0.000534***	0.000533***
	(3.77e-05)	(3.76e-05)	(3.76e-05)	(3.77e-05)	(3.77e-05)	(3.76e-05)
Market-to-Book	0.00456	0.00438	0.00352	0.00383	0.00367	0.00284
	(0.00363)	(0.00362)	(0.00362)	(0.00358)	(0.00357)	(0.00357)
Adjusted RoA	0.425***	0.424***	0.434***	0.441***	0.439***	0.448***
	(0.0708)	(0.0708)	(0.0712)	(0.0703)	(0.0704)	(0.0708)
Equity Volatility	0.0193	0.0192	0.0168	0.0160	0.0160	0.0141
	(0.0212)	(0.0212)	(0.0213)	(0.0210)	(0.0211)	(0.0211)
Log(1+No. of Patents)	0.0528***			0.0557***		
	(0.0186)			(0.0174)		
log(1+ No. of Citations)		0.0479***			0.0501***	
		(0.0162)			(0.0148)	
log(1+ $ Value of Citations)			0.0268**			0.0318***
			(0.0130)			(0.0116)
Constant	3.031***	3.033***	3.038***	3.014***	3.016***	3.021***
	(0.0465)	(0.0466)	(0.0471)	(0.0463)	(0.0463)	(0.0470)
Observations	22,122	22,122	22,122	22,122	22,122	22,122
Adj-Rsq	0.523	0.524	0.523	0.523	0.524	0.522
Ind, Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 12. Checking for representation ability of firms reporting employee expense

Although only a small fraction for firms report employee expense, these firms represent more …of entire sample of manufacturing firms by value of market capitalization and total asset. This leads me to conclude that the sample represents the population well.

Year: 1989- 2013	N	Mean	Std. Dev.	Total Value	% by Value
Manufacturing firms not reporting employee expense					
Total Asset (In mm)	49,777	3,242.755	16,365.93	161,414,615.64	
Net Sales (In mm)	49,777	2,895.225	15,043.61	144,115,614.83	
Manufacturing firms reporting employee expense					
Total Asset (In mm)	3,056	19,039.41	45,503.88	58,184,436.96	**36.0%**
Net Sales (In mm)	3,056	16,624.76	43,339.79	50,805,266.56	**35.3%**

Table 13. Checking for Heckman sample selection bias

The table summarizes the estimates corrected for potential self-selection bias in the sample. First stage is a probit model, where the response variable, Wage Dummy, takes one if a firm reports employee wage in a year and zero otherwise. The sample is restricted only to manufacturing firms. Both in the first and second stages, controls are same as specified in equation (1). In first stage, however, I also include dummies for exchange on which a firm is listed, owing to the likelihood that different exchanges might have different reporting standards. Since I calculate adjusted-RoA by adding employee expense to firm's net income, I do not include adjusted RoA in the first step. In the second stage, which is a linear model, I include Inverse Mills ratio (lambda), which is derived from probit model of the first stage. Parentheses report robust standard errors. *, **, and *** denote statistical significance at 10%, 5%, and 1% levels, respectively

	(1) Wage Dummy	(2) Wage Dummy	(3) Wage Dummy
Panel A: First Stage (Probit Regression)			
Book Leverage	-0.0705*** (0.0110)		
Book Leverage * High IPI	0.0282*** (0.00740)		
Alternate Book Leverage		-0.0709*** (0.0106)	
Alternate Book Leverage * High IPI		0.0160** (0.00726)	
Alternate Market Leverage			-0.105*** (0.0132)
Alternate Market Leverage * High IPI			0.0332*** (0.00868)
log(Total Asset)	0.0214*** (0.000481)	0.0235*** (0.000509)	0.0231*** (0.000500)
Avg Sale Per Employee	-3.39e-05*** (3.11e-06)	-3.33e-05*** (2.95e-06)	-3.28e-05*** (2.92e-06)
Market-to-Book	0.000934*** (0.000280)	0.00130*** (0.000259)	0.000105 (0.000272)
Equity Volatility	0.00453 (0.00348)	0.00114 (0.00335)	0.00279 (0.00329)
High IPI	-0.0269*** (0.00846)	-0.0207** (0.00832)	-0.0231*** (0.00820)
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Exchange Dummies	Yes	Yes	Yes

	(1) Log(AEE)	(2) Log(AEE)	(3) Log(AEE)
Panel B: Second Stage (OLS Regression)			
Book Leverage	-0.336*		
	(0.184)		
Book Leverage * High IPI	1.242***		
	(0.126)		
Alternate Book Leverage		-0.410***	
		(0.0978)	
Alternate Book Leverage * High IPI		1.457***	
		(0.135)	
Alternate Market Leverage			-0.397***
			(0.138)
Alternate Market Leverage * High IPI			1.312***
			(0.172)
Inverse Mills Ratio	-1.605***	-0.269***	-0.255***
	(0.425)	(0.0644)	(0.0633)
log(Total Asset)	-0.264***	-0.00270	0.00606
	(0.0882)	(0.0162)	(0.0155)
Avg Sale Per Employee	0.00109***	0.000696***	0.000673***
	(0.000133)	(4.98e-05)	(4.94e-05)
Market-to-Book	0.0246***	0.0302***	0.0309***
	(0.00607)	(0.00457)	(0.00488)
Adjusted RoA	0.336***	0.435***	0.400***
	(0.108)	(0.109)	(0.110)
Equity Volatility	0.0213	0.0774	0.0799
	(0.0678)	(0.0658)	(0.0672)
High IPI	0.420***	0.131	0.172
	(0.125)	(0.105)	(0.105)
Constant	6.795***	3.180***	2.989***
	(1.149)	(0.223)	(0.217)
Observations	48,520	48,520	48,520
Censored Observations	45,464	45,464	45,464
Uncensored Observations	3,056	3,056	3,056
Wald chi-sq	2886	3350	3357
p-val	0.00	0.00	0.00
Ind FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes

Exogenous Information Shock and Dividend Payout Policies: Evidence from IFRS Adoption

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Abstract

We study changes in firms' dividend policies in response to improved information environment between investors and firms, enabled by IFRS adoption. We document that the relation between information asymmetry reduction and dividend payout policy is not monotonic, and in fact depends on firm's underlying growth opportunities. Following mandatory adoption of IFRS, firms with low growth opportunities exhibit higher propensity of paying dividends. On the other hand, those with high-growth opportunities exhibit reduced propensity of paying dividends. These results are consistent for dividend payout ratio as well. These, in conjunction, suggest firm's growth rate play a key role in determining the impact of improved information environment on firm's dividend policies.

Key words: Information asymmetry, dividend, growth opportunities, IFRS

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1. Introduction

In this paper, we study the interactive effects of reduction in information asymmetry and growth opportunities available to firms on their dividend payout policy. A plethora of work has gone into studying the determinants of a firm's dividend decision since (Miller & Modigliani, 1961) proposed dividend irrelevance theory. The consensus from that body of work is that information asymmetry between managers and shareholders influences dividend payout primarily via two channels: agency cost of free cash flow (Jensen, 1986) and signalling of private information (Bhattacharya, 1979; John & Williams, 1985, etc.). These findings suggest that as information asymmetry reduces, the need to pay dividends should also reduce.

However, literature also highlight the key role played by firm's growth opportunities to motivate its dividend policies. It suggests firms' dividend payout policies are linked to their growth opportunities (DeAngelo, DeAngelo, & Skinner, 2004; Fama & French, 2001; Jensen, 1986). Investors assess these growth opportunities based on common information available such as financial statements, analyst reports etc. Reduction in information asymmetry improves the information available to investors (e.g. through improved analyst forecasts) and therefore provide them a better assessment of a firm's growth opportunities. In such case, investors can change their demand for dividend based on this new assessment. Therefore, in this paper, we examine the change in firms' payout policies following an information shock conditional on their growth opportunities.

Specifically, we analyse the changes in payout policies of low growth and high growth firms post a reduction in the information asymmetry. Prior literature documents that dividend payout is closely linked to firm's growth opportunities. Dividends are less likely for firms with high investment opportunities owing to cash required for new investment opportunities (Fama & French, 2001). On the contrary, firms with low growth opportunities have more free cash flow and have higher tendency to invest in uneconomic project that leads to potentially higher agency conflicts (Jensen, 1986). Such firms are likely to pay more dividends on an average in comparison with high growth firms to reduce the agency cost of free cash flow (DeAngelo, DeAngelo, and Skinner, 2004).

Therefore, we study changes in payout policies for low-growth and high-growth firms post an information shock. Reduced information asymmetry between a firm and its shareholders provides more information to investors, and we argue this enables investors to assess firm's growth opportunities more accurately. Consequently, investors demand higher share of free cash flows as dividends from low growth firms, which in line with the agency theory of free cash flows (Jensen, 1986). Improved informed environment could also improve minority investors' monitoring capabilities and enable them to more successfully alleviate overinvestment issues and extract higher cash dividends from firms (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000), especially if firms have limited investment opportunities. Similarly, investors are more willing to let go off dividends from firms with high growth opportunities. They are likely to accept a lower dividends from high growth firms in expectation of future capital appreciation from such firms.

In sum, we predict that information asymmetry reduction leads to increase in dividend payout from low growth firms and a decreases in the same from high growth firms. We test the strength of these predictions using both firm's propensity of paying dividend as well as their dividend levels. As shown in Figure 1, while propensity to pay dividends has reduced over the years, the aggregate amount of dividend paid has increased over time. This suggests that dividend level and propensity need not follow the same trend over time. We argue that if growth opportunities moderate the relation between information asymmetry reduction and propensity to pay dividends, they also influence the relation between the former and dividend levels in the same manner.

Thus far, we claim that investors can better gauge a firm's growth opportunities following an improvement in information environment. Of numerous channels that might be at play here, we attempt to explore information made available by analysts. Investors assess growth opportunities based on public information available to them through financial statements and analyst reports. If reduced information asymmetry enables analysts to forecast more accurately, investors could use these forecasts to asses a firm's growth opportunities with higher precision. Therefore, our aforementioned predictions are more prominent for firms that exhibit lower analyst forecast errors after a reduction in information asymmetry.

We use mandatory adoption of International Financial Reporting Standard (IFRS) as an exogenous information shock. Research documents improved information environment, and hence increased transparency between managers and shareholders following IFRS adoption (Barth, Landsman, & Lang, 2008; Horton, Serafeim, & Serafeim, 2013; Landsman, Maydew, & Thornock, 2012). To formally analyse the causal impact of mandatory IFRS adoption on dividend policies, we use difference-in-difference (DID) method. We use linear and non-linear models to estimate change in dividend payouts and propensity of paying dividends, respectively. We collect firm-level annual data from 49 countries over a span of 8 years – ranging from 2001 to 2008 from WorldScope and Datastream. Countries that enacted IFRS accounting standards are in the treatment group, whereas the others are used as control group. We take 2005 as benchmark year for IFRS for control groups.

To test the role of firm's growth opportunities in this setting, we divide firms into two groups depending on whether their growth opportunities – as measured by asset growth, market to book ratio and capital expenditure to total asset ratio – is above or below median. Firms are labelled as high growth if they are above median of growth measure and as low-growth if otherwise. We also control for firm characteristics such as size, profitability, leverage, cash flow uncertainty, and alternative payout channel such as stock repurchase. We also include fixed effects at country, year and industry levels to control for time invariant unobserved characteristics along these dimensions. Since our sample includes 2008, our results are likely to be influenced by the financial crisis. To check robustness of our proposition, we also run tests on the subsample of 2001 to 2007.

We document that vis-à-vis benchmark firms, low growth firms in countries with mandatory IFRS adoption exhibit a significant increase in the propensity of paying dividend. The magnitude of this increase is economically significant, and amounts to an increase in the propensity to pay dividends on the order of 12 percentage points. Similarly, for these firms, following IFRS adoption the payout ratio increases by approximately 3 percentage points. In contrast, we find a significant decrease in propensity of paying dividends for high growth firms in IFRS countries. This decrease is economically significant as well, with the propensity to pay dividends going down by 15 percentage points. Similarly, we find a reduction in payout for high growth firms by 4 percentage points when firms are labelled as high growth. Our analysis suggests that while the overall reduction in propensity is driven by high growth firms, the trend in aggregate dividend levels is driven by low-growth firms. This offers a likely explanation for opposite trends for propensity and payout levels, as exhibited in Figure 1.

Our predictions so far are based on a proper implementation of IFRS. Christensen, Hail, & Leuz (2013), however, argue that certain EU countries bundled enforcement changes with IFRS adoption in 2005. They show that benefits of IFRS such as, improved liquidity or reduced cost of capital, are limited to these countries. Barth and Israeli (2013) point out that disentangling enforcement and IFRS adoption is a difficult task. We follow Christensen, Hail, & Leuz (2013) methodology to test whether changes in payout policies differ across the IFRS countries conditioned on simultaneous enforcement changes. We divide the treatment sample into three non-overlapping groups, *viz*. European Union (EU) countries simultaneously adopting IFRS and improving enforcement, EU countries that only adopted IFRS accounting standards and countries outside European Union.

We find that within each group, low growth firms increase the payouts and high growth firms reduce payouts, and the strength of these changes is statistically different across the three groups. The change in payout policies is most prominent for EU countries that bundled enforcement changes with IFRS adoption, which is in line with the findings of Christensen, Hail, & Leuz (2013). Finally, we test the channel through which investors' ability to assess a firm's growth opportunities could improve. Prior studies show that IFRS adoption leads to improved analyst forecasts (Byard, Li, & Yu, 2011; Hodgdon, Tondkar, Harless, & Adhikari, 2008; Jiao, Koning, Mertens, & Roosenboom, 2012). Therefore, investors should be better equipped to recognize growth opportunities in those firms in IFRS countries that have improved analyst forecasts post adoption of IFRS. Consistent with this, we find that the increase in propensity and payout for low growth firms in IFRS countries as compared to low growth firms in benchmark countries is more pronounced for firms with lower forecast errors.

In addition, we run a battery of robustness tests to cross examine our results. We use alternative proxies for growth opportunities, such as asset growth rate, and capital expenditures to total asset ratio. Our results continue to hold with these proxies. George, T, Li, and Shivakumar (2016) point out that several firms do not adopt IFRS in the year of mandate, but rather defer the adoption either because of flexibility provided by the regulation to adopt later or simply for unknown reasons. To account for this, we replace the country level mandate of IFRS with firm level adoption. Our findings of changes in payout policies continue to hold.

Literature argues that dividends and repurchases have different motivations from a firm's perspective. Jagannathan, Stephens, & Weisbach (2000) provide evidence that firms that repurchase have temporary cash flows, while dividend paying firms have permanent cash flows. Nevertheless we add repurchases, net of equity issuance, to firm's dividend payout in a given year. We find the results to be consistent with our main hypotheses. Finally, we run a placebo test where we study the impact of the timing of information shock on payouts. We find that the changes in payout do not occur in the years leading up to the shock. They start occurring in the year of the shock and become stronger after that.

Our study makes three-pronged contribution to accounting and corporate finance literature. First, we contribute to the sparse literature on real effects of mandatory IFRS adoption on managerial decision making. Existing Studies provide evidence on impact of IFRS adoption on investment efficiency of firms (Biddle, Callahan, Hong, & Knowles, 2016; Schleicher, Tahoun, & Walker, 2010, etc.). Also, Hail, Tahoun, & Wang (2014) provide evidence on impact of IFRS adoption on dividend payout propensity of firms. We add to this literature by examining the moderating effect of growth opportunities on the relation between IFRS adoption and dividend payout propensity as well as dividend levels.

Second, we also contribute to the literature that examines the various determinants of dividends paid by firms. Existing studies document information asymmetry between managers and shareholders as a significant determinant of dividend payouts (Jensen, 1986; Bhattacharya, 1979; John and Williams, 1985; etc.), and growth opportunities available to a firm as another key determinant (DeAngelo, DeAngelo, and Skinner, 2004). We add to this stream of literature by interacting these two determinants together to analyse their combined effect on dividend payouts, both in terms of levels as well as propensity.

Third, we provide a potential explanation of the contrasting time trends between dividend propensity and dividend. While propensity to pay dividends reduces after adoption of IFRS, the amount of dividend paid continues to grow. We attempt to resolve this puzzle by documenting that growth opportunities available to a firm play a significant role in shaping the propensity and payout levels of dividends post adoption of IFRS. We document that payout levels increase for low growth firms post IFRS adoption, while they decrease for high growth firms, thereby providing a potential explanation for the contrasting time trends of dividend propensity and payout levels.

The remainder of the paper is organized as follows. In Section 2, we discuss prior literature and develop hypotheses. In Section 3, we discuss the data and empirical framework. Sections 4, 5 and 6 present the results, robustness tests and conclusion respectively.

2. Literature Review and Hypotheses Development

2.1 Dividend Payouts, Information Asymmetry, and Growth Opportunities

Literature has ample evidence that information asymmetry between managers of a firm and its shareholders is a key determinant of dividend payout policy. Information asymmetry can influence payouts through any of these channels: FCF hypothesis, and signalling hypothesis.

FCF hypothesis emerges from agency problem as proposed by Jensen (1986). Managers have incentives to over-retain cash because they can divert this cash to fund private benefit projects or otherwise benefit themselves at the expense of shareholders (La Porta et al., 2000; Stulz, 1990; etc.). In response, investors pressurize managers to pay put the extra cash as dividends to prevent the build-up of excessive internal cash and hence reduce the opportunity to misuse corporate resources. If managers do not respond to this pressure, the stock price might fall to low levels. This low level of stock price, if continues to exist for a reasonable period, makes the firm vulnerable to takeovers. La Porta et al. (2000) also suggests that managers respond to the demand of payouts from shareholders to build reputation.

Under signalling hypothesis, Bhattacharya (1979), John & Williams (1985), etc., propose that managers use dividends to signal quality of their private information to shareholders. Dividends signal the prospects of a firm; an increase in payout suggests that managers expect earnings to increase in future periods. Managers are reluctant to cut dividends because that signals an expected decrease in future earnings (DeAngelo and DeAngelo, 1990; Guttman, Kadan, and Kandel, 2010). In sum, dividends are costly signals. A firm needs to maintain its payout levels because the absence or a cut in payout sends a negative signal to shareholders.

At the same time, payouts also depend on firm characteristics such as growth opportunities available to a firm. If growth opportunities are limited, disgorging FCF to shareholders becomes more feasible. The availability of excess cash exacerbates agency costs arising from FCF, since managers tend to overinvest by spending it on negative net present value projects (Jensen 1986). Increased dividend payout reduces cash under manager's control, and therefore helps mitigate agency problem. Low growth firms, therefore, pay higher dividends as compared to high growth firms (DeAngelo, DeAngelo, and Skinner, 2004).

On the other hand, if a firm has ample growth opportunities, managers have little excess cash left for empire building. Investors of these firms are willing to let go of dividends, owing to cash required for new investment opportunities (Fama and French, 2001). High growth firms, therefore, pay lower dividends. To sum up, literature suggests the relation between information asymmetry and dividend payouts is moderated by growth opportunities available to a firm. An exogenous shock to information asymmetry enables us to better understand this moderation effect.

2.2 IFRS Adoption and Information Asymmetry

In this paper, we use mandatory IFRS adoption as an exogenous shock to information asymmetry. It enables us to study the moderating influence of growth opportunities on the effect of information asymmetry reduction on dividend payouts. Over the last few years, a large number of countries have adopted IFRS accounting standards. Not surprisingly, this shift in accounting standards has been examined widely (Barth et al., 2008; Hail, Leuz, and Wysocki, 2010; Horton et al., 2013; etc.).

Literature documents a host of capital market and debt contracting benefits arising out of IFRS. There is also sufficient evidence of higher quality earnings, improved information environment, increased transparency between managers and shareholders etc. (Barth et al., 2008, Landsman et al., 2012, Horton et al., 2013). Leuz & Verrecchia (2000) study German firms and find that information asymmetry is significantly lower for firms reporting under IFRS or US GAAP vis-à-vis those reporting under German GAAP.

Barth et al. (2008) document lower earnings management, timely loss recognition, and higher value relevance earnings post IFRS adoption. Landsman et al., (2012) report positive association between IFRS adoption and information content of earnings thereby indicating that investors perceive earnings reported under IFRS to be of higher quality. In addition, a cross-country analysis by Naranjo, Saavedra, & Verdi (2015) suggest IFRS reduces information asymmetry and hence mitigates problems arising from pecking-order theory. Taken together, these findings suggest that IFRS adoption is an appropriate event as an exogenous information shock to firms.

Some recent studies have questioned the benefits attributed to mandatory IFRS adoption. Christensen et al. (2013) examine changes in liquidity of firms that adopted IFRS in EU countries and find that the increase in liquidity is limited to five countries that made enforcement changes concurrent with IFRS adoption. Barth & Israeli (2013) document that enforcement and IFRS strengthen the impact of improved accounting standards. In this paper, we essentially sidestep this debate since we use IFRS adoption as a proxy for exogenous information shock. Even if this information improvement is brought about by a combination of the two events, it does not change the inferences we draw on dividend payout policy of firms.

2.3 Effect of IFRS Adoption on Dividend Payout Propensity – Role of Growth Opportunities

As discussed in the last section, IFRS adoption reduces the information asymmetry between firms and shareholders. A reduction in information asymmetry mitigates agency problem between managers and shareholders (Jensen 1986) and/or using dividends for signalling (Bhattacharya, 1979; John & Williams, 1985). Thus, the need to pay dividends to mitigate agency problem also reduces. In support of this, Hail, Tahoun, and Wang (2014) document that the likelihood of dividend payouts reduces post adoption of IFRS. However, as discussed before, growth opportunities play a significant role in shaping the payout policy of a firm. We propose that these growth opportunities interact with the reduced information asymmetry enabled by IFRS adoption to arrive at the new equilibrium dividend payout propensity.

Low growth firms also experience a reduction in information asymmetry, and should therefore reduce the propensity to pay dividends, as documented by Hail et al., (2014). On the other hand, post a reduction in information asymmetry, investors are able to assess the growth opportunities of a firm more accurately. If investors can better identify low-growth firms from high-growth firms because of better information, they demand higher dividends from low growth firms in order to mitigate FCF driven agency costs. This leads us to the following hypothesis:

HYPOTHESIS 1a**:** *The propensity of paying dividends increases for low growth firms post mandatory adoption of IFRS.*

Similarly, the direction of change in propensity of paying dividends post IFRS adoption is not clear ex ante for high growth firms. High growth firms have higher information asymmetry and therefore are likely to benefit more from a shock that reduces information asymmetry. Li (2010) document that adoption of IFRS results in reduced cost of capital. Owing to this high growth firms can raise external capital more easily and thus holding internal capital might not be as crucial as before. High growth firms are likely to increase dividends. On the other hand, since investors can now identify high growth firms better post a reduction in information asymmetry, they are more willing to let go off dividends. This leads us to the following hypothesis:

HYPOTHESIS 1b**:** *The propensity of paying dividends reduces for high growth firms post mandatory adoption of IFRS.*

2.4 IFRS Adoption, Growth Opportunities, and Dividend Payout Ratio

So far, we have focussed on the propensity of paying dividends in the setting of IFRS adoption. Since our objective is to study the payout policy as a whole, we now shift focus to the payout levels. Propensity to pay dividends and dividend payout levels do not necessarily move in the same direction. As shown in Figure 1, amount of dividend payouts continues to increase over time, despite a decreasing trend in propensity to pay dividends.

Dividends tend to be sticky in nature (Lintner, 1956). Firms that have been consistently paying substantial dividends are unlikely to stop paying dividends post IFRS adoption (DeAngelo and DeAngelo, 1990; Guttman, Kadan, and Kandel, 2010). If dividends continue to follow their time trend, one would expect the average payout ratio to increase post IFRS adoption within the population of dividend payers. However, if we draw parallel with the empirical findings of reduced propensity of paying dividends post IFRS adoption (Hail et al., 2014), one would expect the payout levels also to reduce. This trend is also supported given reduced cost of external capital post IFRS adoption (Li, 2010). Some firms stop paying dividends and the ones that continue to pay dividends post IFRS could reduce the level of dividend as well. This leads us to the following hypothesis:

HYPOTHESIS 2a**:** *The dividend payout ratio of IFRS adopting firms reduces post mandatory adoption of IFRS.*

While the payout ratio is expected to reduce overall post IFRS adoption, it is not clear whether it is reduces across the sample. If investors are able to identify growth opportunities post IFRS adoption with higher precision, and if this better identification impacts propensity of paying dividends heterogeneously based on growth opportunities, same should hold true for payout levels. Therefore, in addition to forcing non-dividend paying low growth firms to start paying dividends (as predicted by hypothesis 1a), investors could also demand higher levels of payout from all low growth firms. Similarly, we predict a decreasing payout levels for high-growth firms. Thus, we expect payout ratio to follow the same trend as propensity of paying dividends post the adoption of IFRS. This leads us to the following two hypotheses:

HYPOTHESIS 2b**:** *The dividend payout ratio of low growth adopting firms increases post mandatory adoption of IFRS.*

HYPOTHESIS 2c**:** *The dividend payout ratio of high growth adopting firms reduces post mandatory adoption of IFRS.*

2.5 IFRS Adoption, Enforcement Changes, and Dividend Payout Ratio

Christensen et al. (2013) document that IFRS benefits such as higher liquidity and lower cost of capital could be a result of concurrent enforcement changes in the EU region. Following them, we categorize treatment countries into three classes, *viz*. countries outside European Union, European Union countries that concurrently improves enforcement along with mandatory IFRS adoption – Finland, Germany, Netherlands, Norway, and the UK – and European Union countries that only mandate implementation of IFRS accounting standards.

Christensen et al. (2013) find the effects of IFRS introduction on stock liquidity are limited to the five European countries undergoing concurrent changes in enforcement. However, Barth and Israeli (2013) contest this evidence and claim it is inherently difficult to disentangle the effects of enforcement changes from those of IFRS adoption. Thus, it is not clear if enforcement change alone can bring the documented benefits of IFRS, or if both are needed together to bring about these benefits. Since we cannot make a directional prediction in this case, we state the following hypothesis in null form:

HYPOTHESIS 3**:** *The strength of changes in payout policy in IFRS adopting firms is stronger for countries with concurrent changes in enforcement and mandatory IFRS adoption.*

2.6 IFRS Adoption, Analyst Forecast Errors, and Payout policies

So far, we have hypothesized changes in payout post reduction in information opportunities conditioned on growth opportunities. We argue that reduction in information asymmetry leads to a better identification of growth opportunities by investors. One possible channel through which investors can get gain improved information is by using improved analyst forecasts. Literature documents that analyst forecast errors improve post adoption of IFRS (Byard et al., 2011; Hodgdon et al., 2008; Jiao et al., 2012). Bilinski, Lyssimachou, & Walker (2012) find that the improved analysts' performance following IFRS adoption can also be extended to analysts' predictions of target prices. Improved forecasts by analysts should inform investors better about a firm's growth prospects. Thus, for firms where analyst forecast errors are low, we should see a more prominent change in payout policies. This leads us to the following hypotheses:

HYPOTHESIS 4a**:** *The propensity to pay dividends and payout ratio of low growth firms increase more for firms with lower forecast errors.*

HYPOTHESIS 4b**:** *The propensity to pay dividends and payout ratio of high growth firms decrease more for firms with lower forecast errors*

3. Data and Empirical Framework

3.1 Data and Sample

We obtain firm-year level observations from Thomson Reuters DataStream and Worldscope, spanning across 49 countries, starting from 2001 till 2008. We combine this with analyst forecast data from I/B/E/S. This is an unbalanced panel data. Table 2 provides descriptive statistics of our sample. We winsorize leverage, market-to-book and return of asset (*ROA*) at 1% and 99% levels. In order to avoid concerns arising from firms voluntarily adopting IFRS and hence endogeneity issues, we restrict our sample to mandatory IFRS adopters, i.e. firms that adopted IFRS only after the mandate in their respective country. We also remove firms that have total asset of less than US$ 10mm. Finally, only those countries are retained for which we have at least 10 valid dividend per share (dps) observations. This leaves us with a sample of almost 70,000 observations.

We begin by looking at the behaviour of dividend payouts by firms across countries and years. Table 1 Panel A shows the country wise distribution of the sample. It shows that dividend payment is common across the globe, with close to 60% of the sample paying dividends. Table 1 Panel B shows the same distribution year wise. It is evident that dividends were cut in the year 2008, i.e. only 56% of our sample firms pay dividends as against average of approximately 60% during previous years. What we do find surprising here is that in 2008 only 27% of firms have reduced dividends whereas 37% firms have increased it. This prima facie evidence is in support of sticky nature of dividends. Figure 1 plots time trend of dividend as well as stock repurchases. Share repurchase and dividends complement each other, since both mechanisms are used to pay back to shareholders. The time trend in the figure insinuates at consistency of these parameters across time.

3.2 Basic Empirical Framework

We examine the impact of exogenous information shock on dividend policy using a difference-in-difference technique. First, to ensure validity of our data, we replicate the findings of HTW (2014). The results are reported in Table 3. We find our results to be consistent with that of HTW (2014). Having done that, we use following logistic regression to test Hypotheses 1a and 1b:

$$Pr(DIV\_PAID_{it}) = \alpha_0\, POST*IFRS + \alpha_1\, POST*IFRS*H1 + \alpha_2\, LTA_{it} + \alpha_3\, LEV_{it} + \alpha_4\, ROA_{it} + \alpha_5\, RET_{it} + \alpha_6\, REP_{it} + \alpha_7\, NEG\_EARN_{it} + \alpha_8 UNCERT_{it} + \alpha_9 DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE + Country\ FE + e_{it} \quad \ldots (1)$$

In above model, we include industry, country as well as year fixed effects. Response variable, dividend paid, is an indicator variable that takes 1 when firm *i* has paid dividend in year *t*. IFRS is an indicator variable that takes a value of 1 for firms in treatment group and 0 otherwise. Similarly, POST takes 1 after a country mandates IFRS adoption and zero before the mandate. For firms based out of control countries, we assign POST 1 after 2005. Countries subject to the event form the treatment sample, and the remaining countries form the control sample. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report these coefficients for brevity.

In equation (1) *H1* is an indicator variable that takes one if firm is classified as a high-growth firm – i.e. when its growth measure such as market to book ratio is above median – and zero otherwise. Similarly, *Q1* is an indicatory variable that takes one if firm is classified as high-growth – i.e. when its growth measure lies in top quartile – and zero when its growth measure lies in the bottom quartiles. Our main coefficient of interest here are α_0 and α_1. The former is a difference in difference (DID) estimate. It measures the impact of the event on treatment vis-à-vis control sample for high growth firms. And, sum of the two coefficients, i.e. $(\alpha_0 + \alpha_1)$, estimates the impact of the event on treatment vis-à-vis control sample for low growth firms.

The model outlined uses several firm level controls that potentially shape its payout policy. *LTA* is the log of total assets of a firm, used as a proxy for the firm size, and we expect a positive sign on its coefficient, since larger firms tend to pay higher dividends (Redding, 1997). *MTB* is the market to book ratio, which is a proxy for a firm's growth opportunities, and we expect a negative sign on its coefficient, since firms with more growth opportunities are less likely to pay dividends (Gaver & Gaver, 1993). *ROA* is the return on assets, a measure of firm profitability, and firms with higher profitability are likely to pay higher dividends. We therefore expect a positive sign on its coefficient.

Lev is the financial leverage, computed as book value of debt to book value of equity. It indicates the levels of debt relative to equity, and therefore firms with higher leverage may have higher interest payment obligations, and therefore would pay lower dividends. We therefore expect a negative sign on its coefficient. We also include *ret*, a measure for annual stock return, to proxy for the firm's stock market performance, and therefore expect a positive sign on its coefficient.

Neg_Earn is an indicator variable that takes a value of 1 in the case of a firm reporting a negative EBIT in a given year. The coefficient on this is expected to be negative. In line with the sticky dividends argument of (Lintner, 1956), we also include a lagged dividend payment dummy variable, indicated by $Payout_{t-1}$. Given share repurchases forms a part of the payout policy of a firm, we control for contemporaneous share repurchases by including an indicator variable, *rep*. Table 2 summarizes the key statistics of the control variables.

3.3 *Empirical Framework for Hypotheses Testing*

Hypothesis 1a examines the influence of IFRS adoption on payout propensity for low growth firms. To study the differential impact of IFRS adoption on firms' propensity of paying dividends, we run a Difference in Difference in Difference (DIDID) by interacting H1, POST and IFRS as laid out in equation (1). The coefficient α_0 and α_1 in equation (1) provide the difference in difference estimate on the differences in likelihood of dividend payouts for low growth and high growth across IFRS in comparison with benchmark countries firms post adoption of IFRS. Based on the prediction of Hypothesis 1a, we expect a positive and significant estimate for $(\alpha_0 + \alpha_1)$.

We use the same model to test hypothesis 1b, which examines the influence of IFRS adoption on payout propensity for high growth firms. The coefficient of interest in this model is α_0, which gives us the change in payout propensity of low growth firms of treatment firms compared to payout propensity of high growth firms in benchmark sample. Based on the prediction of H1b, we expect a negative and significant estimate for α_0. We also estimate equation (1) by restricting sample to top and bottom quartiles of growth measures, where top quartile represents high growth firms.

We continue the analysis by testing hypothesis 2a which tests the impact of IFRS adoption on the dividend payout ratio of firms. We use the following model:

$$Payout_{it} = \alpha_1\, POST*IFRS + \alpha_2\, LTA_{it} + \alpha_3\, LEV_{it} + \alpha_4\, ROA_{it} + \alpha_5\, RET_{it} + \alpha_6\, REP_{it} + \alpha_7\, NEG\_EARN_{it} + \alpha_8 UNCERT_{it} + \alpha_9 DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE + Country\ FE + e_{it} \quad \ldots (2)$$

In equation (2), $Payout_{ijt}$ is the ratio of a firm's total cash dividends paid scaled by its total earnings. Here, α_1 measures the DID estimate for the impact of IFRS adoption on payout ratio for firms. The set of control variables remains the same, except for lagged dividend payment indicator, which is now replaced by lagged payout ratio of the firm. H2a predicts a negative and significant estimate for α_1. Hypothesis 2b examines the moderating influence of growth opportunities on the relation between IFRS adoption and a firm's dividend payout ratio. Specifically, it tests the change in payout ratio of low growth firms post IFRS adoption. To test H2b, we use the following model:

$$Payout_{it} = \alpha_0\, POST*IFRS + \alpha_1\, POST*IFRS*H1 + \alpha_2\, LTA_{it} + \alpha_3\, LEV_{it} + \alpha_4\, ROA_{it} + \alpha_5\, RET_{it} + \alpha_6\, REP_{it} + \alpha_7\, NEG\_EARN_{it} + \alpha_8 UNCERT_{it} + \alpha_9 DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE + Country\ FE + e_{it} \quad \ldots (3)$$

We design the model similar to the one in H1a. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (3), we do not report those coefficients for brevity. To study the differential impact of IFRS adoption on firms' payout ratios, we run a Difference in Difference in Difference (DIDID) by interacting *H1* with POST and IFRS, as laid out in equation (3). The coefficient α_1 in equation (3) provides the difference in difference estimate on the differences in payout ratios of low growth and high growth across IFRS and benchmark countries firms post adoption of IFRS. The coefficient of interest in this model are α_0 and α_1. Hypothesis H2c predicts a negative sign for α_0, i.e. a decrease in payout ratio post IFRS adoption for high growth firms. Hypothesis H2b predicts a positive and significant estimate for $(\alpha_0 + \alpha_1)$, i.e. an increase in payout ratio post IFRS adoption for low growth firms.

Next, to test hypothesis H3, we use the following model:

$$Pr(Div\_paid=1)_{it} = \alpha_0\, POST*EU\_enf + \alpha_1\, POST*EU\_enf*Q1 + \alpha_2\, POST*EU\_nonenf + \alpha_3\, POST*EU\_nonenf*Q1 + \alpha_4\, POST*nonEU + \alpha_5\, POST*nonEU*Q1 + \alpha_6\, LTA_{it} + \alpha_7\, LEV_{it} + \alpha_8\, ROA_{it} + \alpha_9\, RET_{it} + \alpha_{10}\, REP_{it} + \alpha_{11}\, NEG\_EARN_{it} + \alpha_{12} UNCERT_{it} + \alpha_{13} DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE + Country\ FE + e_{it} \quad \ldots (4)$$

Following Christensen et al. (2013), we break up IFRS adopting sample into three non-overlapping groups: EU nations that bundled IFRS adopting with enforcement changes (represented by the variable *EU_enf)*, EU nations that did not have enforcement changes simultaneous with IFRS adoption (represented by the variable *EU_nonenf)*, and non EU IFRS adopting nations (represented by the variable non*EU)*.The sum $(\alpha_0 + \alpha_1)$ represents the change in payout policy for low growth firms in EU nations with concurrent changes in enforcement, with respect to the benchmark group. Similar interpretations can be attributed to $(\alpha_2 + \alpha_3)$ and $(\alpha_4 + \alpha_5)$. Based on H3, we should expect no difference in the payout policies across the three groups. Thus, we expect the difference between $(\alpha_0 + \alpha_1)$, $(\alpha_2 + \alpha_3)$, and $(\alpha_4 + \alpha_5)$ and α_1, α_3, and α_5 to be statistically insignificant.

Finally, we test hypotheses H4a and H4b using the following model:

$$Pr(Div\_paid=1)_{it} = \alpha_0 POST*QF1 + \alpha_1 POST*QF1*Q1 + \alpha_2 POST*QF2 + \alpha_3 POST*QF2*Q1 + \alpha_4 LTA_{it} + \alpha_5\, LEV_{it} + \alpha_6\, ROA_{it} + \alpha_7\, RET_{it} + \alpha_8\, REP_{it} + \alpha_9\, NEG\_EARN_{it} + \alpha_{10} UNCERT_{it} + \alpha_{11} DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE + Country\ FE + e_{it} \quad \ldots (5)$$

This equation breaks up the treatment sample into two non-overlapping subsamples. QF1 is a binary variable, which takes 1 for firms in the treatment sample that have forecast errors above the median value, and zero otherwise. Similarly, QF2 is also a binary variable that takes 1 for firms in the treatment sample that have forecast errors below the median value, and zero otherwise. Both QF1 and

QF2 take zero for control group firms. This enable us to compare the change in dividend policies of high and low forecast error firms in treatment sample vis-à-vis control sample. The sum (α_0 + α_1) represents the difference in payouts for low growth firms between low forecast error treatment firms to entire control sample, and α_1 represents the difference in payouts for high growth firms between low forecast error treatment firms to entire control sample.

The sum (α_2 + α_3) represents the difference in payouts for low growth firms between high forecast error treatment firms to entire control sample, and α_3 represents the difference in payouts for high growth firms between high forecast error treatment firms to entire control sample. We have also included all two-way interaction variables, such as IFRS*H1, in equation (3), we do not report those coefficients for brevity. H3a predicts a positive and significant estimate for $(\alpha_0 + \alpha_1)$ and H3b predicts a negative and significant estimate for α_1. Also, the difference between (α_0 + α_1) and (α_2 + α_3) represents the difference in the changes in payout policies, conditioned on growth opportunities, between low forecast error and high forecast error firms. H3a and H3b predict a positive and significant coefficient on this.

4. Empirical Results

4.1 Univariate Analyses

We start our analyses by studying firm's propensity of paying dividends before and after the adoption of IFRS along growth dimension, separately for treatment and control groups. The result of this analysis is summarized in Table 3. We find that in the treatment group, i.e., for the firms that adopted IFRS, there was an increase in the proportion of low growth firms paying dividends post adoption of IFRS by 5%, whereas same type of firms registered a drop of 0.8% in the control group. This supports the possibility that low growth firms are more likely to pay dividends post IFRS adoption. The results also suggest that high growth firms in treatment group do not increase their dividends, only the low growth firms do.

4.2 Impact of IFRS adoption on propensity of paying dividends

Equation (1) tests the first two hypotheses of the association between growth and payout post IFRS adoption. The estimate of α_0 indicates the change in the propensity of paying dividends by high growth firms, compared across IFRS and Non IFRS countries, while the estimate of $(\alpha_0 + \alpha_1)$ conveys the change in the propensity of paying dividends by low growth firms, again compared across IFRS and Non IFRS countries. The results are summarized in Table 4. In first and third columns, we restrict our sample only to 2007, in order to exclude the impact of financial crisis of 2008. The three-way interaction between post IFRS indicator, treatment indicator and lowest quartile indicator identifies the difference between the likelihood to pay dividends for low growth firms post IFRS adoption and high growth firms post IFRS adoption. Coefficient of interest for H1a is$(\alpha_0 + \alpha_1)$, while for H1b is α_0.

Column (1) compares the change in dividend payment behaviour of lowest quartile growth firms with highest quartile growth firms after the mandatory adoption of IFRS, while column 3 does the same for below median vs above median firms, based on growth opportunities. The sum of coefficients on $(\alpha_0 + \alpha_1)$ in the case of former is 0.300, and statistically significant, while in the case of latter is 0.06, again statistically significant, though smaller economically. The coefficient in column 1 amounts to an approximate increase of 6 percentage points in the propensity to pay dividends post the mandatory adoption of IFRS for low growth firms. Taken together, we find strong support for hypothesis 1a. We also test the robustness of results of equation (1) to the two-way interactive fixed effects of country and year. The results are summarized in Table A1. Since two-way country and year f.e. is collinear with POST*IFRS, we don't observe α_0. However, α_1, i.e. DIDID coefficient of low-growth versus high-growth firms in treatment and control groups are consistent with Hypothesis 1b.

To further investigate if the positive sign on $(\alpha_0 + \alpha_1)$ is driven by increase in the likelihood of payouts by low growth firms or a reduction in the likelihood of payout of high growth firms along with no change in the same for low growth firms, we present the results of column 1 in a tabular format in Table 5, as an example. The results in Table 5 show that low growth and high growth firms that adopted IFRS exhibits an increase and decrease in the likelihood of dividend payment post adoption of IFRS. At the same time, low growth vis-à-vis high growth firms that did not adopt IFRS do not exhibit any significant difference in propensity of paying dividends.

Columns (1) and (3) in Table 4 also present the result for test of hypothesis H1b. The coefficient of interest is α_0. The estimate on α_0 is -0.683 in column (1) which is statistically significant at 1% level. Economically, it is equivalent to a reduction in propensity to pay dividends by 13 percentage points, when computed at means of other control variables in the regression. Similarly, in column (3), the coefficient on α_0 is -0.484, again statistically and economically significant. These results suggest that firms with high growth opportunities reduced the propensity to pay dividends once they adopted IFRS, thereby supporting hypothesis H1b.

The sample period in columns (1) and (3) is 2001-2008 which coincides with the onset of financial crisis around the world. (DeAngelo, DeAngelo, & Skinner, 1992) study a large sample of NYSE listed firms and find that the probability of reducing dividends by a profit-making firm is only 1%, as opposed to 51% for a loss-making firm. Our results could therefore be influence by financial crisis. We therefore test both H1a and H1b on a restricted sample from 2001-2007. The results are presented in columns (2) and (4) of Table 4.

We find the coefficients continue to be significant, both economically and statistically. For H1a, we find the coefficient $(\alpha_0 + \alpha_1)$ is 0.277, translating to an approximate 6 percentage point increase in the propensity to pay dividends post the mandatory adoption of IFRS, for low growth firms. Similarly, α_0 is -0.683, translating to a 11 percentage point reduction in the propensity to pay dividends for high growth firms, post adoption. Taken together, these tests suggest that an exogenous information shock impacts the propensity of paying dividends by firms based on the growth opportunities available to them.

4.3 Impact of IFRS adoption on dividend payout ratio

Hypothesis 2a, 2b, and 2c make predictions on the change in payout ratio for firms that adopt IFRS mandatorily. Equation (2) tests H2a, which makes prediction about the association between payout ratio and IFRS adoption. The estimate of α_1 indicates the change in the payout ratio for adopting firms as compared to benchmark firms. The result for test of H2a is presented in Table 6. The estimate of α_1 in Column (1) is -0.016, which is significant at 5%. It suggests that payout ratios reduced by approximately 2% post the adoption of IFRS for adopting firms, providing support for H2a.

We use equation (3) to test H2b and H2c. Columns (2) through (5) in Table 6 provide results obtained from equation (3). The coefficient of interest for H2b is $(\alpha_0 + \alpha_1)$. The estimate on $(\alpha_0 + \alpha_1)$ in column (2), where firms that are in the lowest quartile of *MTB* are labelled as low growth, is 0.037 and significant at 1%. This suggests that the payout ratio increases for low growth firms post adoption by approximately 5% as compared to low growth benchmark firms. In column (4), when firms are assigned to low growth based on median cut off, the estimate on $(\alpha_0 + \alpha_1)$ is 0.0095, again significant at 5% level. These two results lend support to H2b, suggesting that low growth firms increased their payout ratios post adoption of IFRS.

To examine H2c, we focus on the coefficient of α_1. In column 2 (column 4), its estimate is -0.043 (-0.046) significant at 1% (1%). These results provide strong support for H2c, suggesting high growth firms reduced their payout ratios post adoption of IFRS. We also test H2b and H2c on the restricted sample from 2001-2007, again to reduce the impact of financial crisis. These subsample results are tabulated in columns (3) and (5). We obtain very similar results to the full sample tests. In sum, we find support for hypothesis 2a, 2b and 2c, suggesting that payout ratio did change post adoption of IFRS, and the relation between payout ratio and IFRS adoption is moderated by growth opportunities available to a firm.

4.4 IFRS Adoption and Enforcement

We use equation (4) to test the robustness of hypothesis H3. The results are summarized in Table 7. Column (1) reports results for propensity of paying dividends, whereas column (2) report that for payout ratio. Herein, α_0, α_2 and α_4 captures the difference-in-difference estimates for high-growth firms in EU nations that bundled IFRS adopting with enforcement changes (represented by the variable *EU_enf),* EU nations that did not have enforcement changes simultaneous with IFRS adoption (represented by the variable *EU_nonenf),* and non EU IFRS adopting nations (represented by the variable non*EU)* in comparison with control country-firms, respectively. The coefficients for α_0, α_2 and α_4 are -0.618, -0.557 and -0.528 at significance level of 1%, 1% and 10% respectively.

Similarly, as suggested in equation (4) $(\alpha_0 + \alpha_1)$, $(\alpha_2 + \alpha_3)$, and $(\alpha_4 + \alpha_5)$ captured the DID estimates for high-growth firms in EU nations that bundled IFRS adopting with enforcement changes for aforementioned three classes of IFRS adopters. The coefficients for $(\alpha_0 + \alpha_1)$, $(\alpha_2 + \alpha_3)$, and $(\alpha_4 + \alpha_5)$ are 0.367, 0.153, 0.268, respectively and statistically significant. The estimate for payout ratio, however, as reported in column (2) is strongest for EU countries that improves enforcement simultaneously with mandatory IFRS adoption, particularly for low growth firms. In sum, we find a significant difference in the impact of IFRS on firm's dividend policies based on enforcement classification.

4.5 Analyst Forecast Errors and Payout Policy

We use equation (5) to test H3a and H3b and the results are summarized in Table 8. Column (1) summarizes results for propensity of paying dividend, whereas column (2) summarizes results for payout ratio. Consistent with H3a, in column (1), $(\alpha_0 + \alpha_1)$ is 0.202 and is statistically significant. Similarly, in line with H3b, α_1 is -0.681 and is statistically significant at 1%. These findings imply that the propensity of paying dividends for low growth firms between low forecast error treatment firms to entire control sample increases, and propensity for high growth firms between low forecast error treatment firms to entire control sample decreases post IFRS adoption. Similarly, sum $(\alpha_2 + \alpha_3)$ is 0.384 and is statistically significant and α_3 is -0.623 and is statistically significant at 1%. These findings imply that propensity of paying dividends for low growth firms between high forecast error treatment firms to entire control sample increases, and the propensity for high growth firms between high forecast error treatment firms to entire control sample decreases post IFRS adoption. The results for payout ratio, as reported in column (2) is consistent with those of column (1).

5. Robustness Tests

The inferences drawn in our main tests uses difference in difference technique, which separates the effects of the exogenous shock on the treatment and benchmark firms. However, we conduct robustness checks to assess the validity of our proxies for growth opportunities. We also include firm fixed effects to account for unobserved firm level characteristics that might be correlated with payout policy of firms.

5.1 Alternative proxies for growth opportunities

Our main test uses market-to-book ratio of a firm as a proxy for its growth opportunities. This is a market based measure of growth opportunities. To further test the credibility of our results, we use two accounting based measures of growth opportunities: asset growth rate and capital expenditure to total asset ratio. Titman & Wessels (1988), Chen (2004), and Stankevičienė & Norvaišienė, (2007) among others have used asset growth rate as a proxy for growth opportunities for a firm. Similarly, Bhaduri (2002) and Titman & Wessels (1988) among others have used capital expenditure to total assets as a proxy for growth opportunities. We present the results for these two proxies in Table 9 and 10.

Table 9 presents the result when the dependent variable is propensity to pay dividends. We use the same models as in the case of our main tests. Columns (1) and (2) of Table 9 have growth proxy as asset growth rate, measured as the change in total assets of a firm, scaled by assets at the end of previous year. The coefficient of interest is $(\alpha_0 + \alpha_1)$ for low growth firms and α_1 for high growth firms, as described in model (2).

We find that the coefficient on $(\alpha_0 + \alpha_1)$ is 0.30 (0.17) in column 1 (column 2), significant at 5% (5%). The coefficient on α_1 is -0.28 (-0.25) in column 1 (column 2), significant at 1% (1%). In columns (3) and (4), the proxy for growth opportunities is capital expenditure to total assets ratio. We find that the coefficient on $(\alpha_0 + \alpha_1)$ is 0.22 (0.24) in column 1 (column 2), significant at 5% (5%). The coefficient on α_1 is -0.19 (-0.21) in column 1 (column 2), significant at 5% (1%). Taken together, we find support for hypotheses 1a and 1b with alternative growth proxies as well. We find the results for payout ratios, as summarized in Table 10, to be consistent with these two proxies of growth as well and in line with hypotheses H2b and H2c.

5.2 Timing of Information Shock

In the next robustness test, we replace the single information shock event into four sub periods, and include indicator variables for three of them. We estimate the following model:

$Pr(DIV\_PAIDi_t) = \alpha_0 + \alpha_1 IND1*IFRS*Q1(or\ H1)+\alpha_2 IND2*IFRS*Q1(or\ H1) + \alpha_3 IND3*IFRS*Q1(or\ H1) + \sum_{it} \alpha_i Control_{it} + Industry\ FE + Year\ FE + Country\ FE + e_{it}$ … (6)

Assuming the event occurs at *t=0*, the first indicator variable (IND1) takes a value of 1 for the period *t-2* and *t-1*. The years before that serve as the base period. The second indicator variable (IND2) takes a value of 1 for *t=0* and *t=1*, and the third indicator variable (IND3) takes a value of 1 for all years after *t=1*. If the change in dividend payment behavior is related to the exogenous information shock, then α_1 should be statistically insignificant; α_2, however, could be statistically significant or not, depending on how fast the information shock influences the information environment. Although we cannot predict the significance α_2 ex-ante, we predict α_3 to be positive and significant, since the reduction in information asymmetry is likely to be in play from second year onwards. Results are reported in Table 11.

Columns 1 and 2 present the results for propensity of paying dividends, while columns 3 and 4 report the results for payout ratio. We find that the interaction terms involving IND1 are insignificant in both columns (1) and (3), suggesting that there was no change in the payout propensity prior to the information shock. As expected, we find a significant change in the propensity in the year of the shock, combined with the year after. For low growth firms, the propensity increases, and for high growth firms it decreases.

Similarly, the interaction terms involving IND1 are insignificant in both columns (3) and (4), suggesting that there was no significant change in the payout ratio prior to the information shock. As expected, we find a significant change in the payout ratio in the year of the shock, combined with the year after. For low growth firms, the payout increases, and for high growth firms it decreases. Taken together, we can reliably infer that it is the information shock that is causing the change in propensity of paying dividends as well as in payout ratios.

5.2 Firm-level adoption, Share repurchase, and skewed data distribution

In this section, we examine the strength of our results to a multitude of robustness tests. George, T, Li, and Shivakumar (2016) point out that several firms do not adopt IFRS in the year of mandate, but rather defer the adoption either because of flexibility provided by the regulation to adopt later or simply for unknown reasons. To account for this, we replace the country level mandate of IFRS with firm level adoption. These results are summarized in columns (1) and (2) of Table 12 for propensity of paying dividends and payout ratios, respectively. Our findings of changes in payout policies are consistent and continue to hold true for firm-level adoption as well.

In our next test, we examine the results after including share repurchase to dividends. Although researchers argues that dividends and repurchases have different motivations from a firm's perspective (Jagannathan, Stephens, and Weisbach, 2000) – firms that repurchase have temporary cash flows, while dividend paying firms have permanent cash flows – these are ways to rewards shareholders when firms have surplus cash. Therefore, to be doubly sure of our main predictions, we add repurchases, net of equity issuance, to firm's dividend payout in a given year. These results are reported in columns (3) and (4) of Table 12 for propensity of paying dividends and payout ratios, respectively. We find the results to be consistent with our main hypotheses.

Finally, we want to control for skewed number of observations coming from Japan and USA in our control sample. Since we run OLS for dividend payout ratio, we want to control for excessive loading that might arise from a single economy. We, therefore, test validity of equation (1) after dropping Japan and USA from the control group separately. Cloumns (5) and (6) of Table 12 report results for propensity of paying dividends and payout ratio, respectively, for the subsample after dropping Japan from control group. We find the results here to be consistent with our main proposition. Although regression results for subsample after dropping USA are consistent as well, those are not reported here for brevity.

6. Conclusion

In this paper, we study the impact of an information shock on firms' dividend policies. Given information asymmetry between managers and shareholders is a key motivation for determining firms' dividend policies. Whether its agency conflict (Jensen 1986) or signalling requirement (Bhattacharya 1979, etc.), an improved information environment recommends reduced requirement of dividend payouts. Along with these predictions, (Hail et al., 2014) document that propensity of firm's paying dividends decreases.

However, it's been well documented that firm's characteristics play a key role in determining firm's dividend policies as well (Fama and French, 2001; DeAngelo, DeAngelo, and Skinner, 2004). In particular, in this paper we analyse the moderating role of firm's growth opportunities on the effect of information asymmetry on its dividend policies. Dividends are less likely for firms with high investment opportunities, whereas firms with low growth opportunities have more free cash flow available that leads to potentially higher agency conflicts (Jensen, 1986). Therefore, such firms are likely to pay more dividends on an average in comparison with high growth firms.

In addition to addressing agency conflicts, reduced information asymmetry facilitates better evaluation of firms' growth opportunities by investors. This could also improve minority investors' monitoring capabilities and enable them to more successfully alleviate overinvestment issues and extract higher cash dividends from firms as proposed in outcome theory by (La Porta et al., 2000). This increased demand for dividend is particularly relevant if firms have limited investment opportunities, i.e. low growth firms. We analyse both propensity as well as payout ratio to study the impact of information shock on firm's dividend policies.

To test these predictions, we use mandatory adoption of International Financial Reporting Standard (IFRS) as an exogenous information shock. Researchers document improved information environment, and hence increased transparency between managers and shareholders following IFRS adoption (Barth et al., 2008, Landsman et al., 2012, Horton et al., 2013). We mainly divide firms into two groups depending on whether their growth opportunities – as measured by asset growth, market to book ratio and capital expenditure to total asset ratio – is above or below median. Firms are labelled as high growth if they are above median of growth measure and as low-growth if otherwise.

In sum, we find that post improved information environment high growth firms exhibit reduced propensity as well as level of paying dividends. In contrast, low growth firms exhibit increased propensity as well as level of paying dividends. Our study makes three-pronged contribution to accounting and corporate finance literature. We add to the literature by examining the moderating effect of growth opportunities on the relation between IFRS adoption and dividend payout propensity as well as dividend levels. We document that relationship between IFRS adoption and dividend payout is not monotonic and is conditional on the growth opportunities available to a firm.

In addition, we provide a potential explanation of the contrasting time trends between dividend propensity and dividend. While propensity to pay dividends reduces after adoption of IFRS, the amount of dividend paid continues to grow. We document that payout levels increase for low growth firms post IFRS adoption, while they decrease for high growth firms. We believe, propensity of paying dividends is dominated by high growth firms, whereas dividend levels are dominated by low growth firms.

Appendix

Table A1. DID estimates including two-way fixed effects of country and year

This table summarizes results of the following equations

$Pr(DIV\_PAID_{it}) = \alpha1\ POST*IFRS*H1 + \alpha2\ LTA_{it} + \alpha3\ LEV_{it} + \alpha4\ ROA_{it} + \alpha5\ RET_{it} + \alpha6\ REP_{it} + \alpha7\ NEG\_EARN_{it} + \alpha8 UNCERT_{it} + \alpha9 DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE*Country\ FE + e_{it}$

$Payout_{it} = \alpha1\ POST*IFRS*H1 + \alpha2\ LTA_{it} + \alpha3\ LEV_{it} + \alpha4\ ROA_{it} + \alpha5\ RET_{it} + \alpha6\ REP_{it} + \alpha7\ NEG\_EARN_{it} + \alpha8 UNCERT_{it} + \alpha9 DIV\_PAID_{i,t-1} + Industry\ FE + Year\ FE*Country\ FE + e_{it}$

DIV_PAID_{it} is an indicator variable equal to 1 if the firm pays dividend in the year t, 0 otherwise. Pauout is the ratio of dividend paid to net income. LTA is log of total assets; LEV is financial leverage; MTB market-to-book ratio; ROA is Return on Assets; RET is annual buy and hold return on the firm; REP is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; NEG_EARN is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; UNCERT is the standard deviation of earnings over last three years; $DIV\_PAID_{i,t-1}$ is an indicator variable equal to 1 if the firm paid dividend in the year (t-1) and 0 otherwise; POST is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; IFRS is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Q1 is an indicator variable equal to 1 if a firm's market-to-book ratio (MTB) is in the bottom quartile and zero when it is in the top quartile. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent z-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) *Pr(DIV_PAID$_{it}$)*	(2) Payout Ratio
POST*IFRS*Q1	0.8299***	0.0378*
	(3.9738)	(1.6496)
LTA$_t$	0.2468***	0.0070***
	(14.3307)	(4.3841)
LEV$_t$	-0.0269**	0.0047***
	(-2.2458)	(4.4361)
ROA$_t$	0.0931***	-0.0092***
	(3.4033)	(-4.8384)
RET$_t$	0.2453***	0.0111*
	(4.2938)	(1.8824)
REP$_t$	-1.8734***	-0.2762***
	(-23.5515)	(-38.1206)
NEG_EARN$_t$	-3.3753***	-0.3939***
	(-7.2364)	(-9.3399)
UNCERT$_t$	4.1743***	0.3815***
	(69.4962)	(81.9642)
Constant	-6.3609***	0.0352
	(-4.6815)	(0.2572)
Observations	36,109	36,109
Pseudo R-squared	0.632	
R-squared		0.268
Industry FE	YES	YES
*Country FE * Year FE*	YES	YES
Sample	**2001-2008**	**2001-2008**

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Figure 1: Time Trend of propensity to pay dividends and dividend payout ratios for IFRS adopting countries

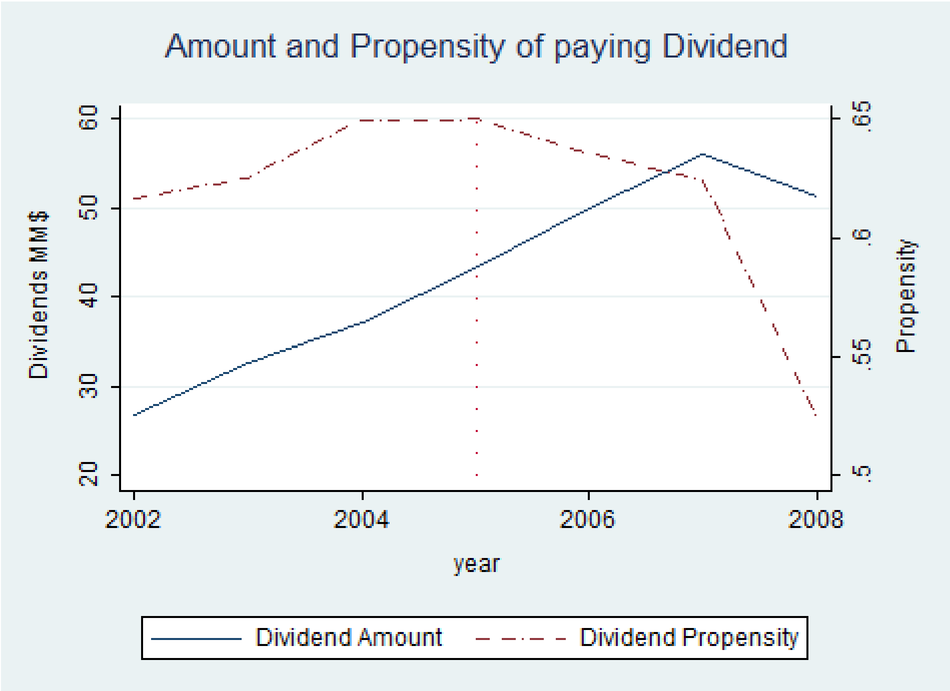

Table 1: Sample distribution

Panel A: Dividend Payment Behavior: Year-wise Distribution

		DIVIDEND PAYERS		DIVIDEND INCREASE		DIVIDEND DECREASE	
YEAR	**Firm Years**	**N**	**%**	**N**	**%**	**N**	**%**
2001	6,759	4,487	66.39%	1,669	24.69%	5,090	75.31%
2002	7,642	4,843	63.37%	2,465	32.26%	5,177	67.74%
2003	8,282	5,337	64.44%	4,099	49.49%	4,183	50.51%
2004	9,852	6,326	64.21%	4,905	49.79%	4,947	50.21%
2005	9,906	6,440	65.01%	4,798	48.44%	5,108	51.56%
2006	9,398	6,246	66.46%	3,987	42.42%	5,411	57.58%
2007	9,094	6,125	67.35%	3,893	42.81%	5,201	57.19%
2008	8,663	5,579	64.40%	3,684	42.53%	4,979	57.47%
TOTAL	**69,596**	**45,383**	**65.21%**	**29,500**	**42.39%**	**40,096**	**57.61%**

Panel B: IFRS adopters and benchmark sample by country

IFRS sample	N	%	Benchmark sample	N	%
AUSTRALIA	927	5.39%	ARGENTINA	115	0.20%
AUSTRIA	106	1.36%	BRAZIL	1,133	1.97%
BELGIUM	401	2.21%	CANADA	552	1.32%
CZECH REPUBLIC	37	0.25%	CHILE	927	1.31%
DENMARK	268	1.38%	CHINA	5,825	9.99%
FINLAND	437	1.95%	COLOMBIA	131	0.22%
FRANCE	2,830	14.91%	EGYPT	116	0.38%
GERMANY	947	5.50%	INDIA	765	3.87%
GREECE	1,206	5.60%	INDONESIA	655	1.19%
HONG KONG	720	3.53%	JAPAN	15,902	23.76%
HUNGARY	4	0.09%	MALAYSIA	4,097	6.85%
IRELAND	197	0.91%	MEXICO	145	0.24%
ISRAEL	428	2.94%	PERU	145	0.32%
ITALY	59	3.41%	RUSSIA	113	0.67%
LUXEMBOURG	53	0.29%	SOUTH KOREA	5,256	10.07%
NETHERLANDS	649	2.80%	SRI LANKA	150	0.47%
NEW ZEALAND	64	0.61%	UNITED STATES	15,855	27.35%
NORWAY	251	1.36%			
PAKISTAN	575	2.88%			
PHILIPPINES	525	2.75%			
POLAND	410	3.20%			
PORTUGAL	215	1.13%			
SINGAPORE	1,473	8.16%			
SOUTH AFRICA	488	2.79%			
SPAIN	755	3.21%			
SWEDEN	199	1.26%			
SWITZERLAND	171	1.14%			
TURKEY	312	2.81%			
UNITED KINGDOM	3,007	16.22%			
Total	**17,714**	**100.00%**	**Total**	**51,882**	**100.00%**

Table 2: Descriptive Statistics

The sample comprises of 69,596 firm-year observations from 47 countries between 2001 and 2008 for which sufficient financial and stock price data is available of WorldScope Database. DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise; *LTA* is log of total assets; *LEV* is financial leverage, defined as total debt as a percentage of total assets; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings scaled by total assets over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid. All continuous variables are winsorized at 1% and 99% levels.

VARIABLES	(1) N	(2) Mean	(3) Sd	(4) P25	(5) Median	(6) P75
ROA_t(%)	69,596	3.23	8.96	1.02	3.37	6.87
MTB_t	69,596	1.91	2.15	0.74	1.25	2.2
LEV_t(%)	69,596	105.53	187.24	14	50.92	116.55
RET_t	69,596	0.18	1.22	-0.22	0.03	0.35
LTA_t	69,596	12.48	1.68	11.32	12.29	13.38
NEG_EARN_t	69,596	0.16	0.37			
DIV_PAIDt	69,596	0.65	0.48			
REP_t	69,596	0.25	0.43			
$PAYOUT_t$	69,596	0.33	0.49	0	0.19	0.44
$UNCERT_t$	69,596	0.04	0.05	0.01	0.02	0.05
DIV_PAIDt_{-1}	69,596	0.65	0.48			

Table 3: DID Analysis for Low vs High Growth Firms based on Quartiles – Treatment and Control Separate

This table presents the results from estimating the following model (1)
$Pr(DIV\_PAID_{it}) = \alpha_0 POST + \alpha_1 POST*Q1 + \alpha_2 LTA_t + \alpha_3 LEV_t + \alpha_4 ROA_t + \alpha_5 RET_t + \alpha_6 REP_t + \alpha_7 NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB and zero when firms belong to top-quartile of MTB. Similarly, H1 is an indicator variable equal to 1 if a firm's MTB is below median MTB and zero otherwise. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	Low Growth based on Quartile Classification		Low Growth based on Median Classification	
	Treatment	*Control*	*Treatment*	*Control*
	$Pr(DIV\_PAID_{it})$	$Pr(DIV\_PAID_{it})$	$Pr(DIV\_PAID_{it})$	$Pr(DIV\_PAID_{it})$
POST	-0.6121***	-0.0194	-0.4337*	0.0971
	(-5.4998)	(-0.3170)	(-1.9351)	(1.2399)
Q1	-0.4762***	0.5680***		
	(-4.0303)	(7.6310)		
*POST * Q1*	0.6722***	-0.0701		
	(4.8683)	(-0.8807)		
H1			-0.5490***	0.3435***
			(-4.3642)	(6.9405)
*POST * H1*			0.6459***	-0.0279
			(4.5177)	(-0.4735)
Control Variables				
LTA_t	0.2141***	0.1792***	0.2376***	0.1537***
	(7.0597)	(10.0385)	(7.3230)	(12.0897)
LEV_t	0.0094	-0.0387***	0.0173	-0.0536***
	(0.4675)	(-2.9965)	(0.8320)	(-4.8077)
ROA_t	0.1819*	0.1182***	0.1631	0.0721**
	(1.9070)	(4.0294)	(1.5929)	(2.0787)
RET_t	0.3289***	0.0199	0.2645**	0.0751*
	(2.8343)	(0.3540)	(2.1227)	(1.8659)
REP_t	-1.5345***	-1.8449***	-1.6165***	-1.8418***
	(-10.4474)	(-22.2936)	(-10.8050)	(-28.7478)
NEG_EARN_t	-0.9209	-4.0347***	-2.1203***	-3.0079***
	(-1.3106)	(-7.3338)	(-2.8146)	(-7.5593)
$UNCERT_t$	3.8249***	4.3374***	3.6700***	4.6991***
	(37.5596)	(65.3701)	(35.1184)	(91.2390)
DIV_PAID_{t-1}	0.2141***	0.1792***	0.2376***	0.1537***
	(7.0597)	(10.0385)	(7.3230)	(12.0897)
Observations	8,240	28,011	17,628	51,822
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES
Pseudo R-squared	0.550	0.619	0.566	0.638
Sample	**2001-2008**	**2001-2008**	**2001-2008**	**2001-2008**

Table 4: DIDID Analysis for Low vs High Growth Firms – Propensity of Paying Dividends

This table presents the results from estimating the following model (1)

$Pr(DIV\_PAID_{it}) = \alpha_0\, POST*IFRS + \alpha_1\, POST*IFRS*Q1(or\ H1) + \alpha_2\, LTA_t + \alpha_3\, LEV_t + \alpha_4\, ROA_t + \alpha_5\, RET_t + \alpha_6\, REP_t + \alpha_7\, NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB and zero when firms belong to top-quartile of MTB. Similarly, H1 is an indicator variable equal to 1 if a firm's MTB is below median MTB and zero otherwise. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Pr(DIV\_PAID_{it})$	(2) $Pr(DIV\_PAID_{it})$	(3) $Pr(DIV\_PAID_{it})$	(4) $Pr(DIV\_PAID_{it})$
*POST * IFRS*	-0.6829***	-0.5416***	-0.4844***	-0.2501**
	(-5.2247)	(-3.6470)	(-5.2289)	(-2.3620)
*POST * IFRS * Q1*	0.9601***	0.7919***		
	(5.7070)	(4.1639)		
*POST * IFRS * H1*			0.5165***	0.3418**
			(4.1416)	(2.4156)
Control Variables				
LTA_t	0.1818***	0.1818***	0.1616***	0.1680***
	(11.7211)	(11.1642)	(15.0386)	(14.6653)
LEV_t	-0.0319***	-0.0449***	-0.0522***	-0.0734***
	(-2.9596)	(-3.6753)	(-5.6451)	(-6.8429)
ROA_t	0.0965***	0.0931***	0.0702**	0.0639**
	(4.2309)	(4.2253)	(2.3791)	(2.2184)
RET_t	0.0786	0.1037*	0.1357***	0.1490***
	(1.5533)	(1.9110)	(3.8252)	(3.9164)
REP_t	-1.7297***	-1.8227***	-1.7731***	-1.8745***
	(-24.2461)	(-23.3518)	(-32.7849)	(-31.2709)
NEG_EARN_t	-2.9902***	-3.6822***	-2.2151***	-2.8935***
	(-7.0279)	(-7.6619)	(-7.3118)	(-8.5001)
$UNCERT_t$	4.2336***	4.2906***	4.4699***	4.5541***
	(75.6716)	(73.4746)	(107.1458)	(103.3576)
DIV_PAID_{t-1}	0.1818***	0.1818***	0.1616***	0.1680***
	(11.7211)	(11.1642)	(15.0386)	(14.6653)
Observations	36,251	31,698	69,596	60,933
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES
Pseudo R-squared	0.603	0.595	0.604	0.593
Sample	**2001-2008**	**2001-2007**	**2001-2008**	**2001-2007**

Table 5: DID Analysis for Low vs High Growth Firms

This table shows the DID coefficients from Table 5 in a matrix format. Post IFRS, low growth firms had an increased propensity to pay dividends, both in the IFRS and non IFRS Sample. However, the increase is significantly higher in IFRS Sample as compared to Non IFRS Sample, as suggested by the DIDID coefficient of 0.136. This suggests that low growth firms in the IFRS Sample had a higher increase in the propensity to pay dividends as compared to rest of the sample. This is further corroborated in the DIDID analysis in Table 7.

	IFRS		**Non IFRS**	
	Low Growth	*High Growth*	*Low Growth*	*High Growth*
Pre IFRS	*-0.111*	*0.554****	*0.658****	*0*
Post IFRS	*0.582****	*0.393****	*1.07****	*0.522****
Difference	*0.693***(a)*	*-0.161***(c)*	*0.415**(b)*	*0.522***(d)*
DID		*0.854****		*-0.106*
DIDID				*0.96****

(a)-(b)=0.278**

(c)-(d)= -0.683***

Table 6: DIDID Analysis for Low vs High Growth Firms – Payout Ratios

This table presents the results from estimating the following OLS model
$Payout_t = \alpha_0 POST*IFRS + \alpha_1 POST*IFRS*Q1(or\ H1) + \alpha_2 LTA_t + \alpha_3 LEV_t + \alpha_4 ROA_t + \alpha_5 RET_t + \alpha_6 REP_t + \alpha_7 NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 Payout_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

$Payout_t$ is the ratio of dividends paid to earnings in the year *t*; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; $Payout_{t-1}$ is the ratio of dividends paid to earnings in the year *t-1*; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of market to book ratio and zero when firms belong to top-quartile of market to book ratio. Similarly, H1 is an indicator variable equal to 1 if a firm's market to book ratio is below median market to book ratio and zero otherwise. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Payout_t$	(2) $Payout_t$	(3) $Payout_t$	(4) $Payout_t$	(5) $Payout_t$
*POST * IFRS*	-0.0162**	-0.0426***	-0.0437***	-0.0465***	-0.0353***
	(-2.3881)	(-3.1832)	(-3.1121)	(-5.1588)	(-3.7674)
*POST * IFRS * Q1*		0.0797***	0.0945***		
		(4.0426)	(4.4826)		
*POST * IFRS * H1*				0.0560***	0.0520***
				(4.2174)	(3.6981)
<u>*Control Variables*</u>					
LTA_t	-0.0014	0.0013	0.0003	-0.0012	-0.0018
	(-1.1081)	(0.6930)	(0.1650)	(-0.9731)	(-1.4230)
LEV_t	-0.0001***	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(-10.2262)	(-7.1293)	(-6.9886)	(-10.3130)	(-9.8833)
ROA_t	-0.0046***	-0.0040***	-0.0041***	-0.0046***	-0.0047***
	(-19.5260)	(-13.1340)	(-12.5203)	(-19.6648)	(-18.5526)
RET_t	-0.0095***	-0.0090***	-0.0094***	-0.0095***	-0.0101***
	(-3.3512)	(-2.8175)	(-2.7356)	(-3.3474)	(-3.2866)
REP_t	0.0082*	0.0030	0.0023	0.0094**	0.0078
	(1.7785)	(0.4350)	(0.3293)	(2.0218)	(1.6335)
NEG_EARN_t	-0.2792***	-0.2750***	-0.2757***	-0.2798***	-0.2792***
	(-44.4015)	(-33.2761)	(-30.8061)	(-44.4073)	(-41.3518)
$UNCERT_t$	-0.4484***	-0.4216***	-0.4362***	-0.4456***	-0.4431***
	(-17.5377)	(-12.9079)	(-12.6661)	(-17.4558)	(-16.3678)
$Payout_{t-1}$	0.4159***	0.3939***	0.3924***	0.4153***	0.4148***
	(55.0270)	(37.7373)	(36.5715)	(54.5893)	(52.8517)
Observations	69,596	36,251	31,698	69,596	60,933
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES	YES
R-squared	0.255	0.195	0.195	0.228	0.231
Sample	**2001-2008**	**2001-2008**	**2001-2007**	**2001-2008**	**2001-2007**

Table 7: IFRS and Enforcement Changes: Impact on Payout Policies

$Pr(DIV\_PAID_{it}) = \alpha_0 POST*EU\_enf + \alpha_1 POST*EU\_enf*Q1 + \alpha_2 POST*EU\_nonenf + \alpha_3 POST*EU\_nonenf*Q1 + \alpha_4 POST*nonEU + \alpha_5 POST*nonEU*Q1 + \alpha_6 LTA_t + \alpha_7 LEV_t + \alpha_8 ROA_t + \alpha_9 RET_t + \alpha_{10} REP_t + \alpha_{11} NEG\_EARN_t + \alpha_{12} UNCERT_t + \alpha_{13} DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. *QF1* is an indicator variable that takes a value of 1 for all firms in the treatment sample that have below median absolute forecast errors, 0 otherwise. *QF2* is an indicator variable that takes a value of 1 for all firms in the treatment sample that have above median absolute forecast errors, 0 otherwise. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB and zero when firms belong to top-quartile of MTB. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. Column (1) reports results for logit model and (2) summarizes result for OLS model for payout ratio, where payout is the ratio of dividend to earnings. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Pr(DIV\_PAID_{it})$	(2) $Payout_t$
*(1) POST * EU_enf*	-0.6175***	-0.0205
	(-3.6640)	(-0.7649)
*(2) POST * EU_enf * Q1*	0.9846***	0.0932**
	(4.1584)	(2.1122)
*(3) POST * EU_nonenf*	-0.5574***	-0.0169
	(-2.9062)	(-0.8237)
*(4) POST * EU_nonenf * Q1*	0.7103**	0.0369
	(2.2793)	(1.0399)
*(5) POST * nonEU*	-0.5276*	-0.0409
	(-1.6702)	(-1.2236)
*(6) POST * nonEU * Q1*	0.7959**	0.0873**
	(1.9757)	(2.1679)
F Test: (1)+(2)-[(3)+(4)]	0.2141**	0.0527**
	(2.1193)	(2.3121)
F Test: (1)-(3)	-0.0601**	-0.0035
	(-2.3934)	(-0.032)
Control Variables		
LTA_t	0.1913***	-0.0115***
	(5.1521)	(-4.7348)
LEV_t	-0.0015***	-0.0000*
	(-5.6928)	(-1.7681)
ROA_t	0.0425***	-0.0051***
	(3.0480)	(-14.5123)
RET_t	0.0769***	-0.0088**
	(5.0755)	(-2.5408)
REP_t	0.1808***	0.0070
	(3.1319)	(0.8566)
NEG_EARN_t	-1.6577***	-0.2310***
	(-6.2680)	(-28.9134)
$UNCERT_t$	-3.2345***	-0.3084***
	(-2.7082)	(-8.1583)
DIV_PAID_{t-1}	4.1859***	0.3572***
	(8.1080)	(54.2457)
Observations	36,397	36,397
Country-,Industry-, Year fixed Effects	YES	YES
Sample	**2001-2008**	**2001-2008**

Table 8: Analyst Forecast Error and Payout Policies

This table presents the results from estimating the following equations:

$Pr(DIV\_PAID_{it}) = \alpha_0\, POST*QF1 + \alpha_1\, POST*QF1*Q1 + \alpha_2\, POST*QF2 + \alpha_3\, POST*QF2*Q1 + \alpha_4\, LTA_t + \alpha_5\, LEV_t + \alpha_6\, ROA_t + \alpha_7\, RET_t + \alpha_8\, REP_t + \alpha_9\, NEG\_EARN_t + \alpha_{10} UNCERT_t + \alpha_{11} DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

$Payout_{it} = \alpha_0\, POST*QF1 + \alpha_1\, POST*QF1*Q1 + \alpha_2\, POST*QF2 + \alpha_3\, POST*QF2*Q1 + \alpha_4\, LTA_t + \alpha_5\, LEV_t + \alpha_6\, ROA_t + \alpha_7\, RET_t + \alpha_8\, REP_t + \alpha_9\, NEG\_EARN_t + \alpha_{10} UNCERT_t + \alpha_{11} DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise. Payout is the ratio of dividend to earnings. *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. *QF1* is an indicator variable that takes a value of 1 for all firms in the treatment sample that have below median absolute forecast errors, 0 otherwise. *QF2* is an indicator variable that takes a value of 1 for all firms in the treatment sample that have above median absolute forecast errors, 0 otherwise. QF1 and QF2 take zero for control firms. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB and zero when firms belong to top-quartile of MTB. Similarly, H1 is an indicator variable equal to 1 if a firm's MTB is below median MTB and zero otherwise. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Pr(DIV\_PAID_{it})$	(2) $Payout_t$
*(1) POST * QF1*Q1*	0.8832***	-0.0157
	(2.8838)	(-0.4169)
*(2) POST * QF1*	-0.6811***	0.0010
	(-2.9747)	(0.0365)
*(3) POST * QF2*Q1*	1.0063***	0.0828***
	(4.1397)	(2.8102)
*(4) POST * QF2*	-0.6228***	-0.0358**
	(-3.4933)	(-2.0799)
F Test: (1)+(2)-[(3)+(4)]	0.1815**	0.0617**
	(2.5442)	(2.16)
F Test: (2)-(4)	-0.0583***	-0.0368**
	(-3.3934)	(-2.254)
Control Variables		
LTA_t	0.1858***	0.0023
	(11.9422)	(1.2516)
LEV_t	-0.0016***	-0.0001***
	(-12.3056)	(-6.8570)
ROA_t	0.0424***	-0.0043***
	(11.2200)	(-13.7554)
RET_t	0.0758***	-0.0106***
	(3.8194)	(-2.7629)
REP_t	0.2078***	0.0197***
	(4.2120)	(3.0234)
NEG_EARN_t	-1.6407***	-0.2724***
	(-23.1844)	(-33.0228)
$UNCERT_t$	-3.0403***	-0.4245***
	(-7.1192)	(-12.7590)
DIV_PAID_{t-1}	4.1921***	4.5733***
	(76.9540)	(103.8909)
Observations	36,397	36,397
Country-,Industry-, Year fixed Effects	YES	YES
Sample	**2001-2008**	**2001-2008**

Table 9: Alternative Growth Proxies – Propensity to Pay Dividends

This table presents the results from estimating the following model (1)
$Pr(DIV\_PAID_{it}) = \alpha_0\, POST*IFRS + \alpha_1\, POST*IFRS*Qa(or\ Qcap) + \alpha_2\, LTA_t + \alpha_3\, LEV_t + \alpha_4\, ROA_t + \alpha_5\, RET_t + \alpha_6\, REP_t + \alpha_7\, NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Qa (Qcap) is an indicator variable equal to 1 if a firm belongs to the lowest quartile of Asset Growth (Capex to Assets ratio) and zero when firms belong to top-quartile of the same. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Pr(DIV\_PAID_{it})$	(2) $Pr(DIV\_PAID_{it})$	(3) $Pr(DIV\_PAID_{it})$	(4) $Pr(DIV\_PAID_{it})$
*POST * IFRS*	-0.2761***	-0.2537**	-0.1950**	-0.2108***
	(-2.5862)	(-2.3878)	(-2.5489)	(-2.7467)
*POST * IFRS * Qa*	0.5822***	0.4209**		
	(3.3911)	(2.2696)		
*POST * IFRS * Qcap*			0.4190***	0.4533***
			(3.2083)	(3.3683)
<u>*Control Variables*</u>				
LTA_t	0.1988***	0.2011***	0.2020***	0.2010***
	(13.0927)	(12.8756)	(13.2021)	(12.6316)
LEV_t	-0.0017***	-0.0016***	-0.0013***	-0.0013***
	(-14.6866)	(-13.2828)	(-11.6722)	(-10.9322)
ROA_t	0.0488***	0.0490***	0.0494***	0.0513***
	(13.9531)	(13.4265)	(11.5181)	(11.3382)
RET_t	0.0395**	0.0397**	0.0585***	0.0588***
	(2.3482)	(2.3134)	(3.2695)	(3.1709)
REP_t	0.2821***	0.2741***	0.3655***	0.3821***
	(5.1601)	(4.7729)	(6.2027)	(6.1999)
NEG_EARN_t	-1.6673***	-1.6784***	-1.7477***	-1.7801***
	(-25.6232)	(-23.3511)	(-24.4309)	(-23.4816)
$UNCERT_t$	-2.1051***	-1.7223***	-2.4887***	-2.0528***
	(-5.8236)	(-4.5425)	(-5.7941)	(-4.5950)
DIV_PAID_{t-1}	3.7477***	3.7163***	3.7469***	3.7376***
	(83.5924)	(79.5489)	(78.4521)	(75.2265)
Observations	36,251	31,698	36,251	31,698
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES
Pseudo R-squared	0.549	0.548	0.535	0.535
Sample	**2001-2008**	**2001-2007**	**2001-2008**	**2001-2007**

Table 10: Alternative Growth Proxies – Payout Ratios

This table presents the results from estimating the following OLS model
$Payout_t = \alpha_0 POST*IFRS + \alpha_1 POST*IFRS*Qa(or\ Qcap) + \alpha_2 LTA_t + \alpha_3 LEV_t + \alpha_4 ROA_t + \alpha_5 RET_t + \alpha_6 REP_t + \alpha_7 NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 Payout_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

$Payout_t$ is the ratio of dividends paid to earnings in the year *t*; *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. *Qa* (*Qcap*) is an indicator variable equal to 1 if a firm belongs to the lowest quartile of Asset Growth (Capex to Assets ratio) and zero when firms belong to top-quartile of the same. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

	(1) $Payout_t$	(2) $Payout_t$	(3) $Payout_t$	(4) $Payout_t$
*POST * IFRS*	-0.0450***	-0.0374***	-0.0059	-0.0045
	(-3.9808)	(-3.1197)	(-0.4625)	(-0.3337)
*POST * IFRS * Qa*	0.0927***	0.0863***		
	(4.4867)	(3.6531)		
*POST * IFRS * Qcap*			0.0424**	0.0444**
			(2.1502)	(2.0845)
Control Variables				
LTA_t	0.0028	0.0035*	-0.0045**	-0.0036*
	(1.6343)	(1.7975)	(-2.4789)	(-1.8692)
LEV_t	-0.0001***	-0.0001***	-0.0001***	-0.0001***
	(-12.6708)	(-12.1460)	(-10.9101)	(-10.0097)
ROA_t	-0.0034***	-0.0036***	-0.0046***	-0.0047***
	(-13.4855)	(-12.6981)	(-14.0046)	(-12.7290)
RET_t	-0.0007	-0.0007	-0.0006	-0.0006
	(-1.2124)	(-1.2200)	(-1.2398)	(-1.2399)
REP_t	0.0356***	0.0331***	0.0412***	0.0354***
	(4.9823)	(4.1425)	(5.4065)	(4.3254)
NEG_EARN_t	-0.3146***	-0.3256***	-0.2937***	-0.2946***
	(-40.2070)	(-37.1394)	(-34.8277)	(-31.3218)
$UNCERT_t$	-0.5258***	-0.5458***	-0.5346***	-0.5455***
	(-16.8927)	(-16.0207)	(-14.2452)	(-13.3540)
$Payout_{t-1}$	0.3612***	0.3582***	0.3972***	0.3954***
	(37.4081)	(34.5278)	(39.9304)	(37.7574)
Observations	36,251	31,698	69,596	60,933
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES
R-squared	0.195	0.195	0.228	0.231
Sample	**2001-2008**	**2001-2007**	**2001-2008**	**2001-2007**

Table 11: Timing of Information Shock

This table presents the results from estimating the following equations

$Pr(DIV\_PAID)_{it} = \alpha_0 + \alpha_1 IND1*IFRS*Q1(or\ H1) + \alpha_2 IND2*IFRS*Q1(or\ H1) + \alpha_3 IND3*IFRS*Q1(or\ H1) + \sum_i \alpha_i Control_i$ $+ Industry\ FE + Year\ FE + Country\ FE + e_t$

$Payout_{it} = \alpha_0 + \alpha_1 IND1*IFRS*Q1(or\ H1) + \alpha_2 IND2*IFRS*Q1(or\ H1) + \alpha_3 IND3*IFRS*Q1(or\ H1) + \sum_i \alpha_i Control_i$ + - $Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t,* 0 otherwise. Payout is the ratio of dividend to earning.

Assuming IFRS is adopted at *t=0*, the first indicator variable (IND1) takes a value of 1 for the period *t-2* and *t-1*. The years before that serve as the base period. The second indicator variable (IND2) takes a value of 1 for *t=0* and *t=1*, and the third indicator variable (IND3) takes a value of 1 for all years after *t=1*. *Controls* is the vector of controls used in the main tests of hypotheses; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB. H1 is an indicator variable equal to 1 if a firm belongs to the lowest two quartiles of MTB. Q2 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of LEV. H2 is an indicator variable equal to 1 if a firm belongs to the lowest two quartiles of LEV. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

VARIABLES	(1) $Pr(DIV\_PAID_{it})$	(2) $Pr(DIV\_PAID_{it})$	(3) $Payout_t$	(4) $Payout_t$
*IND1 * IFRS*	-0.1221	-0.2722	0.0192	0.0247*
	(-0.5230)	(-1.5212)	(0.9759)	(1.7814)
*IND1 * IFRS * Q1*	0.1316		0.0340	
	(0.4169)		(1.1848)	
*IND2 * IFRS*	-0.4691*	-0.5747***	-0.0193	-0.0110
	(-1.9429)	(-3.1128)	(-1.0235)	(-0.8445)
*IND2 * IFRS * Q1*	0.6440**		0.0802***	
	(1.9775)		(2.8745)	
*IND3 * IFRS*	-0.9606***	-1.0844***	-0.0260	-0.0415***
	(-3.7825)	(-5.9609)	(-1.2642)	(-2.9531)
*IND3 * IFRS * Q1*	1.1485***		0.0658**	
	(3.4726)		(2.2107)	
*IND1 * IFRS * H1*		0.4404*		0.0227
		(1.8267)		(1.1302)
*IND2 * IFRS * H1*		0.5930**		0.0458**
		(2.3948)		(2.3826)
*IND3 * IFRS * H1*		1.0454***		0.0575***
		(4.2720)		(2.8297)
Observations	36,251	69,596	36,251	69,596
Firm Level Control Variables	YES	YES	YES	YES
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES
Pseudo R-squared	0.595	0.593	0.246	0.255
Sample	**2001-2008**	**2001-2008**	**2001-2008**	**2001-2008**

Table 12: Additional Robustness Tests

This table presents the results of the following equations

$Pr(DIV\_PAID_t) = \alpha_0 POST*IFRS + \alpha_1 POST*IFRS*Q1 + \alpha_2 LTA_t + \alpha_3 LEV_t + \alpha_4 ROA_t + \alpha_5 RET_t + \alpha_6 REP_t + \alpha_7 NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 DIV\_PAID_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

$Payout_t = \alpha_0 POST*IFRS + \alpha_1 POST*IFRS*Q1 + \alpha_2 LTA_t + \alpha_3 LEV_t + \alpha_4 ROA_t + \alpha_5 RET_t + \alpha_6 REP_t + \alpha_7 NEG\_EARN_t + \alpha_8 UNCERT_t + \alpha_9 Payout_{t-1} + Industry\ FE + Year\ FE + Country\ FE + e_t$

DIV_PAID_t is an indicator variable equal to 1 if the firm pays dividend in the year *t*, 0 otherwise. Payout is the ratio of dividend to earnings. *LTA* is log of total assets; *LEV* is financial leverage; *MTB* market-to-book ratio; *ROA* is Return on Assets; *RET* is annual buy and hold return on the firm; *REP* is an indicator variable equal to 1 if a stock repurchase happens in year t, 0 otherwise; *NEG_EARN* is an indicator variable equal 1 the firm reports an operating loss, 0 otherwise; *UNCERT* is the standard deviation of earnings over last three years; DIV_PAID_{t-1} is an indicator variable equal to 1 if the firm paid dividend in the year *t-1*, 0 otherwise; *POST* is an indicator variable equal to 1 for all firm years after adoption of IFRS, 0 otherwise; *IFRS* is an indicator variable equal to 1 if the firm is domiciled in a country that adopted IFRS. Q1 is an indicator variable equal to 1 if a firm belongs to the lowest quartile of MTB and zero when firms belong to top-quartile of MTB. Similarly, H1 is an indicator variable equal to 1 if a firm's MTB is below median MTB and zero otherwise. Although we have also included all two-way interaction variables, such as IFRS*H1, in equation (1), we do not report those coefficients for brevity. All continuous variables are winsorized at 1% and 99% levels. Heteroskedasticity consistent *z*-statistics based on standard errors clustered at country level are reported in parentheses. ***, **, and * correspond to 1%, 5%, and 10% significance levels, respectively.

VARIABLES	(1) *Propensity: Firm Level Adoption*	(2) *Payouts: Firm Level Adoption*	(3) *Propensity: (including net repurchase)*	(4) *Payouts: (including net repurchase)*	(5) *Propensity: Sans Japan*	(6) *Payouts: Sans Japan*
*POST * IFRS*	-0.5650***	-0.0513***	-0.7331***	-0.0806*	-0.4425***	-0.0340**
	(-4.3130)	(-3.4593)	(-5.7740)	(-1.7782)	(-3.5293)	(-2.5018)
*POST * IFRS * Q1*	0.8662***	0.0913***	0.9245***	0.1365**	0.6864***	0.0462**
	(5.1101)	(4.3365)	(5.8243)	(2.45)	(4.1349)	(2.2232)
<u>*Control Variables*</u>						
LTA_t	0.1777***	0.0012	0.3156***	0.0851***	0.2182***	-0.0075***
	(11.4755)	(0.6371)	(13.1798)	(9.2152)	(13.2770)	(-3.9166)
LEV_t	-0.0016***	-0.0001***	-0.0026***	-0.0002***	-0.0016***	-0.0000*
	(-12.94	(-7.23)	(-11.04)	(-2.62)	(-10.00)	(-1.74)
ROA_t	0.0422***	-0.0040***	0.0713***	0.0100***	0.0565***	-0.0028***
	(11.1453)	(-13.1536)	(15.3083)	(8.8236)	(12.8171)	(-8.8934)
RET_t	0.1189***	-0.0086***	-0.0161	-0.0029	0.0848***	-0.0059***
	(4.3104)	(-2.9355)	(-1.6258)	(-0.9580)	(3.7583)	(-3.0100)
REP_t	0.0825	0.0023			0.2850***	-0.0012
	(1.6322)	(0.3397)			(5.0654)	(-0.1604)
NEG_EARN_t	-1.7204***	-0.2744***	-1.0851***	-0.0161	-1.5341***	-0.1774***
	(-24.0279)	(-33.2202)	(-18.0029)	(-0.8347)	(-17.1601)	(-19.4044)
$UNCERT_t$	-3.3726***	-0.4284***	-11.8193***	-0.2463*	-2.7735***	-0.1560***
	(-7.8050)	(-13.0975)	(-17.8931)	(-1.9446)	(-5.7569)	(-4.6760)
DIV_PAID_{t-1}	4.1511***	0.3929***	0.2637***	-0.0051	3.9559***	0.3533***
	(76.1805)	(37.7173)	(7.95)	(-1.0590)	(67.5350)	(20.4254)
Observations	36,397	36,397	36,397	36,397	27,801	27,801
Country-,Industry-, Year fixed Effects	YES	YES	YES	YES	YES	YES
Sample	**2001-2008**	**2001-2008**	**2001-2008**	**2001-2008**	**2001-2008**	**2001-2008**