Skilled labor shortage risk and dividend payout policy

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Abstract

Using a measure of U.S. listed companies' skilled labor risk—that is, the risk of failing to attract and retain skilled labor, by the intensity of discussions on this issue in 10-K filings, we examine the effect of skilled labor risk on corporate dividend payout policy. Based on a sample of 21,514 firm-year observations spanning the period from 1996 to 2021, we find that firms significantly reduce dividend payout when faced with skilled labor risk. Employing the Inevitable Disclosure Doctrine (IDD) as an instrumental variable, we address potential endogeneity concerns and confirm a robust negative relationship between skilled labor risk and dividend payouts. Additionally, our analysis shows that skilled labor risk is linked to greater earnings and cash flow volatility, prompting firms to adopt more conservative dividend policies. These results underscore the important role of labor market frictions in shaping corporate financial decisions.

Keywords: skilled labor, risk, dividend.

1 Introduction

Human capital ranks as one of the most valuable intangible assets for a firm. Skilled labor, in particular, is inherently inalienable—meaning skilled employees are challenging to replace due to their specialized skills or critical knowledge that underpins a company's operations. Consequently, a firm's capital is less productive if it struggles to attract and retain such skilled talent (Bolton et al., 2019). For instance, a skilled worker may be a scientist who develops high-tech products or a manager with crucial relationships with clients or suppliers and possesses a larger fraction of the firm's human capital than the typical unskilled worker (Israelsen and Yonker, 2017). The ability to attract and retain talent, although not explicitly reflected on the balance sheet, is crucial for a firm's productivity, growth, profitability, and, ultimately, survival in today's knowledge economy. According to the 2023 ManpowerGroup Talent Shortage survey, talent shortages in the U.S. have more than tripled in the last ten years, with 75% of employers struggling to fill positions, up from just 14% in 2010.[1] In addition, the findings of Karabarbounis (2024) about the ongoing decline in the share of income accruing to labor in the U.S. and other countries have huge implications for skilled labor risk. Occupational choices and regulations such as tax incentives have also been documented to impact skilled labor risk (Cieślik and van Stel, 2024). In this paper, we adopt and extend the Qiu and Wang (2021) dataset, which quantifies skilled labor risk—that is, the potential failure in attracting and retaining skilled labor—by the intensity of discussions on this issue in 10-K filings and examine the effect of skilled labor risk on corporate dividend payout policy. We focus on skilled labor shortage risk and dividend for several reasons.

Firstly, prior research suggests that financing constraints are key determinants of a firm's choice of dividend payout policy (Denis and Osobov, 2008; Michaely and Roberts, 2012). Skilled employees are critical to a firm's operation and profitability, and the

[1] See https://go.manpowergroup.com/talent-shortage

shortage of skilled labor can alter managers' perceptions of a stable business environment conducive to sustainability and stability of future cash flows (Eisfeldt and Papanikolaou, 2013). When firms are unable to attract and retain skilled talents, managers anticipate increases in the perceived risk of future financial shortfalls and the perceived cost of external financing and may choose more conservative dividend distributions to "save for rainy days". This is consistent with the financial flexibility theory, which suggests that firms preserve financial flexibility in the face of uncertainty or risk by pursuing conservative policies such as reducing dividend payouts (Bates et al., 2009; Boasiako and Keefe, 2021; Boasiako et al., 2022).

Secondly, the type of human capital that skilled employees possess is different from that of ordinary employees and their replacement is difficult (Chen et al., 2021). Skilled labor are critical to a firm's success since they significantly contribute to driving innovation and creativity within a company (Leiponen, 2005). For example, Apple stated in its 2012 10-K that "the Company's success depends largely on the continued service and availability of key personnel." Skilled labor are able to identify opportunities for improvement and develop new ideas and solutions that can help the company to stay ahead of the competition. Consequently, relative to rank-and-file employees, the inability to attract and retain skilled labor could be much more costly to a firm and its shareholders. This argument is broadly consistent with Belo et al. (2017) and Ochoa (2013) who show that because it is costly to replace skilled labor, firms with a high proportion of skilled employees take on more risk and are more vulnerable to economic aggregate shocks and employment contractions (Krishnamurthy and Li, 2025). Consistent with the human capital investment theory (Becker, 1964), firms facing skilled labor shortages may prioritize internal investments in employee retention—such as offering higher compensation and incentives—over dividend payouts, as retaining skilled talent becomes a key focus for long-term success.

Thirdly, skilled labor shortages could result in higher labor and operating costs, which can negatively impact a company's bottom line and, consequently, its dividend policy. For instance, Kuehn et al. (2017) find that the cost of replacing a worker amounts to one-third of a new hire's annual salary. Qiu and Wang (2021) also examine the sensitivity of a firm's compensation policy to its skilled labor risk and find that an increase in the skilled labor risk from the 25th to the 75th percentile increases the average skilled labor compensation by 22%. This provides empirical evidence that if companies are not able to retain and attract skilled workers, they may need to offer higher compensation to attract and retain talent, which could result in higher labor costs, decrease profit margins and negatively impact dividend policy. Also, a shortage of skilled labor can lead to an overall decrease in productivity, high operational inefficiencies, and even adversely impact customers' brand loyalty to a firm (Dou et al., 2021), which can reduce profitability and make cash flows more susceptible to economic shocks, consequently subjecting firms to high future cash flow uncertainty. Consistent with the precautionary motive hypothesis, when a company faces cash flow uncertainty, it may adopt conservative corporate policies to ensure that it has sufficient funds to meet its operational and investment needs. Indeed, prior research (such as Michaely et al. (2021)) shows that greater future cash flow uncertainty results in lower dividend payouts. Finally, investors may view skilled labor risk as a threat to long-term profitability (as well as growth potential) and put pressure on the firm to maintain a conservative dividend policy.

However, there could also be a positive association between skilled labor risk and dividend payout policy. According to signaling theory, dividend changes have long been viewed as signals of both current and expected future firm prospects (Jensen et al., 2010; Bhattacharya, 1979; Miller and Rock, 1985). Hence, while skilled labor shortage risk can put pressure on firm profitability and financial stability, a firm facing high skilled labor shortage risk could potentially pay dividends to signal stability to shareholders. By

paying dividends, the firm may be able to signal to investors that it is financially stable and has sufficient cash reserves to support its ongoing operations, despite the challenges posed by the labor market.

Therefore, how skilled labor shortage risk affects a firm's dividend policy is an empirical question. Bolton et al. (2019) provide theoretical evidence of risk management based on the inalienability of risky human capital. They argue that even when there are no capital market frictions, firms add value by optimally managing human capital risk and liquidity because doing so allows them to reduce the cost of key-man risk to investors. Accordingly, we examine the empirical relation between skilled labor risk and dividend policy. To conduct our analysis, we adopt, extend and use Qiu and Wang (2021)'s newly collected data, which quantitatively capture U.S. firms' skilled labor risk from 1996 to 2013. Consistent with Qiu and Wang (2021), we extend the skilled labor risk data to 2021 by measuring a firm's skilled labor risk in a year by the number of sentences that the firm spends discussing the retention and attraction of skilled labor and key talents in the 10-K. **Unlike industry-wide proxies such as the industry-specific Labor Skill Index (LSI) developed by Belo et al. (2017), which assumes homogeneity across firms within an industry, our approach generates a firm-specific and time-varying measure of skilled labor risk. Therefore, the skilled labor risk we adopt and extend reflects each firm's unique exposure to challenges in attracting and retaining skilled workers.**

Using a sample of 21,514 firm-year observations from 1996 to 2021, we first examine the impact of skilled labor risk on dividend payouts. Our findings indicate a negative relationship between skilled labor risk and dividend payouts. Economically, the result is not trivial. A one standard deviation increase in *Skilled Labor Risk* (*LN(Skilled Labor Risk)*) is on average associated with a 4.1% (5.1%) decrease in *Dividend Payout*, which

corresponds to a 14.6% (18.%) decrease from the mean value.[2] This finding remains robust across several sensitivity tests. Specifically, our results hold consistent when employing alternative estimation methods, controlling for periods of heightened uncertainty, and using different proxies for both skilled labor risk and dividend payout policy. We also examine the impact of skilled labor risk on changes in dividend payout policy. We find that firms facing skilled labor risk are less likely to increase dividends and more likely to decrease and omit dividend payouts.

One potential concern with our baseline analysis is the issue of endogeneity. Specifically, the observed negative relationship between skilled labor risk and dividend payouts may be driven by firm-specific characteristics that simultaneously influence both variables in opposite directions. To address this potential endogeneity, we employ an instrumental variable approach, utilizing the Inevitable Disclosure Doctrine (IDD)—a state-level policy that restricts skilled labor mobility. The IDD limits the ability of employees with access to their firm's trade secrets to move to competing firms, providing a suitable instrument for skilled labor risk.

The IDD serves as a strong instrument for skilled labor risk for several reasons. First, the doctrine directly affects labor mobility, particularly for skilled employees who are more likely to possess critical knowledge, such as trade secrets or proprietary information, making them highly valuable to their employers. By restricting their ability to move to rival firms, the IDD increases retention rates of skilled workers, effectively reducing the immediate risk of skilled labor shortages for firms operating in states where this policy is in place (Gu et al., 2022; Nguyen and Qiu, 2022; Qiu and Wang, 2021). Second, the IDD does not directly impact firms' dividend payout policies. Instead, it primarily influences firms' human capital management strategies, making it less likely to suffer from

[2]To gauge economic significance, Columns 1 and 2 of Table 2 reveal that a one standard deviation increase in *Skilled Labor Risk* and *LN(Skilled Labor Risk)* is associated with decrease in *Dividend Payout* of 14.6% ((-0.0125 × 3.3009)/ 0.2827) and 18.1% ((-0.0612 × 0.8381)/ 0.2827) relative to the mean, respectively.

the same confounding factors that might influence both labor risk and dividend payout decisions. This satisfies the exclusion restriction requirement for a valid instrument, as IDD indirectly affects dividend payouts through its influence on skilled labor risk, rather than directly affecting dividend policies. Lastly, the geographical variation in the enforcement and adoption of the IDD across states introduces an exogenous source of variation in skilled labor risk. This variation allows us to capture the differential impact of skilled labor constraints across firms, providing a clearer identification of the causal effect of skilled labor risk on dividend payout policy. Thus, IDD presents a robust and credible instrument to address endogeneity concerns in our analysis of the relationship between skilled labor risk and dividend payouts.

By employing IDD as the instrument in a two-stage least squares (2SLS) regression framework, we examine the relationship between skilled labor risk and dividend payouts. Our findings confirm that, even after addressing potential endogeneity, the negative relationship between skilled labor risk and dividend payouts remains robust.

The evidence so far suggests a negative relation between skilled labor risk and dividend payouts. We next investigate whether this effect arises as a result of greater skilled labor risk increasing future cash flow and earnings volatility. Firms facing high skilled labor risk are likely to have high uncertainty about their future cash flows and, as a result, adopt a conservative dividend payout policy. We examine the impact of skilled labor risk on ex-post realized cash flow and earnings volatilities and find strong evidence that skilled labor risk is indeed significantly and positively related to cash flow and earnings volatilities.

This paper contributes to the literature in a number of ways. First, our study provides new evidence in the dividend literature and contributes to the existing literature by highlighting the labor market dimensions that determine firms' dividend payout policy. Prior studies examining the determinants of firms' dividend policy have considered factors

such as firm characteristics (Fama and French, 2001; DeAngelo et al., 2006; Denis and Osobov, 2008), corporate governance (John et al., 2015; Hu and Kumar, 2004; Michaely and Roberts, 2012), earnings and reporting quality (Caskey and Hanlon, 2013; Koo et al., 2017) and CEO attributes (Nicolosi, 2013; Caliskan and Doukas, 2015; Hossain et al., 2023). By examining the impact of firm-level skilled labor risk, an important input in the production function, we demonstrate that dividend policy is significantly impacted by frictions in the labor market.

In addition, our study makes contribution to the growing strand of research on how skilled labor risk impacts firms' corporate decisions, asset prices and cost of debt. For example, Ghaly et al. (2017) show that firms in industries that have higher proportion of skilled labor hold more precautionary cash.[3] Belo et al. (2017) and Ochoa (2013) demonstrate that because it is costly to replace skilled labor, firms with a high proportion of skilled employees take on more risk and are more vulnerable to economic aggregate shocks. Qiu and Wang (2021) find a positive relation between skilled labor risk and compensation. A recent study by Cheng et al. (2023) find that cost of bank debt is higher for firms that depend more on skilled workers. We extend the existing literature by investigating the dividend payout implications of firm-level skilled labor risk. Our study is closely related to Nguyen and Qiu (2022) who examine whether skilled labor intensity—determined by the industry-specific Labor Skill Index (LSI) developed by Belo et al. (2017)—affect dividend payout policy. However, we delineate from this study by focusing on firm-level skilled labor shortage risk and not the extent of an industry's reliance on skilled labor. We use a unique measure that captures firm-level skilled labor risk—that is, the potential failure to attract and retain skilled labor—and examine its implications for corporate dividend payout policy. Thus, by employing the skilled labor shortage risk at the firm level, we provide a more complete understanding of firm-level

[3]Qiu and Wang (2021) reveal that service industries that heavily rely on human capital are among the industries with the highest skilled labor risk.

risk for dividend payout policies.

The rest of the paper is organized as follows. Hypothesis discussion is presented in Section 2. We describe our data and empirical specification in Section 3. In Section 4, we present and discuss our results. We carry out robustness checks in Section 5 and conclude in Section 6.

2 Hypothesis Development

There are at least four reasons why skilled labor risk will impact the dividend payout policy of a firm. Below we discuss these reasons and develop hypotheses.

First, in order to retain top talent, firms that face skilled labor risk may choose to offer competitive compensation packages that go above and beyond market standards. For example, Qiu and Wang (2021) examine the sensitivity of a firm's compensation policy to its skilled labor risk and find that an increase in the skilled labor risk from the 25th to the 75th percentile increases the average skilled labor compensation by 22%. In addition to earning higher compensation, prior studies show that the compensation of skilled employees are more rigid (Campbell III, 1997; Du Caju et al., 2012) and firms tend to maintain the compensation of skilled employees even during an economic downturn as they recognize the value and importance of their expertise (Campbell III and Kamlani, 1997; Franz and Pfeiffer, 2006; Lagakos and Ordonez, 2011). The above discussion suggests that if retaining skilled employees is crucial for the company's success, it might have to allocate a substantial amount of its revenue towards employee compensation. This, in turn, can reduce the funds available for other purposes, such as paying dividends.

Second, skilled employees have unique and distinct capabilities that are challenging to replicate and match compared to rank-and-file employees (Chen et al., 2021). Studies have also indicated that the cost of replacing skilled employees

is higher (Blatter et al., 2012; Dolfin, 2006). To mitigate skilled labor risk, companies may invest in training and development programs for their employees. Indeed, Peters and Taylor (2017) suggest that firms with skilled employees invest more in organizational and knowledge capital. In addition, Eisfeldt and Papanikolaou (2013) suggest that a company's cash flows have to be shared between skilled labor and shareholders. The competing claim on the cash flows can have a negative impact on dividend payment.

Third, a shortage of skilled labor can lead to an overall decrease in productivity, high operational inefficiencies, and even adversely impact customers' brand loyalty to a firm which can reduce profitability and make cash flows more susceptible to economic shocks, consequently subjecting firms to high future cash flow uncertainty. If a firm anticipates fluctuating earnings due to the risk of skilled labor shortage, it may adopt a more conservative dividend policy. This could result in lower and more stable dividend payments to ensure that they have sufficient liquidity to address unexpected challenges. Indeed, prior research (such as Michaely et al. (2021)) shows that greater future cash flow uncertainty results in lower dividend payouts. Similarly, Nguyen and Qiu (2022) examine the effect of a firm's reliance on skilled labor—proxied by the industry-specific Labor Skill Index (LSI) developed by Belo et al. (2017)—on its payout policy and find that a one standard deviation increase in the intensity of reliance on skilled labor is on average associated with a 0.74 percentage point decline in the propensity to pay dividends.

The foregoing arguments lead to our testable hypothesis as follows:

Hypothesis 1: *Skilled labor shortage risk leads to a decrease in dividend payout.*

On the other hand, there could also be a positive association between skilled labor risk and dividend payout payout. Dividend changes have long been viewed as signals of both current and expected future firm prospects (Jensen et al., 2010). Hence, while skilled labor shortage risk can put pressure on firm profitability and financial stability, a firm facing high skilled labor shortage risk could potentially pay dividends to signal stability

to shareholders. By paying dividends, the firm may be able to signal to investors that it is financially stable and has sufficient cash reserves to support its ongoing operations, despite the challenges posed by the labor market. This leads to the alternative hypothesis stated as follows:

Hypothesis 2: *Skilled labor shortage risk leads to an increase in dividend payout.*

3 Data and methodology

3.1 Data

To examine the relationship between skilled labor shortage risk and dividend policies, we adopt and extend the dataset developed by Qiu and Wang (2021), which provides a quantitative measure of firms' skilled labor risk from 1996 to 2013.[4] We extend this skilled labor shortage risk measure through 2021. Following Qiu and Wang (2021), we create a Python-based machine learning code that parses 10-K filings from the SEC's EDGAR database into sentences. A sentence is classified as relevant to skilled labor shortage if it contains certain keywords identified by Qiu and Wang (2021). The variable *Skilled Labor Risk* represents the total number of sentences addressing labor shortage risk within a firm's 10-K filings.[5] All firm financial data are collected from the Compustat database. In line with prior studies (Kyiu et al. (2025)), we exclude firms from the utility and financial industries (Standard Industrial Classification (SIC) codes from 4900 to 4999 and 6000–6999, respectively) because these industries are highly regulated. We further exclude firm-year observations with missing or negative values for total assets, sales, and net income. Following previous studies (such as Sarkodie et al. (2025)), we winsorize all continuous variables at their 1st and 99th percentiles to limit the influence

[4]We thank Yue Qiu for making the skilled labor risk data available on his website: https://yueqiuumn.wordpress.com/research/

[5]We also consider the natural logarithm of skilled labor risk.

of outliers. All variables are defined in appendix. Our final sample consist of 21,514 firm-year observations over the 1996-2021 period.

3.2 Methodology

We aim to examine how skilled labor risk affect dividend payout policies. To test this hypothesis, we estimate the following baseline model, controlling for firm characteristics.

$$Div_{i,t} = \alpha + \beta_0 Skilled\ Labor\ Risk_{i,t} + \beta_1 X_{i,t} + \lambda_i + \delta_t + \varepsilon_{i,t}, \tag{1}$$

where $Div_{i,t}$ is the measure of dividend (*Dividend Payout* or *Dividend Payer(0/1)*) for firm i at time t. *Dividend Payout* is the ratio of cash dividends (DVC) to net income (NI) (Balachandran and Nguyen, 2018; Floyd et al., 2015) whereas *Dividend Payer(0/1)* is a indicator variable set to one in the year a firm pays dividend, zero otherwise (John et al., 2011). $Skilled\ Labor\ Risk_{i,t}$ is firm *i's* skilled labor risk at time t. For each estimation, we also use the natural logarithm of skilled labor risk, *LN(Skilled Labor Risk)*. $X_{i,t}$ is a set of firm-level controls. Following prior studies (Fama and French, 1997; DeAngelo et al., 2006; Denis and Osobov, 2008; Grullon and Michaely, 2002), the control variables in our regression are firm size, profitability, retained earnings, cash holdings, leverage and tangibility. We include industry fixed effects, λ_i and year fixed effects, δ_t to control for time-invariant industry level heterogeneity and macroeconomic shocks that affect all firms each year. In all specifications, we cluster the standard errors at the firm level.

4 Empirical results

4.1 Summary statistics

Table 1 reports the summary statistics of our sample and the variables used in our analyses. We report the mean, standard deviation, 25th percentile, median, and 75th percentile. On average, 58% of our sample firms are dividend payers. The average cash dividend payment, measured as the ratio of cash dividend to net income, is 0.28. The mean skilled labor risk for the sample firms is 2.7, which suggests that in their 10-k reports, the sample firms address skilled labor risk with an average of about three sentences. The average firm holds 16% of assets in cash and leverage of 25%.

4.2 Skilled labor risk and dividend payout policy

We present the regression results of our baseline model in Table 2, where we test for the effect of skilled labor risk on corporate dividend payout policy using different specifications. The dependent variable is dividend, which is either *Dividend Payout* or *Dividend Payer(0/1)*. The variables of interest are *Skilled Labor Risk* and *LN(Skilled Labor Risk)*, which are featured in Columns 1 and 3, and Columns 2 and 4, respectively. In all columns, we include several firm-level controls, year-fixed effects to control for common fluctuations in firm dividend payout over time, and industry-fixed effects to control for industry differences in the level of dividend payout. In Columns 1-2, we present OLS estimates for *Dividend Payout* and the probit estimates for *Dividend Payer(0/1)* are presented in Columns 3 and 4.

Across all four Columns of Table 2, the coefficients on *Skilled Labor Risk* and *LN(Skilled Labor Risk)* are negative and statistically significant at the 1% level. Economically, the results are not trivial. To gauge economic significance, columns 1 and 2 reveal that a one standard deviation increase in *Skilled Labor Risk* and *LN(Skilled Labor Risk)* is as-

sociated with a decrease in dividend payout of 14.6% ((-0.0125 × 3.3009)/ 0.2827) and 18.1% ((-0.0612 × 0.8381)/ 0.2827) relative to the mean, respectively. This is not trivial in the corporate finance literature. With a mean cash dividend of about $202 million for our sample of firms, this translates into an average reduction in dividend payout ranging between $29 million and $37 million per one standard deviation increase in *Skilled Labor Risk* and *LN(Skilled Labor Risk)*. This suggests that firms that face skilled labor shortage risk significantly reduce their dividend payout. By way of comparison, (Hail et al., 2014) document a reduction in the probability of paying dividends of 9% and 11% following the mandatory adoption of IFRS and the initial enforcement of new insider trading laws. Similarly, Nguyen and Qiu (2022) find that a one standard deviation increase in the intensity of reliance on skilled labor is, on average, associated with a 0.74 percentage point decline in the propensity to pay dividends. Therefore, the results presented in Table 2 reveal a relatively sizable adverse effect of skilled labor risk on dividend payout.

Our baseline results show that firms that face skilled labor shortage risk reduce their dividend payouts. We further examine the link between skilled labor risk and changes in dividend policy. Table 3 reports the regression results on the effect of skilled labor risk and dividend changes. Here, the dependent variable in Columns 1 and 4 is *DivInc(0/1)*, which is a dummy variable equal to 1 if cash dividends in year t are higher than cash dividends in year $t-1$, and 0 otherwise. The dependent variable in Columns 2 and 5 is *DivDec(0/1)* DivDec(0/1) which is a dummy variable equal to 1 if cash dividends in year t are less than cash dividends in year $t-1$, and 0 otherwise. The dependent variable in Columns 3 and 6 is *DivOmit(0/1)* DivOmit(0/1) which is a dummy variable equal to 1 if a dividend-paying firm does not pay dividend in year t, and 0 otherwise. We present the probit estimates for *DivInc(0/1)*, *DivDec(0/1)* and *DivOmit(0/1)* in Columns 1-6.

In Columns 1 and 4, we document a negative and significant (at the 1% level) effect

of *Skilled Labor Risk* and *LN(Skilled Labor Risk)* on the likelihood of a dividend increase, suggesting that firms that face skilled labor shortage risk are less likely to increase dividend payouts. On the decrease side, we find that *Skilled Labor Risk* and *LN(Skilled Labor Risk)* are positively associated with decreases in dividends, providing some evidence that dividend-paying firms are more likely to reduce dividend payouts when faced with skilled labor risk. Turning to dividend omissions, in Columns 3 and 6, we find that *Skilled Labor Risk* and *LN(Skilled Labor Risk)* load positively and significantly (at the 1% level) on *DivOmit(0/1)*, suggesting that firms facing skilled labor shortage risk tend to not only reduce dividends but are more likely to omit paying dividends too.

4.3 Skilled labor risk, earnings and cash flow volatility

The inability to attract and retain skilled labor can lead to an overall decrease in productivity and high operational inefficiencies, which can reduce profitability and make cash flows more susceptible to economic shocks, consequently subjecting firms to high future cash flow uncertainty. Therefore, firms facing high skilled labor risk are likely to have high uncertainty about their future cash flows and, as a result, adopt a conservative cash policy and cut dividend payouts. We examine this explanation by creating two alternative measures of realized volatilities — *Earnings Volatility* and *Cash Flow Volatility*. Panel A of Table 4 presents the results of the effect of skilled labor risk on the realized volatilities measures. Greater realized earnings and cash flow volatilities indicate greater ex-post cash flow uncertainty. Across Columns 1-4, the coefficients on *Skilled Labor Risk* and LN(*Skilled Labor Risk*) are positive and statistically significant. In particular, the coefficients in Columns 3 and 4 indicate that higher skilled labor risk is indeed related to higher ex-post realized cash flow volatilities in the future.

If skilled labor risk has a negative effect on dividend payouts due to high future cash

flow volatility, then a natural follow-up question is what happens to cash holdings. We argue that because firms that face skilled labor risk are more susceptible to cash flow volatility, such firms will have more incentives to hold cash for precautionary motive because cash reserve enables a firm to cushion itself from future cash flow volatility (Han and Qiu, 2007). Therefore, we examine the effect of skilled labor risk on cash holdings in Panel B of Table 4. The results show that firms that have skilled labor risk hold more cash, which is consistent with the need for such firms to reduce dividend payouts. The findings are consistent with (Ghaly et al., 2017) who show that firms that have higher proportion of skilled workers hold more cash.

4.4 Addressing endogeneity concerns

As indicated earlier, a potential concern is that the baseline results could be endogenous. That is the observed negative relationship between skilled labor risk and dividend payouts may be driven by firm-specific characteristics that simultaneously influence both variables in opposite directions. To mitigate this endogeneity concern, we re-estimate our dividend regressions with the IV-2SLS approach. We employ an instrumental variable, namely, Inevitable Disclosure Doctrine (IDD), a state-level policy which restricts skilled labor mobility. The IDD limits the ability of employees with access to their firm's trade secrets to move to competing firms (Gu et al., 2022). The IDD's effectiveness is underpinned by the fact that its enforcement is not contingent on employment contract clauses (such as whether a noncompete agreement is in place) and the locations of future rival firms (such as whether the rival firm is located in the same state as the employer in IDD state) (Nguyen et al., 2023). The adoption of the IDD by a state court thus significantly enhances the ability of firms located in that IDD state to protect their proprietary knowledge and reduce the mobility of their skilled labor, providing a suitable instrument for

skilled labor risk.

To qualify as a valid instrument, the IDD variable needs to be strongly correlated with the instrumented regressors (the validity requirement) but uncorrelated with the error term (the exclusion restriction). The IDD serves as a strong instrument for skilled labor risk for several reasons. First, the doctrine directly affects labor mobility, particularly for skilled employees who are more likely to possess critical knowledge, such as trade secrets or proprietary information, making them highly valuable to their employers. By restricting their ability to move to rival firms, the IDD increases retention rates of skilled workers, effectively reducing the immediate risk of skilled labor shortages for firms operating in states where this policy is in place (Gu et al., 2022; Nguyen and Qiu, 2022; Qiu and Wang, 2021). Second, the IDD does not directly impact firms' dividend payout policies. Instead, it primarily influences firms' human capital management strategies, making it less likely to suffer from the same confounding factors that might influence both labor risk and dividend payout decisions. This satisfies the exclusion restriction requirement for a valid instrument, as IDD indirectly affects dividend payouts through its influence on skilled labor risk, rather than directly affecting dividend policies. Lastly, the geographical variation in the enforcement and adoption of the IDD across states introduces an exogenous source of variation in skilled labor risk. This variation allows us to capture the differential impact of skilled labor constraints across firms, providing a clearer identification of the causal effect of skilled labor risk on dividend payout policy. Thus, IDD presents a robust and credible instrument to address endogeneity concerns in our analysis of the relationship between skilled labor risk and dividend payouts.[6]

Following prior studies (Qiu and Wang, 2021; Chetty et al., 2017; Corradin and Popov, 2015), we construct our instrument variable, *Inevitable Disclosure Doctrine(0/1)*, which

[6]While the IDD provides exogenous variation in firms' exposure to skilled labor risk, there may be concerns about unobserved state-level factors correlated with both IDD adoption and firm financial policies.

is a dummy variable equals to 1 if the firm is headquatered in a state that has passed the IDD law and zero otherwise. In Column 1 of Table 5, we estimate the first stage regression and find that the instrument, *IDD(0/1)* is negative and statistically significant at the 1% level in explaining *Skilled Labor Risk*. In Columns 2-3 of Table 5, we estimate the second-stage regressions where the dependent variables are dividend measures and *Skilled Labor Risk* is replaced by predicted *Skilled Labor Risk* from the first-stage regression. The results presented in Columns 2-3 show that the coefficients associated with *Skilled Labor Risk* are negative and statistically significant at the 1% level in explaining dividend. The IV-2SLS approach supports our findings that firms significantly reduce dividend payout when faced with skilled labor risk. We perform the under-identification and weak identification tests to check the validity of our instruments. The results in Column 3 of Table 5 indicate that the instrument passes both the under-identification test with a Kleibergen-Paap rk LM statistic of 24.28 (p-value$<$ 1%) and the weak identification test with a Kleibergen-Paap rk Wald F statistic of 24.45.

5 Robustness Checks

5.1 GLM and zero inflated beta model

Our dividend payout measures can be considered as proportion variables, which are confined within the range of zero to one. Cook et al. (2008) discuss typical specification errors that arise when using a linear prediction equation to model a proportional or fractional variable. The authors demonstrate that the conditional expectation of such a model is actually a nonlinear function of the independent variables.

To address the estimation challenges posed by a bounded dependent variable, we employ a Generalized Linear Model (GLM) with a logit link function to re-calculate the

baseline dividend payout regressions. In Columns 1-2 of Table 6, the coefficients of *Skilled Labor Risk* and *LN(Skilled Labor Risk)* are negative and statistically significant at 1% level.

Moreover, our dependent variables include a significant number of zero values, which standard beta regression models are not well-suited to handle. To account for this, we follow the approach of Cook et al. (2008) and employ a zero-inflated beta model. This model is appropriate because it separately accounts for the excess zeros and the continuous values between 0 and 1, allowing us to better capture the underlying data structure and avoid biased estimates. In Columns 3 and 4 of of Table 6, the coefficients associated with *Skilled Labor Risk* and *LN(Skilled Labor Risk)* are negative and statistically significant at 1% level. These results are qualitatively similar to the main results in Table 2.

5.2 Controlling for the periods of high uncertainty

Our sample period includes the global financial crisis (GFC) and the Covid-19 period, which can influence the dividend payout policies of firms (Kilincarslan, 2021). For instance, the COVID-19 pandemic had far-reaching and unprecedented economic consequences. Uncertainties about the future trajectory of the virus, policy responses of governments (including lockdowns), the long-term impact on labor markets, and shifts in household and firm behavior massively increased firms' future cash flow risks (Pettenuzzo et al., 2023). Prior studies such as Cejnek et al. (2021) find that the percentage drop in the present value of cuts in near-term dividends during the onset of the COVID-19 pandemic exceeds that of the overall drop in stock prices, and the dividend futures drawdowns during the crisis year were actually followed by substantial dividend cuts, which contrast with the notion of dividend smoothness.

In order to alleviate possible concerns about the confounding effect, we thus conduct

robustness test by controlling for GFC and Covid-19. *GFC(0/1)* is set one for the global financial crisis period of 2007-2009 and zero otherwise. *Covid(0/1)* is an indicator set to one for the years 2020 and 2021, zero otherwise. The results reported in Table 7 indicate that our findings are robust to the controlling for the GFC and Covid-19 period.

5.3 Alternative dividend payout variables

To check the robustness of our results, we follow prior studies (Goodell et al., 2022; Nguyen and Qiu, 2022; Hoberg et al., 2014) and examine skilled labor risk on three alternative measures of dividend payout policy and present the results in Table 8. Columns (1) and (2) show the result for cash dividend scaled by total assets. Columns(3) and (4) is the result for cash dividend scaled by shares outstanding and Columns (5) and (6)is the result for cash dividend scaled by market value of equity. Our results remain statistically similar and consistent with the baseline results.

5.4 Key human capital risk as a proxy for skilled labor risk

As an alternative to skilled labor risk, we use key man risk to examine the robustness of our baseline results. A key employee possesses a larger fraction of the firm's human capital than the typical worker, hence, losing a single key employee could be much more costly to a firm and its shareholders than losing numerous rank-and-file employees. Firms whose human capital is concentrated in a few irreplaceable employees lack diversification in their human capital stock, exposing them to key human capital risk. Israelsen and Yonker (2017) quantify the key human capital risk exposure of firms using key man life insurance policy disclosure in their 10-K filings from 1997 to 2009. We use key man risk data from Israelsen and Yonker (2017) to examine the effect of skilled labor risk on

dividend payout and present the results in Table 9. Consistent with our baseline results, across all columns of Table 9, the coefficient estimates on *Key Human Capital* are negative and statistically significant, suggesting that firms facing key man risk are less likely to pay cash dividends.

5.5 Skilled labor risk and firm performance

As we explained earlier, the inability to attract and retain skilled labor can lead to an overall decrease in productivity and high operational inefficiencies, which can reduce profitability. Indeed, our initial analysis shows that firms facing skilled labor risk have higher ex-post realized cash flow volatilities. As an additional test, we examine the effect of skilled labor risk on firm performance and present the results in Table 10. In Columns (1) and (2), the dependent variable is *Return on Assets* measured as earnings before interest and tax scaled by total assets, and in Columns (3) and (4), the dependent variable is *Return on Equity*, which is earnings before interest and tax scaled by total common equity. The results presented in Table 10 show that skilled labor risk lead to lower firm performance.

6 Conclusion

We adopt and extend a unique measure that captures firm-level skilled labor risk—that is, the potential failure to attract and retain skilled labor—and examine its implications for corporate dividend payout policy in the U.S. We find robust evidence of a negative association between skilled labor risk and dividend payout. Further analysis reveals that skilled labor risk is also negatively associated with dividend increases, suggesting that

firms facing such risk are less likely to raise dividend payouts. Importantly, we find that this negative relationship may be driven by earnings and cash flow volatility, highlighting the financial uncertainty introduced by skilled labor shortages.

These findings carry significant policy implications. First, they suggest that labor market frictions can shape financial policies at the firm level, reinforcing the need for coordinated efforts between corporate decision-makers and policymakers to address skilled labor shortages. Second, given the negative relationship between skilled labor risk and dividend payout, firms experiencing a shortage of skilled workers should prioritize HRM strategies aimed at attracting and retaining talent while fostering workforce stability. Third, both retail and institutional investors should factor in skilled labor shortages in their investment decisions, recognizing that firms facing higher risks in this area can adopt precautionary measures, such as reducing dividend payouts. Additionally, this paper advocates for greater corporate disclosure regarding human capital management, ensuring that companies transparently communicate their strategies for mitigating skilled labor shortages. Finally, policymakers should acknowledge the macroeconomic consequences of skilled labor risks and implement proactive measures to stabilize the labor market. This may include enacting regulations that promote labor mobility and skilled migration, expanding the available talent pool, and alleviating the pressures of human capital shortages on firms. Overall, our study contributes to a growing body of research on the intersection of labor dynamics and corporate finance, and it highlights the importance of incorporating human capital considerations into strategic and financial decision-making.

Despite our comprehensive robustness checks, potential biases may still remain. Specifically, there is the possibility of residual omitted variable bias or measurement error in our proxy for skilled labor risk, which may not be fully addressed by our empirical strategies. Therefore, future studies may explore a measure that fully and even more accurately capture skilled labor risk. **For instance, future research could enhance the skilled**

labor risk proxy by incorporating insights from earnings call transcripts or investor presentations. Executives often address forward-looking concerns, including talent retention, hiring difficulties, and labor market conditions, especially when prompted by analysts. These discussions can reveal real-time labor concerns and strategic emphasis that may not appear as prominently in formal filings.

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Table 1: Summary Statistics

This table provides summary statistics for the main variables used in our analyses for the sample period 1996 to 2021. All continuous variables are winsorized at the top and bottom one percentile. Refer to Appendix A for variable definitions.

	N	Mean	Median	Std. Dev.	25th Pctl.	75 Pctl.
Dividend Payout	21,514	0.2827	0.1303	0.4961	0	0.3741
Dividend Payer(0/1)	21,514	0.5806	1	0.4935	0	1
Skilled Labor Risk	21,514	2.6633	1	3.3009	0	4
LN(Skilled Labor Risk)	21,514	0.9429	0.6931	0.8381	0	1.6094
Firm Size	21,514	7.1935	7.1827	1.8517	5.9319	8.4305
Market-to-book	21,514	2.3744	1.8715	1.6751	1.3664	2.7643
LN(Firm Age)	21,514	2.3532	2.3979	0.5342	1.9459	2.8332
Tangibility	21,514	0.5542	0.4535	0.3967	0.2434	0.7765
Profitability	21,514	0.0854	0.0713	0.0631	0.0428	0.1111
Cash	21,514	0.1586	0.0953	0.1756	0.0333	0.2202
Net Cash	21,514	0.2253	0.0956	0.3811	0.0313	0.2512
Financial Leverage	21,514	0.2492	0.2156	0.2296	0.0582	0.3639
Retained Earnings	21,514	0.3776	0.3755	0.3655	0.2029	0.5738
Earnings Volatility	21,514	0.0364	0.0263	0.0318	0.0149	0.0468
Cash Flow Volatility	21,514	0.0377	0.0284	0.0299	0.0169	0.0484

Table 2: Skilled labor risk and dividend policy

This table reports the effect of skilled labor shortage risk on corporate dividend policy. The dependent variable is dividend (either *Dividend Payout* or *Dividend Payer(0/1)*). All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Dividend*			
	Dividend Payout	*Dividend Payout*	*Dividend Payer(0/1)*	*Dividend Payer(0/1)*
	(1)	(2)	(3)	(4)
	OLS	OLS	Probit	Probit
Skilled Labor Risk	-0.0125***		-0.0633***	
	(0.0021)		(0.0085)	
LN(Skilled Labor Risk)		-0.0612***		-0.2965***
		(0.0083)		(0.0318)
Firm Size	0.0128***	0.0124***	0.2147***	0.2150***
	(0.0045)	(0.0045)	(0.0164)	(0.0164)
Market-to-book	0.0035	0.0041	-0.0152	-0.0129
	(0.0050)	(0.0050)	(0.0185)	(0.0185)
LN(Firm Age)	0.0926***	0.0917***	0.5779***	0.5756***
	(0.0193)	(0.0192)	(0.0673)	(0.0671)
Tangibility	0.1290***	0.1267***	0.4166***	0.4094***
	(0.0244)	(0.0243)	(0.0845)	(0.0846)
Profitability	-0.0750	-0.0802	1.8188***	1.8001***
	(0.1286)	(0.1285)	(0.3878)	(0.3885)
Cash	0.0811*	0.0798*	-0.4476***	-0.4598***
	(0.0431)	(0.0432)	(0.1565)	(0.1571)
Financial Leverage	-0.0718**	-0.0696*	-0.5021***	-0.4970***
	(0.0360)	(0.0360)	(0.1064)	(0.1067)
Retained Earnings	-0.0650***	-0.0665***	0.3552***	0.3469***
	(0.0224)	(0.0223)	(0.0852)	(0.0851)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,472	21,472
Adjusted/Pseudo R^2	0.0642	0.0666	0.184	0.188

Table 3: Skilled labor risk and dividend changes

This table reports the effect of skilled labor shortage risk on dividend changes. The dependent variable is either *DivInc(0/1)*, *DivDec(0/1)* or *DivOmit(0/1)*. *DivInc(0/1)* is a dummy variable equal to 1 if cash dividends in year t are higher than cash dividends in year $t-1$, and 0 otherwise. *DivDec(0/1)* is a dummy variable equal to 1 if cash dividends in year t are less than cash dividends in year $t-1$, and 0 otherwise; and *DivOmit(0/1)* is a dummy variable equal to 1 if if a dividend-paying firm does not pay dividend in year t. All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variables: *Dividend Changes*					
	DivInc(0/1)	*DivDec(0/1)*	*DivOmit(0/1)*	*DivInc(0/1)*	*DivDec(0/1)*	*DivOmit(0/1)*
	(1)	(2)	(3)	(4)	(5)	(6)
Skilled Labor Risk	-0.0274***	0.0078*	0.0633***			
	(0.0060)	(0.0045)	(0.0085)			
LN(Skilled Labor Risk)				-0.1390***	0.0276	0.2966***
				(0.0244)	(0.0192)	(0.0318)
Firm Size	0.1348***	-0.0721***	-0.2141***	0.1343***	-0.0720***	-0.2143***
	(0.0118)	(0.0086)	(0.0164)	(0.0118)	(0.0086)	(0.0164)
Market-to-book	0.0212	-0.0674***	0.0165	0.0223	-0.0674***	0.0142
	(0.0147)	(0.0119)	(0.0185)	(0.0148)	(0.0119)	(0.0185)
LN(Firm Age)	-0.4496***	-1.1861***	-0.5748***	-0.4523***	-1.1871***	-0.5725***
	(0.0444)	(0.0320)	(0.0671)	(0.0442)	(0.0319)	(0.0669)
Tangibility	0.2308***	0.0653	-0.4109***	0.2255***	0.0655	-0.4037***
	(0.0641)	(0.0483)	(0.0846)	(0.0640)	(0.0483)	(0.0847)
Profitability	1.2634***	0.4614*	-1.8407***	1.2528***	0.4628*	-1.8218***
	(0.3082)	(0.2740)	(0.3890)	(0.3086)	(0.2739)	(0.3897)
Cash	-0.2224*	0.4275***	0.4473***	-0.2265*	0.4323***	0.4594***
	(0.1171)	(0.0930)	(0.1564)	(0.1171)	(0.0929)	(0.1571)
Financial Leverage	-0.4308***	0.0972	0.4946***	-0.4270***	0.0954	0.4895***
	(0.0826)	(0.0779)	(0.1065)	(0.0826)	(0.0778)	(0.1069)
Retained Earnings	-0.2255***	-0.3924***	-0.3528***	-0.2296***	-0.3919***	-0.3446***
	(0.0499)	(0.0508)	(0.0850)	(0.0500)	(0.0508)	(0.0849)
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	19,700	19,700	19,700	19,700	19,700	19,700
Pseudo R^2	0.0621	0.146	0.184	0.0635	0.146	0.188

Table 4: Skilled labor risk and cash flow volatilities

Panel A reports the estimation results of the effect of skilled labor shortage risk on cash flow and earnings volatility. Panel B reports the estimation results of the effect of skilled labor shortage risk on cash holdings. All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Earnings and Cash flow volatility*			
Panel A: Cash flow volatilities				
	Earnings Volatility		*Cash Flow Volatility*	
	(1)	(2)	(3)	(4)
Skilled Labor Risk	0.0008***		0.0007***	
	(0.0002)		(0.0002)	
LN(Skilled Labor Risk)		0.0041***		0.0034***
		(0.0005)		(0.0006)
Firm Size	-0.0031***	-0.0031***	-0.0032***	-0.0032***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Market-to-book	-0.0001	-0.0001	0.0003	0.0003
	(0.0003)	(0.0003)	(0.0004)	(0.0004)
LN(Firm Age)	-0.0043***	-0.0042***	0.0008	0.0008
	(0.0012)	(0.0012)	(0.0013)	(0.0013)
Tangibility	-0.0027*	-0.0026*	-0.0029**	-0.0027*
	(0.0014)	(0.0014)	(0.0014)	(0.0014)
Profitability	0.0746***	0.0750***	0.0687***	0.0690***
	(0.0084)	(0.0084)	(0.0087)	(0.0087)
Cash	0.0294***	0.0294***	0.0325***	0.0327***
	(0.0030)	(0.0030)	(0.0032)	(0.0032)
Financial Leverage	0.0026	0.0024	0.0032	0.0031
	(0.0019)	(0.0019)	(0.0020)	(0.0020)
Retained Earnings	0.0002	0.0003	-0.0115***	-0.0114***
	(0.0013)	(0.0013)	(0.0016)	(0.0016)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,514	21,514
Adjusted R^2	0.199	0.202	0.219	0.221
Panel B: Cash holdings				
	Cash		*Net Cash*	
	(1)	(2)	(3)	(4)
Skilled Labor Risk	0.0042***		0.0071***	
	(0.0009)		(0.0022)	
LN(Skilled Labor Risk)		0.0129***		0.0205**
		(0.0031)		(0.0083)
Firm Size	-0.0114***	-0.0114***	-0.0277***	-0.0278***
	(0.0016)	(0.0017)	(0.0046)	(0.0046)
Market-to-book	0.0248***	0.0249***	0.0297***	0.0299***
	(0.0020)	(0.0020)	(0.0046)	(0.0046)
LN(Firm Age)	-0.0263***	-0.0273***	-0.0349*	-0.0366**
	(0.0066)	(0.0067)	(0.0181)	(0.0182)
Tangibility	-0.0607***	-0.0609***	-0.1456***	-0.1461***
	(0.0070)	(0.0070)	(0.0162)	(0.0162)
Profitability	0.3897***	0.3910***	0.7028***	0.7048***
	(0.0445)	(0.0446)	(0.1196)	(0.1198)
Financial Leverage	-0.1387***	-0.1400***	-0.2661***	-0.2683***
	(0.0114)	(0.0114)	(0.0275)	(0.0275)
Retained Earnings	-0.0028	-0.0027	-0.0280	-0.0280
	(0.0080)	(0.0080)	(0.0269)	(0.0268)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,514	21,514
Adjusted R^2	0.388	0.386	0.264	0.263

Table 5: Robustness: Two-stage instrumental variable estimation

In this table, we re-estimate the baseline regressions skilled labor risk on dividend payout with the instrumental variable 2SLS method. The inevitable disclosure doctrine (IDD) is a state-level policy which restricts skilled labor mobility by limiting the opportunities for employees with inevitable access to their firm's trade secrets to switch to rival firms. Therefore, our instrumental variable is *Inevitable Disclosure Doctrine(0/1)*, which is set to one if a firm is located in an IDD state, zero otherwise. In Column 1, we provide estimation results of the first stage of 2SLS regression. In Columns 2-3, we provide estimation results of the second stage of 2SLS regressions. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Skilled Labor Risk	*Dividend Payout*	*Dividend Payer(0/1)*
	First Stage of 2SLS	Second Stage of 2sls	
	(1)	(2)	(3)
Inevitable Disclosure Doctrine(0/1)	-0.4876***		
	(0.0986)		
Skilled Labor Risk		-0.1089***	-0.1519***
		(0.0332)	(0.0441)
Firm Size	-0.0716**	0.0058	0.0591***
	(0.0288)	(0.0056)	(0.0068)
Market-to-book	0.0767**	0.0097	0.0052
	(0.0305)	(0.0065)	(0.0083)
LN(Firm Age)	-0.6158***	0.0301	0.1089***
	(0.1318)	(0.0296)	(0.0389)
Tangibility	-0.3416**	0.0858***	0.0877**
	(0.1434)	(0.0277)	(0.0355)
Profitability	-0.7380	-0.1037	0.5009***
	(0.8647)	(0.1464)	(0.1630)
Cash	1.5931***	0.2214***	0.0719
	(0.3507)	(0.0770)	(0.0974)
Financial Leverage	-0.2721	-0.1133***	-0.2116***
	(0.1999)	(0.0400)	(0.0462)
Retained Earnings	-0.1318	-0.0744***	0.0915***
	(0.1238)	(0.0253)	(0.0299)
Year Fixed Effects	YES	YES	YES
Industry Fixed Effects	YES	YES	YES
Observations	21,338	21,338	21,338
Kleibergen-Paap rk LM stat.		24.283	24.283
Kleibergen-Paap rk Wald F stat		24.450	24.450
Adj R-squared	0.318		

Table 6: Robustness to econometric method: GLM and zero inflated beta model

This table reports the GLM and zero inflated beta model results of the effect of skilled labor risk on dividend payout. The dependent variable is *Dividend Payout*. All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors, clustered by firm, are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Dividend Payout*			
	GLM		Zero inflated beta model	
Skilled Labor Risk	-0.0805***		-0.0561***	
	(0.0160)		(0.0099)	
LN(Skilled Labor Risk)		-0.3091***		-0.2257***
		(0.0473)		(0.0299)
Firm Size	0.0840***	0.0814***	0.0480***	0.0469***
	(0.0280)	(0.0280)	(0.0159)	(0.0158)
Market-to-book	0.0188	0.0206	0.0148	0.0166
	(0.0287)	(0.0289)	(0.0177)	(0.0178)
LN(Firm Age)	0.4923***	0.4902***	0.3199***	0.3172***
	(0.1286)	(0.1278)	(0.0771)	(0.0768)
Tangibility	0.6952***	0.6934***	0.4273***	0.4186***
	(0.1341)	(0.1342)	(0.0745)	(0.0746)
Profitability	-0.6479	-0.6077	-0.3649	-0.3717
	(0.7919)	(0.7878)	(0.4542)	(0.4553)
Cash	0.4742*	0.4600*	0.2832*	0.2705*
	(0.2468)	(0.2463)	(0.1618)	(0.1626)
Financial Leverage	-0.3841*	-0.3766*	-0.2631**	-0.2516*
	(0.2015)	(0.2002)	(0.1286)	(0.1285)
Retained Earnings	-0.3195***	-0.3268***	-0.2065***	-0.2088***
	(0.1170)	(0.1169)	(0.0682)	(0.0680)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,514	21,514

Table 7: Robustness: Controlling for periods of high uncertainty

This table reports the effect of skilled labor shortage risk on corporate dividend policy after controlling for periods of high uncertainty (*GFC(0/1)* and *Covid(0/1)*). *GFC(0/1)* is set to one for the global financial crisis period of 2007-2009, zero otherwise; and *Covid(0/1)* is set to one for the Covid-19 pandemic period of 2019-2021, zero otherwise. The dependent variable is dividend (either *Dividend Payout* or *Dividend Payer(0/1)*). All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Dividend*			
	Dividend Payout	*Dividend Payout*	*Dividend Payer(0/1)*	*Dividend Payer(0/1)*
	(1)	(2)	(3)	(4)
	OLS	OLS	Probit	Probit
Skilled Labor Risk	-0.0125***		-0.0633***	
	(0.0021)		(0.0085)	
LN(Skilled Labor Risk)		-0.0612***		-0.2965***
		(0.0083)		(0.0318)
Firm Size	0.0128***	0.0124***	0.2147***	0.2150***
	(0.0045)	(0.0045)	(0.0164)	(0.0164)
Market-to-book	0.0035	0.0041	-0.0152	-0.0129
	(0.0050)	(0.0050)	(0.0185)	(0.0185)
LN(Firm Age)	0.0926***	0.0917***	0.5779***	0.5756***
	(0.0193)	(0.0192)	(0.0673)	(0.0671)
Tangibility	0.1290***	0.1267***	0.4166***	0.4094***
	(0.0244)	(0.0243)	(0.0845)	(0.0846)
Profitability	-0.0750	-0.0802	1.8188***	1.8001***
	(0.1286)	(0.1285)	(0.3878)	(0.3885)
Cash	0.0811*	0.0798*	-0.4476***	-0.4598***
	(0.0431)	(0.0432)	(0.1565)	(0.1571)
Financial Leverage	-0.0718**	-0.0696*	-0.5021***	-0.4970***
	(0.0360)	(0.0360)	(0.1064)	(0.1067)
Retained Earnings	-0.0650***	-0.0665***	0.3552***	0.3469***
	(0.0224)	(0.0223)	(0.0852)	(0.0851)
GFC(0/1)	-0.0359	-0.0178	-0.3734***	-0.2898***
	(0.0255)	(0.0257)	(0.0861)	(0.0879)
Covid(0/1)	-0.0267	-0.0184	-0.6041***	-0.5643***
	(0.0366)	(0.0364)	(0.1256)	(0.1256)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,472	21,472
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R^2	0.0675	0.0699	0.184	0.188

Table 8: Robustness: Alternative dividend payout variables

This table reports estimation results for alternative dividend payout variables. The dependent variable is dividend (either *Div/Assets*, *Div/Shares*, or *Div/MVE*). *Div/Assets* is the ratio of cash dividends to total assets (Hoberg et al., 2014), *Div/Shares* is the ratio of cash dividends to the number of shares outstanding (Baker et al., 2016), and *Div/MVE* is the ratio of cash dividends to market value of equity (Desai and Jin, 2011). All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Dividend*					
	Div/Assets		*Div/Shares*		*Div/MVE*	
	(1)	(2)	(3)	(4)	(5)	(6)
Skilled Labor Risk	-0.0007***		-0.0130***		-0.0006***	
	(0.0002)		(0.0032)		(0.0001)	
LN(Skilled Labor Risk)		-0.0036***		-0.0643***		-0.0028***
		(0.0006)		(0.0144)		(0.0003)
Firm Size	0.0001	0.0001	0.1359***	0.1355***	0.0006***	0.0005***
	(0.0004)	(0.0004)	(0.0086)	(0.0086)	(0.0002)	(0.0002)
Market-to-book	0.0021***	0.0022***	-0.0166*	-0.0160*	-0.0017***	-0.0017***
	(0.0005)	(0.0005)	(0.0090)	(0.0090)	(0.0002)	(0.0002)
LN(Firm Age)	0.0075***	0.0074***	0.2199***	0.2190***	0.0033***	0.0032***
	(0.0013)	(0.0013)	(0.0320)	(0.0318)	(0.0008)	(0.0007)
Tangibility	0.0052***	0.0051***	0.1264***	0.1240***	0.0050***	0.0049***
	(0.0016)	(0.0016)	(0.0377)	(0.0377)	(0.0009)	(0.0009)
Profitability	0.1187***	0.1184***	1.7941***	1.7886***	0.0287***	0.0285***
	(0.0118)	(0.0118)	(0.2101)	(0.2102)	(0.0055)	(0.0055)
Cash	-0.0007	-0.0008	-0.0447	-0.0460	0.0036**	0.0036**
	(0.0035)	(0.0035)	(0.0682)	(0.0683)	(0.0016)	(0.0016)
Financial Leverage	-0.0052**	-0.0051**	-0.0605	-0.0582	-0.0008	-0.0007
	(0.0024)	(0.0024)	(0.0547)	(0.0546)	(0.0013)	(0.0013)
Retained Earnings	-0.0014	-0.0015	0.0520	0.0505	-0.0007	-0.0007
	(0.0021)	(0.0021)	(0.0410)	(0.0410)	(0.0009)	(0.0009)
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Observations	21,514	21,514	21,514	21,514	21,514	21,514
Adjusted R^2	0.190	0.192	0.280	0.281	0.111	0.116

Table 9: Robustness: Key human capital risk as a proxy for skill labor risk

This table reports the effect of key human capital risk on corporate dividend payout policy. The dependent variable is dividend (either *Dividend Payout* or *Dividend Payer(0/1)*). All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Dependent Variable: *Dividend*	
	Dividend Payout	*Dividend Payer(0/1)*
	(1)	(2)
	OLS	Probit
Key Human Capital	-0.0508***	-0.3518***
	(0.0195)	(0.0937)
Firm Size	0.0163***	0.2520***
	(0.0052)	(0.0209)
Market-to-book	0.0049	-0.0305
	(0.0056)	(0.0231)
LN(Firm Age)	0.1062***	0.5962***
	(0.0302)	(0.1174)
Tangibility	0.1398***	0.5788***
	(0.0253)	(0.1044)
Profitability	-0.2941*	1.3281**
	(0.1573)	(0.5605)
Cash	0.0262	-0.4528**
	(0.0480)	(0.2042)
Financial Leverage	-0.1465***	-0.5944***
	(0.0331)	(0.1506)
Retained Earnings	-0.0219	0.6831***
	(0.0323)	(0.1472)
Year Fixed Effects	YES	YES
Industry Fixed Effects	YES	YES
Observations	9,805	9,762
Adjusted/Pseudo R^2	0.0689	0.212

Table 10: Skilled labor risk and firm performance

This table reports the effect of skilled labor shortage risk on profitability. The dependent variable is *Return on Assets* in Columns 1 and 2, and *Return on Equity* in Columns 3 and 4. All continuous variables are winsorized at the 1% level. Refer to Appendix A for variable definitions. Standard errors clustered by firm are shown in parentheses, with 1%, 5%, and 10% levels of statistical significance denoted by ***, **, and *, respectively.

	Return on Assets (1)	*Return on Assets* (2)	*Return on Equity* (3)	*Return on Equity* (4)
Skilled Labor Risk	-0.0005*		-0.0018	
	(0.0003)		(0.0013)	
LN(Skilled Labor Risk)		-0.0027**		-0.0102**
		(0.0010)		(0.0050)
Firm Size	-0.0007	-0.0007	0.0240***	0.0239***
	(0.0006)	(0.0006)	(0.0027)	(0.0027)
Market-to-book	0.0253***	0.0253***	0.0385***	0.0386***
	(0.0009)	(0.0009)	(0.0038)	(0.0038)
LN(Firm Age)	0.0030	0.0030	-0.0070	-0.0072
	(0.0025)	(0.0025)	(0.0135)	(0.0134)
Tangibility	-0.0054*	-0.0055*	-0.0038	-0.0043
	(0.0030)	(0.0030)	(0.0149)	(0.0149)
Cash	-0.0138**	-0.0139**	-0.1190***	-0.1189***
	(0.0067)	(0.0067)	(0.0276)	(0.0274)
Financial Leverage	-0.0182***	-0.0181***	0.0783**	0.0786**
	(0.0053)	(0.0053)	(0.0362)	(0.0362)
Retained Earnings	0.0244***	0.0244***	0.0564***	0.0561***
	(0.0041)	(0.0041)	(0.0208)	(0.0208)
Year Fixed Effects	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES
Observations	21,514	21,514	21,514	21,514
Adjusted R^2	0.395	0.395	0.0849	0.0851

Appendices

A Variable definitions

This table provides the definition of the key variables used. Accounting data are from Compustat.

Variable	Definition
Skilled Labor Risk	Number of sentences a firm spend discussing risk associated with skilled labor in the 10-K in a year
Dividend Payout	The ratio of cash dividends (DVC) to net income (NI)
Dividend Payer(0/1)	Set to one in the year a firm pays dividend and zero otherwise; set to zero if missing
Earnings Volatility	Earnings volatility, which equals standard deviation of annual net income (NI)/total assets (AT) over 5-year rolling window. We require a minimum of 3 consecutive non-missing observations
Cash Flow Volatility	Standard deviation of cash flows over 10-year rolling window, we require at least 3 years of observations
Firm Size	Natural logarithm of total book assets (AT)
Market-to-book	Ratio of total book assets (AT) less the book value of common equity (CEQ) plus the total market value of equity (CSHO $\times$ $PRCC_C$) all divided by the total book assets (AT)
LN(Firm Age)	Natural Logarithm of the number of years a firm has been listed in the merged CRSP/Compustat database
Tangibility	Ratio of gross property, plant, and equipment (PPEGT) to total book assets (AT)
Profitability	Ratio of operating income before depreciation (OIBDP) to total book assets (AT)
Cash	Cash and marketable securities (CHE) scaled by total book assets (AT)
Net Cash	Cash and marketable securities (CHE) scaled by net assets (AT-CHE)
Financial Leverage	The ratio of total debt (short (DLC) plus long-term debt (DLTT)) to beginning year total assets (AT)
Retained Earnings	Ratio of retained earnings (RE) over total book assets (AT)