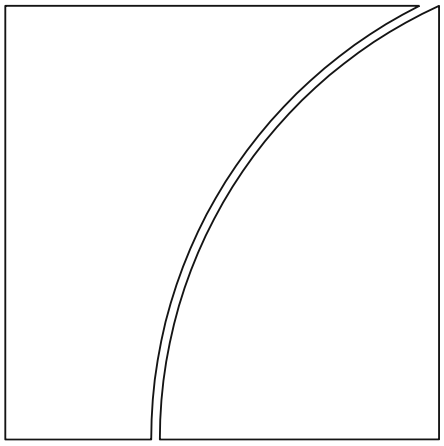

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Corporate payout policy: Are financial firms different?*

Emmanuel Caiazzo[1], Leonardo Gambacorta[2], Tommaso Oliviero[3], Hyun Song Shin[2]

Abstract

It is well documented that financial firms display a larger corporate payout propensity than non-financial firms. By using an international sample of listed firms from advanced economies, we show that this difference vanishes after accounting for heterogeneity among corporations in their financial leverage, stock market liquidity and share-ownership by institutional investors. A theoretical model that builds on Acharya *et al.* (2017) provides a framework to analyze the effect of corporate structure on payout decisions and rationalizes the economic mechanisms behind our empirical results.

Keywords: corporate payout policy, dividends, financial firms, risk-shifting
JEL Classi ication Numbers: G21; G35

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1 Introduction

In friction-less markets, corporate payout policies do not affect the firms' market value (Miller and Modigliani, 1961). However, departing from the perfect market hypotheses and leveraging on insights from this seminal contribution,[1] the literature has highlighted that the firms' choice of distributing or retaining profits will be affected by the underlying motives of their stakeholders and management, and can finally impact its evaluation.[2]

Starting from Fama and French (2001), empirical studies on the determinants of dividend payout choice have focused on the role played by firms' profitability, growth prospect, price-to-book ratio and size, thus neglecting the role of corporate structure and governance. Furthermore, the empirical analysis of Fama and French (2001) only includes non-financial firms in the sample of firms without providing detailed explanations for this choice.[3] The exclusion of financial firms in empirical studies on corporate payout policies has been pursued by a significant strand of the subsequent contributions in the literature (Baker and Wurgler, 2004b,a; DeAngelo *et al.*, 2006; Hoberg and Prabhala, 2008; Denis and Osobov, 2008; Leary and Michaely, 2011; He *et al.*, 2017). In the same vein, a parallel strand of the literature has applied the same segregation principle by investigating the banks' determinants of dividend payout propensity considering them separately from non-financial firms (Abreu and Gulamhussen, 2013; Hirtle, 2014; Forti and Schiozer, 2015; Acharya *et al.*, 2017; Cziraki *et al.*, 2022).

Considering financial and non-financial firms separately provides a valid approach when looking at stylized evidence or specific events such as the Great Financial Crisis. It is well known that financial firms display larger dividend payout propensity than non-financial firms even during crisis time (Floyd *et al.*, 2015; Acharya *et al.*,

[1] From Miller and Modigliani (1961), Section V, page 431: "First, it is important to keep in mind that from the standpoint of dividend policy, what counts is not imperfection *per se* but only imperfection that might lead an investor to have a systematic preference as between a dollar of current dividends and a dollar of current capital gains."

[2] See Allen and Michaely (2003), DeAngelo *et al.* (2009) for a comprehensive review of the literature on corporate payout policy.

[3] "We exclude utilities from the tests to avoid the criticism that their dividend decisions are a

2022). However, from a broader perspective, it still needs to be explored if it is possible to identify (and account for) key heterogeneity in the corporate structure of the two sectors that rationalize the observed difference in their dividend payout propensity.

Although there are reasons to presume that financial firms, particularly banks, are not comparable to other companies (e.g., regulation, capital requirements) and must be treated separately, we take a different perspective in this paper. In particular, we provide a simple theory of dividend payouts that incorporate ingredients related to the ownership and the financial structure that apply to all firms, irrespective of their sector of activity. We then make comparative static considerations to deliver testable implications that we bring to the data. Our goal is to answer the following questions: are financial firms different? What makes financial firms so different regarding the corporate payout policy?

In line with the theoretical predictions, we empirically verify that the probability of being a dividend payer is larger the higher firms' leverage is (a key feature of the financial sector), the higher firms' stock market under-evaluation is, and the lower is the presence of stock-holders in the firm's ownership structure with a longer-term horizon. Interestingly, we find that, when jointly accounting for these factors and other determinants identified in the literature, the statistical difference in corporate payout propensity between financial and non-financial firms vanishes.

The choice of these additional dimensions of heterogeneity among firms in shaping the choice to distribute dividends or not is motivated by theoretical considerations. We consider a model à la Acharya *et al.* (2017) where a leveraged firm decides the dividend payout policy up to a fixed amount of available cash. In the original baseline model, the optimal dividend policy is ruled by the shareholders' propensity to expropriate wealth from creditors (risk-shifting propensity) when the expected future firm's value is low enough. In line with this intuition, Acharya *et al.* (2017) show that low indebtedness, i.e., low probability of default, deters dividend

by-product of regulation. We also exclude financial firms."

payment.[4] We expand this baseline set-up by adding: (i) a discrepancy between the firm's value and the share price (possibly due to informational distance between inside and outside investors); and (ii) the presence of sellers in the share-ownership structure, that is shareholders who desire to sell their shares following the dividend payment (short-term horizon).

The presence of sellers exacerbates the risk-shifting incentive documented in Acharya *et al.* (2017), and this effect is also amplified when the firm's stock market liquidity is poor enough. The intuition lies in the fact that for sellers who are short-term oriented, cash dividends will be superior to retained earnings when the price concession that shareholders bear for the immediate execution of their sales is high (Banerjee *et al.*, 2007).

Following these theoretical insights, we verify the prediction of the model on the determinants of dividend payout propensity. In particular, as mentioned above, we find that the statistical difference between financial and non-financial companies disappears once these additional factors are included in empirical specifications.

We source data from the S&P Capital IQ database, including listed companies from 31 advanced economies from 2005–2018. In the spirit of Fama and French (2001), we differentiate companies between payers and non-payers and study the payout propensity as a function of profitability, investment opportunities and size. Given the cross-country nature of our analysis, we also control for heterogeneity in macroeconomic conditions by including country-year fixed effects in the regression analysis. We measure payers by the occurrence of corporate payout distribution policy in each year. In particular, we define a payer if, in a given year, a company has distributed cash dividends or, alternatively, if it has distributed dividends or has repurchased its shares.

In a preliminary empirical test, we find that, after conditioning on classical Fama-French factors, the payout propensity by financial firms is still larger when compared to non-financial firms. The difference between financial and non-financial firms

[4]The idea that distressed firms tend to exhaust their cash flows through dividend payout finds empirical confirmations in the literature, as for instance in Kanas (2013), Srivastav *et al.* (2014),

persists after the inclusion of further determinants, such as the ratio of earned capital to total equity (a measure of a firm's life-cycle stage as in DeAngelo *et al.* (2006)), and firms' risk (Hoberg and Prabhala, 2008; Kuo *et al.*, 2013). The persistent difference justifies the widespread approach by the literature in not pooling financial and non-financial firms.

Then, we include the variables suggested by our theoretical model in the analysis. We consider the equity ratio over total assets as a (inverse) measure of financial leverage. To measure the distance between the firm's value and its share price, we use the annual share-turnover, which captures how liquid a share is; it has been documented that stock market liquidity influences dividend payout policy and share repurchase decision (Banerjee *et al.*, 2007; Brockman *et al.*, 2008). Finally, we proxy the fraction of holders with the observed fraction of institutional investors in each firm's shareholder base. In our model, the holders can be understood as shareholders not seeking cash payouts in the short run and, consistently, Koijen *et al.* (2023) have recently found a negative role of institutional investors for payout demands (except for private banking groups).

In the empirical specification that includes all the determinants of corporate payout policy (the Fama-French factors, firms' risk, the ratio of earned capital to total equity, equity over total assets, stocks' market liquidity and the fraction of institutional ownership in the firms' shareholder base) we find that the difference between financial and non-financial disappears. This result suggests that after accounting for these additional determinants, being a financial firm does not boost *per se* the probability of being a dividend payer and may be compared to non-financial on the same ground.

The rest of the paper is organized as follows. Section 2 presents the theoretical model. Section 3 describes the sample and shows the estimation results. Section 4 concludes.

Li *et al.* (2017).

2 Theory

The economy consists of a firm operating for two periods. During the initial period, the firm is endowed with c units of capital in cash assets and no-cash risky assets. The risky asset will pay a stochastic return y at the final period. For simplicity, we impose a uniform distribution for the risky asset:

$$y \sim U[0, a] \tag{1}$$

We assume that the firm has liabilities equal to l. The debt contract is hard and the payment l must be due at the final period.

At the initial date, the firm can pay a dividend d up to its cash asset c. The firm defaults if, during the final period, the realization of the risky asset plus the available cash (i.e., the cash c net of the dividend payment d) is lower than the amount of liabilities l. Therefore, the minimum realization of the risky asset such that the firm avoids the default is given by:

$$\tilde{y}(d) = l - c + d$$

.

The dividend payout characterizes the firm's default probability. To make sure that the firm's default probability is well-defined for any d, we assume that $l \in (c, a + c)$. If the firm survives, we assume that the future value of its profits, i.e., the franchise value, is given by V.

The firm's ownership structure consists of a fraction k of shareholders, that we define *sellers*, desiring to sell their shares following the dividend payment at the initial period. The remaining fraction consists of those shareholders, that we define as *holders*, desiring to hold their shares until the end of the economy. The payoff of holders and sellers differ to the extent that the market price of shares diverge from the true value. We interpret the gap between the true and the market value of the firm' shares as the market liquidity of the firm' stocks. Our interpretation

is justified by the relevance of the market liquidity in terms of propensity to pay dividends documented in the literature (Banerjee *et al.*, 2007). Thus, let H and S be the payoffs of holders and sellers, respectively:

$$H(d) = d + E[y - \tilde{y}|y \geq \tilde{y}] \times \text{Prob}(y \geq \tilde{y}) + V \times \text{Prob}(y \geq \tilde{y}) \tag{2}$$

$$S(d) = d + \lambda\Big[E[y - \tilde{y}|y \geq \tilde{y}] \times \text{Prob}(y \geq \tilde{y}) + V \times \text{Prob}(y \geq \tilde{y})\Big] \tag{3}$$

Where $\lambda \in (0, 1)$ measures the firm' stocks market liquidity. The higher λ, the lower the price concession that sellers bear for an immediate execution of their sales.

The firm's management maximizes the payoff of all shareholders. Thus, the firm's dividend payout policy maximizes:

$$\begin{aligned} W(d) &= (1-k)H(d) + kS(d) \\ W(d) &= d + \Big[1 - k\Big(1 - \lambda\Big)\Big]\Big[\frac{a - \tilde{y}(d)}{2} + V\Big]\Big(\frac{a - \tilde{y}(d)}{a}\Big) \end{aligned} \tag{4}$$

Proposition 1. *Let $d^\star$ be the dividend payout policy maximizing W. Thus, $d^\star$ satisfies:*

$$d^\star = \begin{cases} c & \text{if} \quad V < V^\star \\ 0 & \text{if} \quad V \geq V^\star \end{cases} \tag{5}$$

Where:

$$V^\star = a\frac{k(1-\lambda)}{1 - k(1-\lambda)} + l - \frac{c}{2}$$

Proof. Notice that $W(d)$ is a convex function of d. Therefore, the maximum is either at $d = 0$ or at $d = c$. The point of max is at $d = c$ if and only if $W(0) < W(c)$.

From (4) follows that:

$$W(0) < W(c) \iff V < V^\star$$

□

Equation (5) states that the firm's optimal dividend payout is a bang-bang policy: either the dividends constitute the entire cash or the firm pays no dividends at all. The firm is a dividend payer when the franchise value is sufficiently large. Intuitively, the franchise value defines the value of remaining solvent. When the value of future profits is low, shareholders prefer to detach resources from the company.

Since the condition $V < V^\star$ is more likely to hold when $V^\star$ is high, variables having a positive impact on $V^\star$ are also variables having a positive impact on the firm's probability of being a dividend payer. Three variables embedded in $V^\star$ are of interest for our analysis: l, k and λ. $V^\star$ is increasing in l since a high level of debt reduces the company's probability of success regardless of the dividend payout policy. Thus, when the firm's indebtedness l increases, the expected franchise value decreases and the shareholders' incentive to divert funds from the firm boosts. Furthermore, a raise in the market liquidity λ depresses $V^\star$ since the higher the liquidity, the more the interests of the sellers are aligned with those of the holders. Finally, an increase in the fraction of sellers k has a similar effect. Since sellers sell their shares at the market price, from their point of view, the firm's franchise value is lower than the actual one ($\lambda V < V$), meaning that they always have more incentive than holders to seek out dividends.

In summary, from $V^\star$, we get the following testable predictions:

1. The higher a firm's indebtedness l, the higher the probability that the firm is a dividend payer:

2. The higher a firm's liquidity λ, the lower the probability that the firm is a dividend payer

3. The higher the fraction of sellers k, the higher the probability that the firm is a dividend payer

In the next section, we test the above predictions. We identify measures of the theoretical parameters in the data and account for them in analyzing the determinants of corporate payout policies, jointly with other classical factors analyzed in the literature.

3 Empirical Analysis

3.1 Data description and summary statistics

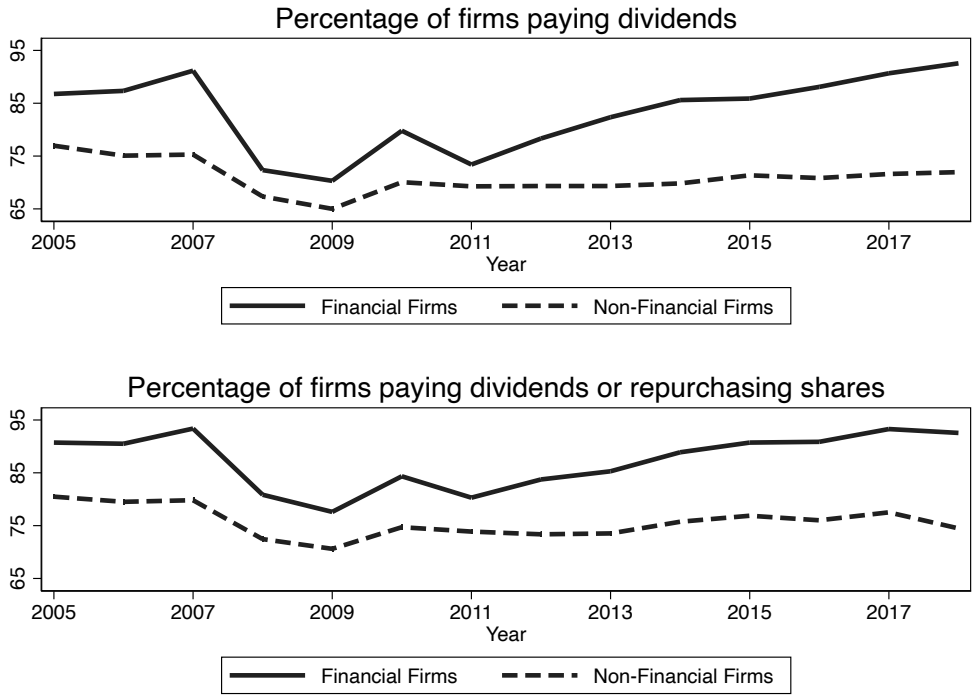
Data are taken from the S&P Capital IQ database, including financial firms (banks and insurance companies) and non-financial firms over 2005–18.[5] Our sample consists of 2,724 companies from 31 countries.[6] We consider balance sheet data at annual frequency and distinguish, in each year, between payers and not payers. We consider two distinct measures. First, a payer is a firm that pays cash dividends in a year; alternatively, a payer either pays cash dividends in a year or repurchases its shares (or both). The two variables are highly correlated as the fraction of firms that engaged in both distribution policies in the same year is 36%. Furthermore, as we will show below, dividend distribution is the most common payout policy as the fraction of share re-purchasers is around 32% in our sample, against 70% of dividend payers.

The upper panel of Figure 1 shows the share of dividend payers among firms in the financial sector (financial firms) and other firms in any sector (non-financial firms). The average fraction of dividend payers among financial firms is significantly larger than the corresponding fraction of payers in non-financial firms (on average 83.7% vs 70.8% in the period 2005–18). This was also true in the years around the Great Financial Crisis (2008–09), although the difference shrank in turbulent times.

[5] We exclude years from 2019 onward because, as for the profit generated in 2019, we observe a sharp drop in the fraction of dividend payers due to the spread of the Covid-19 pandemic. This is especially true among banks headquartered in the euro area, possibly reflecting financial institutions' adherence to the recommendations of regulators and supervisors on the suspension of dividend distribution (Gambacorta *et al.*, 2023; Dautović *et al.*, 2023).

[6] The sample is small given that we are ex-ante selecting companies for which all variables used in the empirical analysis are observed in the sample period. This naturally tilts the sample towards larger listed firms.

Figure 1: Dividend payouts: are financial firms different?



Notes: In the upper panel, we report the percentage of firms that distributed dividends in each given year. In the lower panel, we report the percentage of firms that either distributed dividends or repurchased shares (or both) in each given year.

The pattern is confirmed when defining a payer considering dividend and share repurchases (lower panel of Figure 1). This stylized evidence aligns with previous studies that have underlined the larger payout propensity of financial firms; our analysis will confirm that the difference in the average fraction of payers between financial and non-financial firms is still positive and significant once typical dividend payout determinants are accounted for.

About the empirical literature that has analyzed empirically the payout policies of firms, and according to the predictions we stated in the theoretical section, we identify a set of determinants of corporate payout policy. Table 1 provides summary statistics of the variables used in the empirical analysis.

In line with evidence in Figure 1, financial firms display a larger share of dividend payers when compared to non-financial firms, both considering cash dividends and share repurchases. Looking at the payouts, financial firms also display lower average

Table 1: Summary Statistics: Financial vs Non-financial

	Non-Financial firms	Financial firms
Payer (dividends 0/1)	0.708	0.837
	(0.455)	(0.370)
Payer (div.+rep. 0/1)	0.755	0.877
	(0.430)	(0.329)
Payout (div. to book)	0.0621	0.0388
	(0.817)	(0.0544)
Payout (div.+rep. to book)	0.0810	0.0537
	(0.923)	(0.0871)
Return on equity	0.0722	0.0862
	(0.250)	(0.121)
Log(Market Capitalization)	6.755	7.844
	(2.277)	(2.183)
Price-to-book	2.409	1.234
	(2.537)	(1.344)
Growth rate of total assets	0.0686	0.0487
	(0.254)	(0.190)
Retained Earnings over Equity	0.0166	0.401
	(1.985)	(0.770)
Idiosyncratic risk	2.354	1.634
	(1.680)	(1.214)
Systematic risk	0.727	0.808
	(0.544)	(0.676)
Equity over Total Assets	0.486	0.168
	(0.208)	(0.206)
Log(share turnover)	-1.874	-2.210
	(1.239)	(1.486)
Institutional ownership	0.318	0.282
	(0.266)	(0.259)
Observations	24,328	2,971

Notes: The table shows average values for all companies (non-financial vs financial) in our sample period (2005-2018); standard deviation in parenthesis. *Payer (dividends 0/1)* is a dummy variable that takes value equal to one if a company distributed dividends in a given year. *Payer (div.+rep. 0/1)* is a dummy variable that takes value equal to one if a company distributed dividends or repurchased its shares in a given year. *Payout (div. to book)* is the ratio of dividends paid to book value of equity. *Payout (div.+rep. to book)* is the ratio of dividends paid plus share repurchase to book value of equity. *ROE* is return on equity. *Log(Market Capitalization)* is the log of market value of equity. return on equity. *Price-to-book* is the ratio of the market capitalization to book equity. *Growth rate of total assets* is the yearly growth rate of total assets. *Retained Earnings over Equity* is the ratio of retained earnings over book equity. *Idiosyncratic risk* is the standard deviation of residuals from a CAPM regression run for each firm-country-year that use daily returns and *Systematic risk* is the standard deviation of predicted returns from the same regression. *Equity over Total Assets* is the ratio of book equity to total assets. *Log(share turnover)* is the log of the ratio between the average number of shares traded over a year and outstanding shares. *Institutional ownership* is the fraction of shares in the end of institutional investors.

values of dividend payouts (cash dividends over book value of equity) and total payout (the value of dividends plus share repurchases over book value of equity). Financial firms also display larger ROE and market capitalization. Furthermore, they show a lower price-to-book ratio and lower growth rate of total assets, due to the smaller business opportunities of the financial sector relative to the non-financial

sector in the analyzed period, that also contains the Great Financial Crisis. Financial firms are presumably more mature, so they display a larger accumulated share of retained earnings over total assets and, given their business model, significantly larger financial leverage as measured by the equity over total assets.

We measure firms' risk starting from annual stock market returns (source: Eikon Thomson Reuters). Our analysis will consider idiosyncratic risk and systematic risk measures separately. In line with Hoberg and Prabhala (2008), who analyze the role of risk for the dividend payout policies of US companies, we include these two determinants of dividend payout propensity in the empirical analysis. Summary statistics show that financial firms display a relatively larger systematic risk component but lower idiosyncratic risk. Finally, we find that market liquidity, as measured by the logarithm of yearly share turnover, is lower for financial firms and that these display a lower share of institutional owners. However, this last difference is not large (28.2% vs 31.8%).

3.2 Empirical Results

In this section, we model the probability that a firm will pay dividends. In particular, we use the following linear probability model:

$$D_{ict} = \beta \cdot Financial\ Firm_i + \gamma X_{it} + \lambda_{ct} + \epsilon_{ict} \tag{6}$$

Where D_{it} equals 1 if the firm i at time t is a payer and 0 otherwise. *Financial Firm* is a dummy variable that takes a value equal to 1 if a company operates in the financial sector (banks plus insurance companies) and zero otherwise. In the version of Fama and French (2001), the vector X_{it} includes various observable characteristics, including the four time-varying determinants of the likelihood of paying dividends as outlined in the previous section: 1) the return on equity, 2) the growth rate of total assets; 3) the log of market capitalization, and 4) the price-to-book ratio. The model also includes the country-year fixed effects (λ_{tc}) that account for country-

specific time-varying factors (e.g., GDP annual growth or dividend taxation).

Table 2: Payout probability: Financial vs Non-financial

	(I)	(II)	(III)	(IV)
	Payer (div. 0/1)		Payer (div.+rep. 0/1)	
Financial Firm	0.036***	0.026***	0.026**	0.016**
	(0.013)	(0.010)	(0.011)	(0.008)
Return on equity	0.683***	0.517***	0.642***	0.475***
	(0.014)	(0.015)	(0.014)	(0.015)
Log(Market Capitalization)	0.066***	0.053***	0.063***	0.045***
	(0.002)	(0.002)	(0.002)	(0.002)
Price-to-book	-0.014***	-0.009***	-0.014***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
Growth rate of total assets	-0.117***	-0.095***	-0.090***	-0.070***
	(0.012)	(0.011)	(0.011)	(0.011)
Retained Earnings over Equity		0.009***		0.011***
		(0.002)		(0.002)
Idiosyncratic risk		-0.059***		-0.061***
		(0.003)		(0.002)
Systematic risk		-0.093***		-0.065***
		(0.007)		(0.006)
Observations	27,299	27,299	27,299	27,299
R-squared	0.355	0.403	0.357	0.407
Country-Year FE	Y	Y	Y	Y

Notes: The table shows estimation results of equation (6). In columns I and II the dependent variable is *Payer (dividends 0/1)* , a dummy variable that takes value equal to one if a company distributed dividends in a given year. In columns III and IV, the dependent variable is *Payer (div.+rep. 0/1)*, a dummy variable that takes value equal to one if a company distributed dividends or repurchased its shares in a given year. *Financial Firm* is a dummy variable that takes value equal to one for companies that belong to the financial industry. *ROE* is return on equity. *Log(Market Capitalization)* is the log of market value of equity. return on equity. *Price-to-book* is the ratio of the market capitalization to book equity. *Growth rate of total assets* is the yearly growth rate of total assets. *Retained Earnings over Equity* is the ratio of retained earnings over book equity. *Idiosyncratic risk* is the standard deviation of residuals from a CAPM regression run for each firm-country-year that use daily returns and *Systematic risk* is the standard deviation of predicted returns from the same regression.
Standard errors (in parenthesis) are clustered at sector-year level and are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2 presents estimation results of equation (6) that considers as explanatory variables the Fama-French factors. The outcome variable in column (I) identifies dividend payers; in column (III), we consider dividends and share repurchases jointly to define a payer. In both cases, the estimated coefficient β is positive and statistically significant; the corresponding marginal effect tells that, once conditioning on fixed effects, financial firms have a probability of being a dividend payer that is 3.6 percentage points larger than that of other companies. This confirms the graphical analysis in Figure 1, after conditioning on ROE, growth opportunities, as proxied by both the price-to-book ratio and the annual growth rate of total assets, the log of the market capitalization, and country-year fixed effects. Consistently, the estimated β

coefficient in column (III) confirms that financial firms have a probability of being a payer that is 2.6 percentage points larger than others.

In line with the theoretical predictions, payers have higher profitability, as measured by their ROE, and are larger, as measured by the logarithm of market capitalization. The relationship between the price-to-book ratio and the growth rate of total assets with the probability of distributing dividends is negative, in line with the hypothesis that growing firms are more likely to retain profits inside the firm than distributing them.

In columns (II) to (IV), we include further determinants of payout probability as identified in the literature. DeAngelo *et al.* (2006) show that more mature firms have larger payouts; they use the retained earnings ratio over equity to measure a firm's life-cycle stage. In line with this approach, we enlarge the set of observable variables X_{it} in the regression equation and include the ratio of retained earnings over total equity as an additional determinant of dividend payout. Hoberg and Prabhala (2008) and Kuo *et al.* (2013) find that the relationship between risk and dividend policy is negative. Riskier firms have a lower propensity to distribute dividends, conditioning on other factors; Pástor and Pietro (2003) argue that this is true because risk implies more uncertain future cash flows or growth prospects (Pástor and Pietro, 2003), which ultimately provides an incentive to retain profits. Therefore, we consider the idiosyncratic and systematic components of firms' risk. Estimates have expected signs. The coefficient attached to retained earnings over equity is positive, while the coefficients attached to risk factors are negative. Interestingly, the inclusion of these variables only marginally affects the coefficients attached to the financial firm dummy, which remains positive and statistically significant.

We now turn to a more direct test of our theory: we allow dividend policy to depend upon leverage, market liquidity and ownership structure. In Table 3, we start from the specification in column (II) of Table 2 and then add sequentially each additional regressor. In column (I) of Table 3, we augment the specification by including equity over total assets. As predicted by the model (testable implication

1), the larger the capitalization (lower leverage), the less the probability of being a payer. Interestingly, the β coefficient attached to the Financial firm dummy weakens in size and statistical significance with respect to the initial model after accounting for financial leverage. In column (II) of Table 3, we augment the specification by market liquidity as measured by the log of share turnover. In line with testable prediction 2, larger liquidity is associated with a smaller probability of dividend payout. As in the previous specification, the β coefficient attached to the Financial firm dummy weakens in terms of size and statistical significance with respect to the initial model. In column (III) of Table 3, we augment the initial specification by adding the share of institutional owners in each company year as a regressor. To the extent that institutional investors are relatively more long-term oriented, column (III) displays results in line with theoretical prediction 3. A larger share of institutional owners is negatively associated with dividend payout probability.

When adding all three regressors together (column IV), the β coefficient shrinks in size and becomes not statistical significant. This result suggests that, once accounting for the above mentioned dimensions of heterogeneity, the (statistical) difference between financial and non-financial firms disappears. In other words, taken all together, considering these determinants is sufficient to conclude that financial firms are not different from non-financial in their dividend payout propensity.

In Table 4, we repeat the same strategy as in Table 3 but consider both dividends and share repurchases in the definition of a payer. Our starting point is the specification in column (IV) of Table 2. Results in column (I) show that equity over total assets has the expected negative sign; interestingly, after the inclusion of this additional factor, the coefficient attached to the financial dummy already shrinks in size and becomes noisily estimated. A similar result occurs in column (II), where the log of share turnover is included in place of equity over total assets. In column (III), instead, accounting for institutional ownership only marginally affects the point estimate and the precision of the coefficient attached to the financial firm dummy, and, consistently, this factor does not have a statistically significant

Table 3: Dividend payout including additional factors

	(I)	(II)	(III)	(IV)
	Payer (div. 0/1)			
Financial Firm	0.018*	0.015	0.023**	0.004
	(0.010)	(0.009)	(0.009)	(0.010)
Return on equity	0.516***	0.510***	0.517***	0.509***
	(0.015)	(0.015)	(0.015)	(0.015)
Log(Market Capitalization)	0.052***	0.055***	0.054***	0.055***
	(0.002)	(0.002)	(0.002)	(0.002)
Price-to-book	-0.009***	-0.008***	-0.009***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)
Growth rate of total assets	-0.095***	-0.088***	-0.095***	-0.088***
	(0.011)	(0.011)	(0.011)	(0.011)
Retained Earnings over Equity	0.009***	0.008***	0.009***	0.008***
	(0.002)	(0.002)	(0.002)	(0.002)
Idiosyncratic risk	-0.059***	-0.060***	-0.060***	-0.060***
	(0.003)	(0.003)	(0.003)	(0.003)
Systematic risk	-0.094***	-0.063***	-0.090***	-0.063***
	(0.007)	(0.007)	(0.007)	(0.007)
Equity over Total Assets	-0.029*			-0.033*
	(0.017)			(0.017)
Log(share turnover)		-0.025***		-0.025***
		(0.002)		(0.003)
Institutional ownership			-0.049***	-0.017
			(0.014)	(0.015)
Observations	27,299	27,299	27,299	27,299
R-squared	0.404	0.407	0.404	0.407
Country-Year FE	Y	Y	Y	Y

Notes: The table shows estimation results of equation (6). The dependent variable is *Payer (dividends 0/1)*, a dummy variable that takes value equal to one if a company distributed dividends in a given year. *Financial Firm* is a dummy variable that takes value equal to one for companies that belong to the financial industry. *ROE* is return on equity. *Log(Market Capitalization)* is the log of market value of equity. return on equity. *Price-to-book* is the ratio of the market capitalization to book equity. *Growth rate of total assets* is the yearly growth rate of total assets. *Retained Earnings over Equity* is the ratio of retained earnings over book equity. *Idiosyncratic risk* is the standard deviation of residuals from a CAPM regression run for each firm-country-year that use daily returns and *Systematic risk* is the standard deviation of predicted returns from the same regression. *Equity over Total Assets* is the ratio of book equity to total assets. *Log(share turnover)* is the log of the ratio between the average number of shares traded over a year and outstanding shares. *Institutional ownership* is the fraction of shares in the end of institutional investors. Standard errors (in parenthesis) are clustered at sector-year level and are reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

impact on payout probability. Finally, once jointly accounting for all three additional factors, the statistical difference between financial and non-financial firms in payout probability becomes insignificant in magnitude and statistical significance. Notice that, in this last specification, the coefficient attached to institutional ownership becomes positive and statistically significant. This may be related to the fact that share repurchases are more common for financial firms. For those, institutional owners seem to behave contrary to other firms in shaping corporate payouts given the large presence of mutual funds among institutional owners (Harris *et al.*, 2015;

Mücke, 2023).

Table 4: Payout probability including additional factors

	(I)	(II)	(III)	(IV)
	Payer (div. + rep 0/1)			
Financial Firm	0.009	0.007	0.017**	0.001
	(0.009)	(0.008)	(0.008)	(0.009)
Return on equity	0.474***	0.470***	0.475***	0.469***
	(0.015)	(0.015)	(0.015)	(0.015)
Log(Market Capitalization)	0.045***	0.047***	0.045***	0.046***
	(0.002)	(0.002)	(0.002)	(0.002)
Price-to-book	-0.008***	-0.007***	-0.008***	-0.008***
	(0.001)	(0.001)	(0.001)	(0.001)
Growth rate of total assets	-0.070***	-0.065***	-0.070***	-0.064***
	(0.011)	(0.011)	(0.011)	(0.011)
Retained Earnings over Equity	0.011***	0.010***	0.011***	0.010***
	(0.002)	(0.002)	(0.002)	(0.002)
Idiosyncratic risk	-0.061***	-0.062***	-0.061***	-0.061***
	(0.002)	(0.002)	(0.002)	(0.002)
Systematic risk	-0.065***	-0.042***	-0.065***	-0.043***
	(0.006)	(0.007)	(0.006)	(0.007)
Equity over Total Assets	-0.025			-0.029*
	(0.016)			(0.016)
Log(share turnover)		-0.019***		-0.021***
		(0.002)		(0.002)
Institutional ownership			0.008	0.035***
			(0.012)	(0.013)
Observations	27,299	27,299	27,299	27,299
R-squared	0.407	0.409	0.407	0.410
Country-Year FE	Y	Y	Y	Y

Notes: The table shows estimation results of equation (6). The dependent variable is *Payer (div.+rep. 0/1)*, a dummy variable that takes value equal to one if a company distributed dividends or repurchased its shares in a given year. *Financial Firm* is a dummy variable that takes value equal to one for companies that belong to the financial industry. *ROE* is return on equity. *Log(Market Capitalization)* is the log of market value of equity. return on equity. *Price-to-book* is the ratio of the market capitalization to book equity. *Growth rate of total assets* is the yearly growth rate of total assets. *Retained Earnings over Equity* is the ratio of retained earnings over book equity. *Idiosyncratic risk* is the standard deviation of residuals from a CAPM regression run for each firm-country-year that use daily returns and *Systematic risk* is the standard deviation of predicted returns from the same regression. *Equity over Total Assets* is the ratio of book equity to total assets. *Log(share turnover)* is the log of the ratio between the average number of shares traded over a year and outstanding shares. *Institutional ownership* is the fraction of shares in the end of institutional investors.
Standard errors (in parenthesis) are clustered at sector-year level and are reported in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

As a final test, we estimate the full-fledged specification(s) above and analyze the determinants of payouts focusing on actual amounts distributed rather than the distribution propensity. We use two measures, the dividend to book ratio, or the sum of dividends and share repurchases over the book value of equity. We use Tobit models for estimation as the dependent variables are left-censored at zero. The results, presented in Table A1 in the Appendix, show that financial firms exhibit larger dividend payouts when accounting for typical determinants of

payout propensity. However, this difference becomes not statistically significant upon including financial leverage, share-turnover and institutional ownership among the regressors. Similar evidence is found when we use the total corporate payout (dividends plus share repurchases over book equity) as an outcome variable. These latter results confirm that, after accounting for the additional factors highlighted, the difference between financial and non-financial firms also vanishes at the extensive margin of the analysis.

4 Conclusions

Following the seminal paper by Fama and French (2001) and the approach by subsequent empirical studies on corporate payout propensity, financial firms should be considered intrinsically different from non-financial companies, and therefore excluded them from the analyses.

This paper revisits this approach, aiming to compare financial and non-financial firms on equal footing. First, we develop a theoretical framework suggesting that the combined effects of leverage, market under-evaluation and ownership structure play a significant role in explaining the propensity to pay dividends. Second, we test the model's predictions using data for listed firms headquartered in 31 countries. Our findings reveal that a significant larger percentage of financial firms pay dividends controlling only for the typical determinants of being a payer. However, this difference vanishes when accounting the additional determinants considered in our theory. Furthermore, the difference is not statistically significant when considering corporate payouts, suggesting that our theoretical insights are also applicable at the extensive margin of the corporate payout analysis.

From a policy perspective, our results on the determinants of financial firms' dividend payout also contribute to the current debate on prudential regulation. One policy implication of our findings is that regulatory policies aimed at increasing the capital base of financial firms can structurally reduce their higher payout propensity. Moreover, policy recommendations encouraging financial firms to refrain from

distributing dividends could be particularly impactful when the firms exhibit low price-to-book ratios and reduced stock market liquidity.

References

Abreu, J. F. and Gulamhussen, M. A. (2013). Dividend payouts: Evidence from us bank holding companies in the context of the financial crisis. *Journal of Corporate Finance*, **22**, 54–65.

Acharya, V. V., Gujral, I., Kulkarni, N. and Shin, H. S. (2022). Dividends and bank capital in the global financial crisis of 2007–2009. *Journal of Financial Crises*, **4** (2), 1–39.

—, Le, H. T. and Shin, H. S. (2017). Bank capital and dividend externalities. *The Review of Financial Studies*, **30** (3), 988–1018.

Allen, F. and Michaely, R. (2003). Payout policy. In *Handbook of the Economics of Finance*, vol. 1, Elsevier, pp. 337–429.

Baker, M. and Wurgler, J. (2004a). Appearing and disappearing dividends: The link to catering incentives. *Journal of Financial Economics*, **73** (2), 271–288.

— and — (2004b). A catering theory of dividends. *The Journal of Finance*, **59** (3), 1125–1165.

Banerjee, S., Gatchev, V. A. and Spindt, P. A. (2007). Stock market liquidity and firm dividend policy. *Journal of Financial and Quantitative Analysis*, **42** (2), 369–397.

Brockman, P., Howe, J. S. and Mortal, S. (2008). Stock market liquidity and the decision to repurchase. *Journal of Corporate Finance*, **14** (4), 446–459.

Cziraki, P., Laux, C. and Lóránth, G. (2022). Understanding bank payouts during the crisis of 2007–2009. *Review of Corporate Finance Studies*, p. cfac015.

Dautović, E., Gambacorta, L. and Reghezza, A. (2023). *Supervisory policy stimulus: evidence from the euro area dividend recommendation*. BIS Working Papers 1085.

DeAngelo, H., DeAngelo, L. and Skinner, D. J. (2009). Corporate payout policy. *Foundations and Trends in Finance*, **3**, 95–287.

—, — and Stulz, R. M. (2006). Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial Economics*, **81** (2), 227–254.

Denis, D. J. and Osobov, I. (2008). Why do firms pay dividends? international evidence on the determinants of dividend policy. *Journal of Financial Economics*, **89** (1), 62–82.

Fama, E. F. and French, K. R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay? *Journal of Financial Economics*, **60** (1), 3–43.

Floyd, E., Li, N. and Skinner, D. J. (2015). Payout policy through the financial crisis: The growth of repurchases and the resilience of dividends. *Journal of Financial Economics*, **118** (2), 299–316.

Forti, C. and Schiozer, R. F. (2015). Bank dividends and signaling to information-sensitive depositors. *Journal of Banking and Finance*, **56**, 1–11.

Gambacorta, L., Oliviero, T. and Shin, H. S. (2023). Low price-to-book ratios and bank dividend payouts: economic policy implications. *Economic policy*, **38** (115), 675–701.

Harris, L. E., Hartzmark, S. M. and Solomon, D. H. (2015). Juicing the dividend yield: Mutual funds and the demand for dividends. *Journal of Financial Economics*, **116** (3), 433–451.

He, W., Ng, L., Zaiats, N. and Zhang, B. (2017). Dividend policy and earnings

management across countries. *Journal of Corporate Finance*, **42**, 267–286.

Hirtle, B. (2014). Bank holding company dividends and repurchases during the financial crisis. *FRB of New York Staff Report*, (666).

Hoberg, G. and Prabhala, N. R. (2008). Disappearing dividends, catering, and risk. *The Review of Financial Studies*, **22** (1), 79–116.

Kanas, A. (2013). Bank dividends, risk, and regulatory regimes. *Journal of Banking and Finance*, **37** (1), 1–10.

Koijen, R. S. J., Richmond, R. J. and Yogo, M. (2023). Which investors matter for equity valuations and expected returns? *Review of Economic Studies*.

Kuo, J.-M., Philip, D. and Zhang, Q. (2013). What drives the disappearing dividends phenomenon? *Journal of Banking and Finance*, **37** (9), 3499–3514.

Leary, M. T. and Michaely, R. (2011). Determinants of dividend smoothing: Empirical evidence. *The Review of Financial Studies*, **24** (10), 3197–3249.

Li, K., Lockwood, J. and Miao, H. (2017). Risk-shifting, equity risk, and the distress puzzle. *Journal of Corporate Finance*, **44**, 275–288.

Miller, M. H. and Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *the Journal of Business*, **34** (4), 411–433.

Mücke, C. (2023). *Bank Dividend Restrictions and Banks' Institutional Investors*. SAFE Working Paper 392.

Pástor, L. and Pietro, V. (2003). Stock valuation and learning about profitability. *The Journal of Finance*, **58** (5), 1749–1789.

Srivastav, A., Armitage, S. and Hagendorff, J. (2014). Ceo inside debt holdings and risk-shifting: Evidence from bank payout policies. *Journal of Banking and Finance*, **47**, 41–53.

A Online appendix

Table A1: Determinants of corporate payout

	(I)	(II)	(III)	(IV)
	Payout (div.)		Payout(div.+rep.)	
Financial Firm	0.043*	-0.022	0.048**	-0.018
	(0.023)	(0.014)	(0.022)	(0.013)
Return on equity	1.239***	1.221***	1.005***	0.986***
	(0.479)	(0.470)	(0.327)	(0.320)
Log(Market Capitalization)	0.016***	0.017***	0.012***	0.010***
	(0.003)	(0.003)	(0.003)	(0.004)
Price-to-book	0.018***	0.018***	0.046***	0.045***
	(0.006)	(0.006)	(0.012)	(0.012)
Growth rate of total assets	-0.248**	-0.245**	-0.223***	-0.219***
	(0.100)	(0.099)	(0.074)	(0.072)
Retained Earnings over Equity	0.157	0.158	0.122*	0.125*
	(0.097)	(0.097)	(0.068)	(0.069)
Idiosyncratic risk	-0.128**	-0.127**	-0.123**	-0.121**
	(0.059)	(0.059)	(0.052)	(0.051)
Systematic risk	-0.028	0.001	-0.001	0.015
	(0.019)	(0.031)	(0.028)	(0.036)
Equity over Total Assets		-0.176**		-0.202**
		(0.086)		(0.083)
Log(share turnover)		-0.025**		-0.018**
		(0.012)		(0.009)
Institutional ownership		-0.015		0.026
		(0.022)		(0.018)
Observations	27,299	27,299	27,299	27,299
R-squared	0.254	0.257	0.232	0.235
Country-Year FE	Y	Y	Y	Y

Notes: The table shows estimation results of equation from Tobit regressions. In columns I and II, the dependent variable is *Payout (div. to book)*, the ratio of dividends paid to book value of equity. In columns III and IV, the dependent variable is *Payout (div.+rep. to book)*, the ratio of dividends paid plus share repurchase to book value of equity. *Financial Firm* is a dummy variable that takes value equal to one for companies that belong to the financial industry. *ROE* is return on equity. *Log(Market Capitalization)* is the log of market value of equity. return on equity. *Price-to-book* is the ratio of the market capitalization to book equity. *Growth rate of total assets* is the yearly growth rate of total assets. *Retained Earnings over Equity* is the ratio of retained earnings over book equity. *Idiosyncratic risk* is the standard deviation of residuals from a CAPM regression run for each firm-country-year that use daily returns and *Systematic risk* is the standard deviation of predicted returns from the same regression. *Equity over Total Assets* is the ratio of book equity to total assets. *Log(share turnover)* is the log of the ratio between the average number of shares traded over a year and outstanding shares. *Institutional ownership* is the fraction of shares in the end of institutional investors.
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