Do dividend policies of privately held firms follow a life cycle

DO DIVIDEND POLICIES OF PRIVATELY HELD FIRMS FOLLOW A LIFE CYCLE?

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Abstract

We investigate whether the dividend policies of privately held firms follow a predictable pattern that parallels their life cycles. Our analyses are based on a large sample of 113,599 Belgian privately held firms with 666,135 firm-year observations that cover the period from 2005 to 2018. We find that as the retained earnings of privately held firms increase, they are more likely to pay dividends and to pay higher amounts. We find a significant effect of retained earnings on dividend policy in a subsample of established firms, but not in a subsample of young firms. Firms are also more likely to initiate (omit) a dividend as their retained earnings increase (decrease) over time. Overall, our results support the life cycle theory in the context of privately held firms.

Keywords: Dividend policy, Life cycle, Privately held firms, Legal restriction on dividend payouts, Belgium

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1. Introduction

A dividend policy plays a crucial role in the investment and finance decisions of firms and their valuations (e.g., Allen and Michaely 2003; Farre-Mensa, Michaely, and Schmalz 2014). Many studies have investigated the dividend policies of listed firms (Habib and Hasan 2019). However, we still know relatively little about the dividend policies of privately held firms, even though they represent a majority of the economy (Berzins, Bøhren, and Stacescu 2018, 2019; Hernández-Cánovas and Koëter-Kant 2011; Michaely and Roberts 2011; Rommens, Cuyvers, and Deloof 2012). Furthermore, there has been a strong decline in the number of listed firms, especially in the US (e.g., Doidge, Karolyi, and Stulz 2017) but also in other developed countries.[1]

Typically, privately held firms pay dividends less frequently and for less than listed firms (Michaely and Roberts 2012; Rommens, Cuyvers, and Deloof 2012). However, many of them do pay dividends regularly (see, e.g., Berzins, Bøhren, and Stacescu 2018, 2019; Michiels et al. 2015; Poza 2009). This is remarkable since taxes make it costly for firms to pay dividends. Furthermore, the dividends of listed firms can be a signal that mitigates asymmetric information with outside investors. Firms can also use them as a tool to reduce agency conflicts between insiders and outside investors. However, privately held firms typically have few or no outside investors. Asymmetric information and agency problems between insiders and outsiders are, therefore, less likely to affect their dividends.

In this paper, we contribute to the scarce literature on the dividend policies of privately held firms and contribute in general to the literature on the dividend puzzle (Black 1976), which keeps attracting research attention from scholars. According to Fisher Black, "the harder we look at the dividends picture, the more it seems like a puzzle, with pieces that just do not fit

[1] The number of listed domestic firms in the US has declined from a peak of 8,090 n 1996 to 4,397 in 2018. For all OECD countries, it declined from 26,458 companies in 2007 to 22,702 in 2018 (source: https://data.worldbank.org).

together" (Black 1976, 5). This puzzle is still unsolved and even more so in the context of privately held firms. Recent work has shown that dividends are an important source of cash for the investors of privately held firms (Berzins, Bøhren, and Stacescu 2019; Michiels et al. 2015; Rommens, Cuyvers, and Deloof 2012). Shares of privately held firms are, arguably, less liquid than shares of listed firms (Berzins, Bøhren, and Stacescu 2018, 2019; Michaely and Roberts 2012). Due to illiquidity, investors of privately held firms prefer dividends over capital gains, especially when holding a lower equity stake (Berzins, Bøhren, and Stacescu 2018, 2019). This preference highlights the increased importance of paying dividends to attract minority investors and to build a "reputation of fairness" among investors of privately held firms (Berzins, Bøhren, and Stacescu 2018; 2019). Empirical studies have shown that dividends are not irrelevant but count as a complex financing decision for firms, which is in contrast to the argument of Modigliani and Miller's (1958) dividend irrelevance theorem.

The life cycle theory generally refers to the changes in firms' financial policies as they progress from young (start-up) to more established stages (Dickinson 2011; Faff et al. 2016). More established firms are expected to be more likely to pay dividends compared to young firms that face more investment opportunities under resource constraints. As such, more established firms often have greater possibilities of paying dividends due to higher profitability and fewer investment projects. DeAngelo, DeAngelo, and Stulz (2006) test the dividend life cycle for listed firms in the US by using retained earnings as a proxy for age. Their results show that mature and declining firms hold more earned equity but lack the investment opportunities to grow, which makes them better candidates to pay dividends. They find that the likelihood that listed firms pay out dividends is higher when retained earnings represent a larger part of total equity (total assets). These findings are confirmed by Brockman and Unlu (2011) for a multi-country sample of listed firms. However, it is not clear to what extent the dividend policy of a privately held firm follows its life cycle.

We investigate the dividend life cycle for a sample of 113,599 Belgian privately held firms with 666,135 firm-year observations for the period from 2005 to 2018. Belgium provides a particularly interesting setting for studying privately held firms because all Belgian firms have to file a detailed financial statement with the National Bank of Belgium each year (Paeleman, Fuss, and Vanacker 2017). This statement includes information on the dividend policy and is publicly available, which allows us to investigate the dividend policies of the universe of Belgian privately held firms. In addition, privately held firms play a pivotal role in the Belgian economy, as the number of listed firms is very limited.[2] As such, Belgium closely resembles other continental European countries.

To measure the firm's life cycle, we rely on measures used in the literature (e.g., DeAngelo, DeAngelo, and Stulz 2006; Brockman and Unlu 2011): the amount of earned equity (retained earnings) relative to common equity (RE/TE), and the amount of earned equity (retained earnings) relative to total assets (RE/TA). In a robustness check, we use firm age (number of years since founding). Other scholars have argued that retained earnings are a proxy for the firm's life cycle with the advantage that it does not assume linearity in the progression through life cycle stages (Habib and Hasan 2017). Moreover, some scholars prefer retained earnings over age as it does not account for industry differences in the time needed to move through the life cycle stages (Dickinson 2011; Faff et al. 2016). Retained earnings measures to what degree privately held firms are self-funded or rely on external sources over their lifetime (DeAngelo, DeAngelo, and Stulz 2006).[3] Consistent with the life cycle relationship, our results show that retained earnings have a significant and positive effect on the likelihood of privately held firms paying a dividend and on its level after controlling for other determinants of the dividend policy. We find similar results when we use alternative measures for dividend policies, namely

[2] At the end of 2018, there were only 111 Belgian firms listed (source: https://data.worldbank.org).

[3] A disadvantage of using a firm's age, based on the date of its incorporation, is that the date of incorporation does not necessarily reflect the true date of its founding. For instance, a new legal entity might be created after an acquisition, leading to a new date of incorporation, despite the fact that both the acquiring firm and the acquired one already existed.

the dividend to cash flow ratio and the dividend to earnings ratio. Our results also support the life cycle theory when splitting our sample into young (or new) firms and more established firms. Our results are similar when we use subsamples of small versus large privately held firms. Further, the relationship of retained earnings with the dividend policy is also confirmed by our finding that retained earnings significantly increase (decline) five years before a privately held firm initiates (omits) a dividend. We also find that the life cycle relationship exists independently of the legal threshold for solvency that Belgian firms have to pass before regulators will allow them to pay a dividend. Our results are robust when using alternative estimation techniques; a firm's age as an alternative proxy for its life cycle; and an alternative dependent variable, that is, paying dividends in t + 1. Robustness of Inference to Replacement (RIR) tests (Busendbark, Gamache and withers 2022) show that it is very unlikely that endogeneity drives our results.

This paper makes several contributions. First, it provides new insights into the dividend policies of privately held firms that are still poorly understood despite the enormous economic importance of these firms. While studies have found that the dividend policies of privately held firms are affected by taxes (Berzins, Bøhren, and Stacescu 2018), ownership (Michiels et al. 2015; Rommens, Cuyvers, and Deloof 2012), and conflicts of interest between shareholders (Berzins, Bøhren, and Stacescu 2019; Michaely and Roberts 2011); we show that the dividends of these privately held firms follow a pattern in line with their life cycles. Second, our study contributes to the literature on financing policies of SMEs and privately held firms by demonstrating that there is not only a life cycle in the capital structure of these firms (La Rocca, La Rocca, and Cariola 2011; Reid 2003; Serrasqueiro and Maçãs Nunes 2012) but also in their dividend policy. Finally, we draw attention to legal constraints that may affect the dividend payout policy. In Belgium, firms are not allowed to pay dividends when they fail to meet the legal threshold for solvency. Our results show that this threshold by itself does not affect dividend payouts, which raises questions about the usefulness of such thresholds.

Our study continues as follows: In Section 2, we discuss our hypothesis. Section 3 presents the data and the measurements of the variables. Section 4 presents the results for the dividend life cycle of privately held firms. Section 5 concludes.

2. Hypothesis development

Different stages of the life cycle may play an important role in determining the financial decisions and behaviours of firms (La Rocca, La Rocca, and Cariola 2011). Similarly, whether to distribute excess cash in the form of dividends or retain it in the firm may also depend on the stage of a firm's life cycle. Since firms do not progress monotonically from birth to mature stages, this transition may be nonlinear, and firms often move back and forth from one stage to another (Dickinson 2011; Habib and Hasan 2019). This movement raises the question of whether there is a life cycle effect on the dividend policies of firms. DeAngelo, DeAngelo, and Stulz (2006) and Brockman and Unlu (2011) find evidence of a dividend life cycle effect for listed firms in the US, but what about privately held firms?

Privately held firms are different from listed firms in several ways. First, privately held firms face less external pressure to pay dividends when they have excess cash available because information problems and agency conflicts between insiders and outsiders generally play a much smaller role in privately held firms (Michaely and Roberts 2012). Second, the owners of privately held firms often have limited access to external financing and may therefore refrain from paying dividends (Vermoesen, Deloof and Laveren 2013; McNamara, O'Donohoe, and Murro 2020), especially in the early stages of the firm's life cycle when money is scarce and growth opportunities are present. Outside equity financing might be very costly for privately held firms due to asymmetric information that can dilute the control of the owners (Brav 2009). Access to debt financing may also be more limited for privately held firms due to bankruptcy costs. As a result, the owners of privately held firms may prefer to keep high cash reserves instead of paying dividends to reduce their risk (Anderson and Hamadi, 2016). Nevertheless,

the life cycle could influence the dividend policy of privately held firms. Privately held firms are less likely to have self-interested managers who can restrict dividends and keep the free cash flow in the firm at the owners' expense (Rommens, Cuyvers, and Deloof 2012). This manipulation could result in higher dividends to support the cash needs of under-diversified owners, especially in the later stages of the firm's life cycle when there is ample excess cash and few growth opportunities. Further, firms rebalance their capital structure over the life cycle and rely less on debt to sustain their businesses when they reach more mature stages (La Rocca, La Rocca, and Cariola 2011), but they can also distribute the excess cash to the firm's owners. Thus, we expect that mature privately held firms are more likely to pay higher dividends than young privately held firms. Therefore, we propose the following hypothesis:

Hypothesis 1. The dividend policies of privately held firms follow a life cycle pattern.

Hypothesis 1A. The likelihood of paying dividends increases over the life cycles of privately held firms.

Hypothesis 1B. The total dividend payout increases over the life cycles of privately held firms.

3. Data and measurement of variables

We collect data from the Bel-First database maintained by Bureau van Dijk (BvD) which offers electronic access to the detailed yearly financial statements of all Belgian firms. We focus on independent, privately held firms from 2005 to 2018. We exclude financial and utility firms as those are subject to different government regulations (e.g., Allen and Michaely 2003; Berzins, Bøhren, and Stacescu 2018; DeAngelo, DeAngelo, and Stulz 2006; Grullon and Michaely 2002). We also exclude firms which are not independently owned, that is, those firms with an ultimate owner holding at least 50% of the shares, except those held by named individuals, employees, or family members. Further, we select firms with a minimum of one employee to

eliminate "ghost" firms, and we consider only those firms with positive total equity (e.g., DeAngelo, DeAngelo, and Stulz 2006; Hasan and Cheung 2018; Owen and Yawson 2010). Finally, we exclude firm-years when the firm is not legally allowed to pay a dividend according to Belgian legislation. Belgian firms cannot pay a dividend when their "net assets", which equal the total assets minus liabilities and intangible assets, are lower than the "unavailable equity" which is the sum of issued capital (less the sum of uncalled capital and called amounts of unreleased capital), share premiums, revaluation surpluses, legal reserves, unavailable reserves, and investment grants (De Backer et al. 2014). Our sampling procedure results in 113,599 Belgian, independent, privately held firms with 666,135 firm-year observations over the sample period.[4]

All variables used in this study are based on unconsolidated financial statements. Consistent with prior research on dividends (Brockman and Unlu 2011; DeAngelo, DeAngelo, and Stulz 2006; Fama and French 2001; Michiels et al. 2015; Rommens, Cuyvers, and Deloof 2012), our main dividend measures are *DIV* that is a dummy equal to one if the firm pays dividends in year t and zero otherwise, and *Div/CF* that is the dividends paid in year t scaled by the cash flow in year t-1. As a robustness check, we also consider *Div/E* that is the dividends paid in year t over net income in year t-1 (La Porta et al. 2000; Rommens, Cuyvers, and Deloof 2012). Net income represents a year's gain (or loss), profit after tax, but before dividends.

Our independent variable is the firm's life cycle. First, following the literature, we measure the life cycle relationship using retained earnings scaled by total equity and retained earnings scaled by total assets, respectively, in year t-1 (*RE/TE* and *RE/TA*) (Brockman and Unlu 2011; DeAngelo, DeAngelo, and Stulz 2006; Faff et al. 2016; Habib and Hasan 2017; Hasan et al. 2015; Owen and Yawson 2010). As a robustness check, we also measure the life cycle relationship with the natural logarithm of the number of years since the firm's founding, namely

[4] We collected 2004 data to calculate the lagged variables for the initial year 2005 in our data.

Ln_Age (La Rocca, La Rocca, and Cariola 2011). To account for the possible effect of nonlinearities in the firm's life cycle on the dividend policies, we add the squared terms of the proxies, $(RE/TE)^2$ and $(RE/TA)^2$, to our analyses. And as a second robustness check, we check if our results are stable when we add *AGE* and AGE^2.

We also add a number of control variables that studies have shown to affect dividend payouts. We control for leverage by adding the ratio of total equity to total assets in year t-1 (*TE/TA*). Firms moving from the introduction stage towards the more mature stages of their life cycle tend to increase their debt issuance (DeAngelo, DeAngelo, and Stulz 2006; Brockman and Unlu 2011; Michaely and Roberts 2012; Michiels et al. 2015; Rommens, Cuyvers, and Deloof 2012). The TE/TA is a complement to the total debt over total assets (DeAngelo, DeAngelo, and Stulz 2006) that serves as a good measure of leverage considering the restrictions to dividends which debtholders impose on highly indebted, privately held firms (Cassar 2004). As a robustness check, we also measure leverage by the ratio of total debt to total assets in year t-1 (*TD/TA*) (Brockman and Unlu 2011; Michaely and Roberts 2012; Rommens, Cuyvers, and Deloof 2012). We take cash and cash equivalents relative to total assets in year t-1 (*CASH/TA*) as a measure for cash holdings (Brockman and Unlu 2011; Bulan, Subramanian, and Tanlu 2007; DeAngelo, DeAngelo, and Stulz 2006; Michiels et al. 2015). An increase in cash is likely to increase the propensity to pay a dividend. We control for last year's dividend payout by taking the lagged dividend dummy (*L_DIV*) (Fama and French 2001; DeAngelo, DeAngelo, and Stulz 2006). We also add the lagged profitability as more profitable firms have a higher propensity to pay dividends in the following years. We measure profitability by scaling earnings before interest, taxes, depreciation and amortization in year t to total assets in year t-1 (*EBITDA/TA*) (Bulan, Subramanian, and Tanlu 2007; Fenn and Liang 2001; Michiels et al. 2015). We also add the lagged profitability *L_EBITDA/TA* since firms may slowly adapt their dividend policy to new profit information (Lintner 1956). We add the assets growth rate (*AGR*) that is measured as (total assets in year t) – (total assets in year t-1)

over total assets in year t-1 as a measure for firms' growth opportunities (DeAngelo, DeAngelo, and Stulz 2006; Fama and French 2001; Michiels et al. 2015). As a firm matures and growth opportunities decrease, more earnings will be available for paying out dividends (Loderer, Stulz and Waelchli 2017). Finally, we control for the *SIZE* of the firm by taking the natural logarithm of total assets in year t-1 (Bulan, Subramanian, and Tanlu 2007; Brockman and Unlu 2011; Faccio, Lang and Young 2001; Koh et al. 2015; Michaely and Roberts 2012). All variables, except the lagged dividend dummy, are winsorized at the 1% and 99% tails. Table 1 provides an overview of all variables used in this study.

*** Insert Table 1 here ***

4. Results

4.1 Descriptive statistics

Table 2 presents the summary statistics for the dividend payers and nonpayers in our sample. In addition, we also include t-statistics which show significant differences in the variables between dividend payers and nonpayers. On average, 17% of firms pay a dividend in a given year, which is comparable to the earlier findings of Rommens, Cuyvers, and Deloof (2012) in which 19% of the Belgian privately held firms in their sample were dividend payers. Berzins, Bøhren, and Stacescu (2018) find that 27% of the Norwegian privately held firms in their sample paid dividends, while Michaely and Roberts (2012) find that 41% of the UK privately held firms in their sample paid dividends.

*** Insert Table 2 here ***

Table 2 further shows that the proxy RE/TE equals on average 0.28 for dividend payers while it is 0.23 for dividend nonpayers. This difference is statistically significant. Also, the proxy RE/TA equals on average 0.13 for dividend payers while it is 0.10 for dividend nonpayers. This difference is also statistically significant. These statistics provide the first support for the argument that firms with more retained earnings are more likely to pay a

dividend. Table 2 also shows that dividend payers are statistically and significantly older than dividend nonpayers. Dividend payers have less leverage, as shown by the higher TE/TA; are more profitable as measured by EBITDA/TA; and have a lower growth rate for assets, AGR. Furthermore, dividend payers hold more cash and have a larger size than dividend nonpayers. All these findings align with the dividend life cycle theory, as it suggests that firms pay dividends when profits are increasing, and investment opportunities are decreasing.

Table 3 presents the pairwise correlations between the variables used in our analyses. There is a positive correlation between our dividend measures (DIV, Div/CF, Div/E) and the life cycle proxies (RE/TE, RE/TA, Age), and all correlations are statistically significant at the 0.1% level. The possibility of multicollinearity is low because all variance inflation factors are well below 10.

*** Insert Table 3 here ***

To better understand the sample's distribution of firms in light of the prevailing life cycle, we split our sample on the basis of their age. We use a 6-year age threshold which is generally accepted and considered critical for the survival of new firms (e.g., McDougall, Oviatt and Shrader 2003; Zahra, Ireland and Hitt 2000). We measure young (or new) privately held firms as firms that are six years old or younger and more established privately held firms as firms that are more than six years old. Of the firm-year observations in our full sample, 87% belong to more established firms, while 13% belong to young firms. Among the firm-year observations representing dividend payers, 10% are young firms and 90% are more established firms. Or alternatively, among the young firms, 19% pay dividends; and among the more established firms, 37% pay dividends. In terms of firm-year observations (Fig A. 1 and Table A. 1 in the appendix) for young firms; 13% are dividend payers; and for more established firms, 18% are dividend payers (Fig A. 1 in the appendix).

Table A.1 (in the appendix) presents the summary statistics of the dividend policy measures for both subsamples. On average, young firms pay significantly smaller dividends compared to more established firms. The amount of the dividends paid, measured as dividends to cash flow ratio (Div/CF) and dividend to earnings ratio (Div/E), is significantly larger for more established firms. The mean difference between the two subsamples is statistically significant.

4.2 Hypothesis testing: The life cycle relationship

Using a procedure similar to that of DeAngelo, DeAngelo, and Stulz (2006), we run a separate logit regression for each year of the period from 2005 to 2018 to obtain a times series of fitted logit coefficients for which we report the mean coefficients and t-statistics (unadjusted for serial correlation). The Fama and MacBeth (1973) approach of averaging the time series of annual coefficients allows for a correlation of regression residuals across firms (Fama and French 2001). The method is convenient for addressing a time effect and for providing robust, unbiased standard errors (see, Petersen 2009).

In Table 4, the dependent variable is the DIV dummy, and the life cycle is represented by either RE/TE (models 1, 3, 5, 7 and 9) or RE/TA (models 2, 4, 6, 8 and 10). Table 4 presents the mean coefficients and t-statistics from a logit regression for each year of the sample period. All models contain the EBITDA/TA, AGR, and SIZE as control variables. Moreover, we gradually add TE/TA, CASH/TA, L_DIV, and L_EBITDA/TA to the models as control variables.

*** Insert Table 4 here ***

Table 4 clearly shows a life cycle effect in the dividend policies of privately held firms, as higher retained earnings increase a firm's propensity to pay a dividend (DIV), while controlling for other factors that influence the dividend policy. All models show highly and statistically significant and positive mean coefficients for RE/TE and RE/TA (with the lowest t-statistics

of 6.14 and 3.49, respectively).[5,6] In line with earlier research (Bulan, Subramanian, and Tanlu 2007; Fama and French 2001), the coefficients for our control variables are also highly and statistically significant. A higher TE/TA (or a lower leverage)[7], cash holdings, lagged profitability, profitability, and size increase the likelihood of privately held firms paying a dividend. If a firm paid dividends in the previous year, it also increases the likelihood of paying dividends. A higher growth rate decreases the likelihood of privately held firms paying a dividend.

In Table 5, the dependent variable is the dividend to cash flow ratio, and the life cycle is represented by either RE/TE (models 1, 3, 5, 7 and 9) or RE/TA (models 2, 4, 6, 8 and 10). Table 5 presents the mean coefficients and t-statistics from OLS tests for each year from 2005 to 2018. All models contain the EBITDA/TA, AGR, and SIZE as control variables. In addition, we gradually add TE/TA, CASH/TA, L_DIV, and L_EBITDA/TA to the models as control variables.

*** Insert Table 5 here ***

Table 5 also shows a life cycle effect on the dividend policies of privately held firms as higher retained earnings increase a firm's dividends (Div/CF), while controlling for other factors that influence the dividend policy. All models show highly significant and positive mean coefficients for RE/TE and RE/TA (with the lowest t-statistics of 5.55 and 4.20, respectively). The coefficients for our control variables are statistically significant. Models 1 to 6, present positive and statistically significant coefficients for profitability, while models 9

[5] Logit analyses for each year are reported separately in the supplementary online material (Table S. 1). The results present positive and significant coefficients for RE/TE in all years, except in year 2013 (Panel A). The results present positive and significant coefficients for RE/TA in all years except in year 2013 (Panel B).

[6] Belgian firms that pay a dividend to individual shareholders deduct a withholding tax of 25% (until 2017) or 30% (from 2017 onwards) and the received dividend is not subjected to further income tax. When the beneficiary is another firm holding at least 25% of the capital of the paying firm, no withholding tax is deducted by the paying firm and the receiving firm is exempted from corporate tax on the dividend. The change in withholding tax does not alter our results. As shown in the Table S. 1 in the supplementary online material, RE/TE (Panel A) and RE/TA (Panel B) are positive and highly statistically significant before and after the change in 2017.

[7] When we measure leverage as a ratio of total debt to total assets (TD/TA), the results are consistent. Increasing leverage decreases the likelihood of paying dividends (Table S. 2 in the supplementary online material).

to 10 present negative and statistically significant coefficients. A higher TE/TA (or a lower leverage), cash holdings, lagged profitability, and size increase the dividends (Div/CF) of privately held firms. If firms paid dividends in the previous year, it also increases their dividends (Div/CF). A higher growth rate decreases the dividends (Div/CF) of privately held firms. [8,9,10]

We also test whether the relationship between retained earnings and dividend policy is curvilinear. The results in Table A. 2 of the appendix show a curvilinear relationship between the life cycle and the likelihood of paying dividends. In models 1, 2, 3, and 4, we find negative and statistically significant estimates of $(RE/TE)^2$ and $(RE/TA)^2$. The odds ratio of RE/TE in model 1 equals 1.78 but is 0.52 for $(RE/TE)^2$ that means that for every unit of increase in the RE/TE, a privately held firm is more likely to issue dividends by a factor of 1.78. However, due to negative $(RE/TE)^2$ after reaching the turning point, the likelihood decreases by a factor of 0.52. Similarly, in model 2, the odds ratio of RE/TA indicates that the likelihood of issuing dividends increases by a factor of 3.2; while after reaching the extremum point, the likelihood decreases by a factor 0.15. We conduct an "U-test" that was developed by Lind and Mehlum (2010) to identify whether the relationship increases at the lower ages, and then decreases at the higher ages within the range of our data. The U-test confirms the presence of a local extremum point of an inverse U shape within the range of our data in models 1 and 2. Similar conclusions are found in models 3 and 4 (OLS tests instead of logit regressions). However, in models 5 and 6 in which the dependent variable is Div/CF, we find a positive and statistically significant estimate of $(RE/TE)^2$ and a nonsignificant estimate for $(RE/TA)^2$. The U-test shows

[8] Measuring firm size as an inflation adjusted measure does not change our main results when using the dependent variable DIV and Div/CF (Table S. 3 (Panel A) in the supplementary online material).
[9] When we add the ratio intangible assets relative to total assets (IA/TA) as a proxy for growth opportunities (Paeleman and Vanacker 2015) to our models (with dependent variable DIV and Div/CF), the results remain stable (Table S. 3 (Panel B) in Supplementary online material).
[10] When we add a measure for firm creditworthiness (using a default risk indicator of Graydon, based on the Ooghe-Joos-De Vos (OJD) score that is similar to the Altman's Z score, but adapted to a Belgian context (e.g., Heyman, Deloof and Ooghe 2008) to our models (with dependent variable DIV and Div/CF), the results remain stable (Table S. 3 (Panel C) in the supplementary online material).

that the extremum point lies outside our data range in models 5 and 6. Based on these models, our results show that there is a positive, but diminishing, relationship between a firm's life cycle and paying dividends.

Overall, our results support our Hypothesis 1 and confirm the dividend life cycle theory as they show that the decisions of privately held firms to pay dividends depends on the earned equity versus contributed capital mix as measured by either RE/TE or RE/TA. While DeAngelo, DeAngelo, and Stulz (2006) do not include industry affiliation in their regressions, the dividend policies of privately held firms are likely to be affected by the industry in which they operate (e.g., Berzins, Bøhren, and Stacescu 2018; Brockman and Unlu 2011). Therefore, we rerun all logit and OLS regressions while adding dummies for the two-digit NACE-BEL 2008 industry codes. The results in Tables A. 3 and A. 4 of the appendix are fully consistent with the ones reported in Tables 4 and 5, respectively. As an additional robustness test, we measure a dividend policy with the dividend to earnings ratio (Div/E) (Berzins, Bøhren, and Stacescu 2018; 2019; Rommens, Cuyvers, and Deloof 2012). The results in Tables A. 5 and A. 6 of the appendix again show significant coefficients for RE/TA and RE/TA.

4.3 Post-hoc analyses

4.3.1 Subsamples: young firms versus more established firms

Table 2 shows that dividend payers are older than nonpayers. In a first post-hoc analysis, we test if our multivariate results are different for two subsamples of firms: young (or new) privately held firms (measured as firms that are six years old or younger) and more established privately held firms (measured as more than six years old). Table 6 (models 1 to 4) presents the logit results for the dependent variable DIV. Models 1 and 2 show the results for the subsample of young firms while models 3 and 4 show the results for the subsample of more established firms. Our results show that RE/TE is positive and statistically more significant (significant at 1% level) in model 3 compared to model 1 (significant at 5% level). The RE/TA is positive and statistically significant in model 4 while not significant in model 2.

Table 6 (models 5 to 8) presents the OLS results for Div/CF as the dependent variable. Models 5 and 6 show the results for the subsample of young firms, while models 7 and 8 show the results for the subsample of more established firms. Our results show that RE/TE and RE/TA are positive and statistically significant in models 7 and 8 while not significant in models 5 and 6. These results further support the concept of the life cycle theory that predicts that young firms are less likely to pay dividends while more established firms are more likely to pay dividends.

*** Insert Table 6 here***

4.3.2 Subsamples: small firms versus large firms

Table 2 also shows that the privately held firms that pay a dividend are larger than nonpayers, which is consistent with the findings of Fama and French (2001) for listed firms. Fama and French (2001) argue that the decrease in the number of listed firms that pay dividends is due to many new listed firms which are small, unprofitable, and have high growth opportunities. In a second post-hoc analysis, we investigate whether size matters for our results by splitting our sample into two subsamples: small firms (size < the median size in our sample) and large firms (size > the median size in our sample). Table 7 presents the results for the dependent variables DIV and Div/CF. Models 1 to 4 show the logit regressions in which the dependent variable is the dummy variable DIV. Models 5 to 8 show the OLS results when the dependent variable is Div/CF. We add the same independent variables as in Tables 4 and 5 (models 9 and 10). We find strong evidence for a life cycle effect on the dividend policies of both large and small privately held firms: the RE/TE and RE/TA remain highly and statistically significant as well as positive.

*** Insert Table 7 here ***

4.3.3 Dividend initiators and omitters

So far, we have analysed the cross-sectional variation in dividend policies. In this post-hoc analysis, we examine the evolution of RE/TE and RE/TA in the five years before the decision to initiate or omit a dividend. The dividend life cycle predicts that RE/TE and RE/TA will show an upward trend in the years before initiating a dividend (Brockman and Unlu 2011; DeAngelo, DeAngelo, and Stulz 2006). Correspondingly, these variables should assume the opposite trend in the years before omitting a dividend.

We define a dividend initiator as a firm that pays a dividend after having not paid them for five or more consecutive years. A dividend omitter is a firm that omitted dividends after having paid dividends for at least five consecutive years. We identified 11,406 dividend initiators from 2005 to 2018. Of those firms, 67 had initiated dividends twice. Analogously, we identified 3,343 dividend omitters of which 21 had omitted dividends twice during the sample period.

Figure 1 depicts the trends in median values of RE/TE and RE/TA for dividend initiators and dividend omitters from year -5 until year 0, which is the year of the dividend initiation or omission. For the firms with more than one dividend initiation, we only use the first one, and for firms with more than one dividend omission we only use the last one.

*** Insert Figure 1 here ***

For dividend omitters, the trend in the median RE/TE in Figure 1 is as expected. It consistently trends downward in the five years before the omission, with a 73% decline in the median from year -5 to year 0. For the dividend initiators, we find a 76% increase in the median RE/TE from year -5 until year -2, but no increase in years -1 and 0. We observe very similar trends in the median RE/TA. Figure 1 confirms the idea that decisions to initiate or omit dividends depend on firm's earned capital measured by retained earnings.[11]

[11] The finding that dividend omissions follow after a consistent decline in retained earnings suggests that future research could explore how quickly dividends of privately held firms rebound to their initial dividend level after reductions or omissions. To what extent privately held firms substitute dividends with repurchases is unknown.

4.3.4 The implication of a legal threshold for solvency to pay dividends

As noted earlier, Belgian firms must pass a legal threshold for solvency before they can pay a dividend. All our analyses are based on a sample that excludes the 218,407 firm-year observations of firms that were not allowed to pay dividends as they were below that legal threshold. To ascertain that this restriction, which considerably reduces our sample size, does not affect our results, we reestimate all the models in Table 4 by using a sample which also includes firm-year observations of firms that do not meet the threshold. The results (in Table A. 7 of the appendix) confirm the life cycle relationship. This confirmation indicates that the decision to pay out a dividend is driven by the underlying financial situation of the firm, irrespective of the legal threshold for solvency dictated by Belgium.

To further confirm this argument, we investigate how the *distance* between a firm's solvency position and the legal threshold affects its dividend policy. If a firm's dividend decision is driven by its financial situation irrespective of the legal threshold, we expect that the closer a firm gets to this legal threshold, the less likely that it will pay dividends since a closer distance reflects a deteriorating solvency. This relationship is not obvious, as it could be argued that the shareholders of a firm getting closer to the legal threshold for paying a dividend may want to "milk" the firm at the expense of the debtholders who will have priority payment in case of insolvency. In that case, there could actually be an *increase* in the likelihood that the shareholders will push the firm to pay dividends as its solvency position gets closer to the legal threshold to be able to pay out dividends. To investigate the relationship between the solvency distance to the legal threshold and dividend policy, we estimate OLS tests in which we add ln_Age as our life cycle measure and the control variables TE/TA, CASH/TA, EBITDA/TA, AGR, and SIZE; and we add five dummy variables depending on the degree to which the firm's

Among listed firms, share repurchases appeared to grow as a preferred form of a cash payout (Brav et al. 2005; Grullon and Michaley 2002).

solvency is above the legal threshold. D_0_5 is a dummy variable that equals one if the firm's solvency exceeds the legal threshold by 0% to 5%, and zero otherwise; d_5_10 is a dummy variable that equals one if the firm's solvency exceeds the legal threshold by 5% to 10%, and zero otherwise; d_10_20 is a dummy variable that equals one if the firm's solvency exceeds the legal threshold by 10% to 20%, and zero otherwise; d_20_30 is a dummy variable that equals one if the firm's solvency exceeds the legal threshold by 20% to 30%, and zero otherwise; and d_30_40 is a dummy variable that equals one if the firm's solvency exceeds the legal threshold by 30% to 40%, and zero otherwise. In line with the argument that deteriorating solvency reduces the likelihood of paying dividends, Table 8 shows that firms which are legally allowed to pay dividends are less likely to pay them as they are getting closer to the legal threshold. In model 1, where the dependent variable is DIV, firms exceeding the threshold by 30% to 40% are 5% less likely to pay dividends when controlling for age, leverage, cash holdings, cash flow, growth, size, industry, and year fixed effects. The likelihood of paying dividends gradually reduces further as the firm gets closer to the legal threshold, going up to 9% when a firm is within the 5% range of the legal threshold. Our results are very similar when we measure the dividend policy with Div/CF in model 2. So, we find no confirmation of "milking" a dividend policy.

*** Insert Table 8 here ***

4.4 Robustness tests

4.4.1 Alternative estimation techniques

Our findings in Table 4 are robust when we apply alternative estimation techniques. First, we ran panel logit regressions that had industry and year fixed effects and the dependent variable DIV (Table S. 4 in the supplementary online material). Second, we ran panel OLS tests that had industry and year fixed effects and the dependent variable Div/CF (Table S. 5 in the supplementary online material). Third, we ran fixed effects regressions that had firm and year

fixed effects and the dependent variable Div/CF (Table S. 6 in the supplementary online material). Fourth, we ran panel logit regressions that had firm and year fixed effects and the dependent variable DIV (Table S. 7 in the supplementary online material). In all these models, our results show significant and positive relations between the life cycle proxies and dividend policies of privately held firms.

4.4.2 Firm age as an alternative proxy for the life cycle

We check the robustness of our results by using age as an alternative proxy of the firms' life cycle. The results are shown in Table 9. In models 1 and 4, we use ln_Age that is measured as the natural logarithm of years since the firm's incorporation. In models 2 and 5, we use Age. In models 3 and 6, we use Age and Age^2. In models 1 to 3, we run logit regressions with the probability of paying dividends as the dependent variable. In models 4 to 6, we run OLS tests with the level of dividend payouts (Div/CF) as the dependent variable. In all models, we control for TE/TA, cash, profitability, growth, size, industry, and year fixed effects.

*** Insert Table 9 here ***

The results for the control variables are consistent with our previous findings. We find positive and statistically significant coefficients for TE/TA, cash, profitability, and size; and negative and statistically significant coefficients for the asset growth rate. In models 1 and 2, we find positive and statistically significant coefficients for ln_Age and Age, respectively. As firms mature, they are more likely to pay dividends. In models 4 and 5, we also find positive and statistically significant coefficients for ln_Age and Age, respectively. Thus, as firms mature, the amount of the dividends they pay increases.

In model 3, we find a positive and statistically significant coefficient for Age, and a negative and statistically significant coefficient for Age^2. In model 6, we find no significant coefficients for Age and Age^2. For model 3, we conduct the U-test to identify whether the relationship is indeed stronger for lower ages and then weakens for higher ages within the range

of our data. This test confirms the presence of the extremum point within the range of data and confirms an inverse U-shaped relationship. However, due to the small coefficient for Age², we conclude that the relationship is positive but at a diminishing rate. These results are in line with our main findings.

4.4.3 Alternative dependent variables: paying dividends in t+1

We use two alternative dependent variables to test if retained earnings (as a proxy for the firm's life cycle) is a good predictor of whether firms will pay out dividends in the next year. First, we use a dummy variable equal to one if a firm paid a dividend in year t+1. Second, we use Div/CF in year t+1. The results (Tables S. 8 and S. 9 in the supplementary online material) are consistent with the life cycle theory. Increasing retained earnings over the total equity, or total assets, increases the probability of privately held firms paying dividends in year t+1 (Table S. 8 in the supplementary online material). Increasing retained earnings over the total equity, or total assets, increases the amounts of dividends paid out in year t+1, specifically, the Div/CF_t+1 (Table S. 9).

4.4.4 Endogeneity

As recently used by other scholars (e.g., Campbell et al. 2021; Rieger, Wilken, and Engelen 2022; Roccapriore and Pollock 2022), we examine the possibility of endogeneity by using the robustness of inference to replacement (RIR) approach (Busenbark, Gamache and Withers 2022). This approach makes counterfactual changes to the data and "provides insight into the percentage of a parameter estimate that would need to be biased in order to invalidate causal inference..." (Busenbark, Gamache and Withers 2022, 23). Specifically, "the RIR can indicate how much of a given effect size must be biased in order to overturn an otherwise statistically significant parameter estimate" (Busenbark, Gamache and Withers 2022, 44). This approach checks all sources of bias from endogeneity. It is not limited to omitted variables only (Frank et al. 2013). We use the *konfound* command in STATA in our panel logit models with DIV as

the dependent variable (models 9 and 10, Table S. 4 in the supplementary online material) and panel OLS models with Div/CF as the dependent variable (models 9 and 10 in Table S. 6 in the supplementary online material) and our life cycle proxies (RE/TE and RE/TA). The RIR results show that the bias resulting from endogeneity has to be very sizeable to overturn our results.

For the model with DIV as the dependent variable (model 9 of Table S. 4 in the supplementary online material), 88.86% of the estimate (RE/TE) would have to be biased to invalidate the inference. That percentage represents 473,556 cases that would have to be replaced with the cases for which there is zero effect. For the model with DIV as the dependent variable (model 10 of Table S. 4 in the supplementary online material,), 86.17% of the estimate (RE/TA) would have to be biased to invalidate the inference. That percentage represents 459,221 cases that would have to be replaced with the cases for which there is zero effect.

For the model with Div/CF as the dependent variable (model 9 of Table S. 6 in the supplementary online material), 85.31% of the estimate (RE/TE) would have to be biased to invalidate the inference. That percentage represents 453,923 cases that would have to be replaced with the cases for which there is zero effect. For the model with Div/CF as the dependent variable (model 10 of Table S. 6 in the supplementary online material), 82.93% of the estimate (RE/TA) would have to be biased to invalidate the inference. That percentage represents 441,260 cases that would have to be replaced with the cases for which there is zero effect. Therefore, it is very unlikely that endogeneity drives our results.

4.5 Limitations and avenues for future research

This study has some limitations that suggest avenues for future research. First, we use a sample of privately held firms who are independent, that is, do not have a firm as a shareholder with an equity stake of more than 50%. However, research has found that conflicts between shareholders may affect firms' dividend policies (Berzins, Bøhren, and Stacescu 2018, 2019). We encourage future scholars to explore how different shareholder types (family investors,

founders, managers, private equity firms, single investors,…), ownership structures, and different qualities of corporate governance can influence the life cycle theory of dividends in privately held firms. Second, a firm's dividend policy is also affected by the presence and characteristics of managers, and specifically by CEOs (Bertrand and Schoar 2003). Different demographic characteristics, such as a CEO's marital status or political views, can influence the dividend policies of listed firms (Nicolosi 2013). Whether a firm will be more likely to pay dividends also depends on the power (Sheikh 2020), ownership, tenure, and turnover of CEOs (Onali et al. 2016). It raises questions about to what extent these characteristics affect the dividend policies of privately held firms over the course of their life cycles. Finally, our results are based on a database of privately held firms in Belgium. Most research on the dividend policies of privately held firms rely on country specific databases; this limitation calls for more research in an international setting.

5. Conclusion

Despite the fact that most firms around the world are privately held, we still know little about what determines the dividend policy of these firms. In this study, we contribute to a better understanding of the dividend policies of privately held firms by showing that there is a life cycle to their dividends. Some scholars have found evidence of a life cycle relationship among the dividend policies of listed firms (DeAngelo, DeAngelo, and Stulz 2006); but the incentives to pay dividends are fundamentally different in listed firms, and we do not know whether such a relationship also exists for privately held firms. Exploiting the fact that all privately held firms in Belgium are required to publicly disclose their financial statements each year, we find that privately held firms are more likely to pay higher dividends as they mature and have more retained earnings. Year-by-year regressions indicate that the life cycle relationship persists over the entire sample period. The results are confirmed when using alternative measures for dividend policies, alternative proxies for life cycles, and different methods of analysis. Taken together, our results are in line with the theory of a dividend life cycle. The life cycle theory is

also confirmed when splitting our sample into young (or new) and more established firms. We also find similar relationships among small and large privately held firms. Our findings are not influenced by the implication of a legal threshold for solvency to be able to pay dividends. Firms stop paying a dividend as their solvency position worsens, even if they are still above the legal threshold to be able to do so. For policymakers, this ability raises the question of whether such legal restrictions are actually useful. Furthermore, our results are also confirmed when using alternative estimation techniques that use the firm's age as an alternative proxy for its life cycle and measuring our dependent variables in year t+1. Overall, our study contributes to both the finance and management literatures by identifying the life cycle as a significant determinant of the dividend policies of privately held firms in addition to taxation, ownership, and agency relations that should also be considered when evaluating the dividend policies of privately held firms.

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Tables and Figure

Table 1 Variable definition

Dependent variables	**Definition**
Measures of dividend policies	
DIV	Dummy equal to 1 if a firm paid a dividend in year t, zero otherwise
Div/CF	Total dividends paid in year t over the cash flow in year t-1
Div/E	Total dividends paid in year t over net income in year t-1
Independent variables	
Measures of dividend life cycle	
RE/TE	Retained earnings over the total equity in year t-1
RE/TA	Retained earnings over the total assets in year t-1
Age	Number of years since the founding of the firm in year t
Control variables	
TE/TA	Total equity over the total assets in year t-1
CASH/TA	Cash and cash equivalents over the total assets in year t-1
L_DIV	Dummy equal to 1 if the firm paid dividend in year t-1, zero otherwise
EBITDA/TA	Earnings before interest, taxes, depreciation and amortisation in year t over the total assets in year t-1
L_EBITDA/TA	Earnings before interest, taxes, depreciation and amortisation in year t-1 over the total assets in year t-2
AGR	(Total assets in year t) – (total assets in year t-1) over total assets in year t-1
SIZE	Natural log of (total assets) in year t-1
d_0_5	Dummy equal to 1 if firms exceeds the legal threshold for paying a dividend by 0% to 5%, zero otherwise
d_5_10	Dummy equal to 1 if firms exceeds the legal threshold for paying a dividend by 5% to 10%, zero otherwise wise
d_10_20	Dummy equal to 1 if firms exceeds the legal threshold for paying a dividend by 10% to 20%, zero otherwise
d_20_30	Dummy equal to 1 if firms exceeds the legal threshold for paying a dividend by 20% to 30%, zero otherwise
d_30_40	Dummy equal to 1 if firms exceeds the legal threshold for paying a dividend by 30% to 40%, zero otherwise

Table 2 Summary Statistics

This table reports summary statistics for dividend payers and dividend nonpayers in our sample of Belgian, independent, privately held firms for the period 2005-2018. T-statistics show the statistical significance of the difference between the dividend payers and nonpayers for all the variables. All variables are defined and calculated as shown in Table 1. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

	Dividend payers				Dividend nonpayers				t-statistics
Variables	N	Mean	SE	p50	N	Mean	SE	p50	(mean)
Sample	113,306	17%	-	-	552,829	83%	-	-	-
Measures of dividend policy									
Div/CF	113,259	0.65	0.77	0.36	551,791	-	-	-	-
Div/E	112,797	1.67	2.25	0.81	543,320	-	-	-	-
Measures of dividend life cycle									
RE/TE	113,306	0.28	0.34	0.06	552,829	0.23	0.36	0.04	-42.51***
RE/TA	113,306	0.13	0.19	0.02	552,829	0.10	0.18	0.01	-50.65***
ln_Age	113,306	2.93	0.68	3.00	552,829	2.81	0.69	2.89	-57.01***
Age	113,306	22.16	15.02	19	552,829	19.47	13.11	17	-61.19***
Control variables									
TE/TA	113,306	0.46	0.24	0.44	552,829	0.42	0.24	0.38	-58.50***
CASH/TA	113,306	0.25	0.21	0.19	552,829	0.19	0.19	0.11	-93.56***
L_EBITDA/TA	95,751	0.21	0.13	0.18	437,181	0.16	0.12	0.14	-110.37***
EBITDA/TA	113,306	0.21	0.14	0.18	552,829	0.16	0.12	0.14	-129.40***
AGR	113,306	0.06	0.25	0.03	552,829	0.08	0.27	0.02	13.61***
SIZE	113,306	7.18	1.45	7.03	552,829	6.61	1.35	6.49	-129.33***

Table 3 Pairwise correlations
All variables are defined and calculated as in Table 1. All correlation coefficients are significant at the 0.1% level.

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	DIV	1													
2	Div/CF	0.608	1												
3	Div/E	0.559	0.819	1											
4	RE/TE	0.052	0.043	0.032	1										
5	RE/TA	0.062	0.076	0.052	0.842	1									
6	ln_Age	0.070	0.060	0.050	-0.101	0.006	1								
7	Age	0.075	0.059	0.047	-0.094	-0.004	0.906	1							
8	TE/TA	0.071	0.124	0.081	0.066	0.355	0.267	0.229	1						
9	CASH/TA	0.114	0.115	0.073	0.067	0.183	-0.010	-0.006	0.421	1					
10	L_DIV	0.529	0.179	0.151	0.021	0.013	0.081	0.083	0.010	0.119	1				
11	L_EBITDA/TA	0.149	0.056	0.041	0.101	0.103	-0.289	-0.241	0.035	0.185	0.161	1			
12	EBITDA/TA	0.157	0.026	0.011	0.106	0.101	-0.286	-0.239	0.024	0.191	0.185	0.629	1		
13	AGR	-0.017	-0.023	-0.025	0.034	0.035	-0.165	-0.121	0.027	0.021	-0.039	0.118	0.173	1	
14	SIZE	0.157	0.083	0.069	0.015	-0.018	0.357	0.351	-0.053	-0.171	0.160	-0.194	-0.218	-0.099	1

Table 4 Retained earnings and the likelihood of paying a dividend

The dependent variable in all models is the dividend dummy DIV. The life cycle relationship is measured by RE/TE and RE/TA. All variables are calculated as in Table 1. Following the Fama and Macbeth (1973) approach, the table reports mean coefficients and t-statistics from logit regressions for each year in the period 2005-2018. The average pseudo R^2 is calculated from the time series of pseudo R^2. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.25***		0.22***		0.20***		0.29***		0.27***	
	(10.33)		(7.40)		(6.14)		(8.22)		(6.29)	
RE/TA		0.64***		0.31**		0.29**		0.48***		0.42**
		(13.92)		(4.27)		(3.49)		(5.86)		(4.52)
TE/TA			0.77***	0.70***	0.31**	0.25*	0.79***	0.68***	0.79***	0.69***
			(9.13)	(7.25)	(4.18)	(2.81)	(9.99)	(7.20)	(9.42)	(6.77)
CASH/TA					1.27***	1.28***	0.58***	0.59***	0.52***	0.52***
					(24.73)	(25.05)	(10.99)	(11.14)	(8.63)	(8.78)
L_DIV							2.88***	2.88***	2.80***	2.80***
							(21.91)	(21.96)	(20.72)	(20.77)
L_EBITDA/TA									1.20***	1.21***
									(17.86)	(17.93)
EBITDA/TA	4.37***	4.35***	4.35***	4.37***	4.04***	4.05***	2.20***	2.21***	1.68***	1.69***
	(50.22)	(48.90)	(56.36)	(56.66)	(52.12)	(52.42)	(23.08)	(23.53)	(15.88)	(16.11)
AGR	-0.37***	-0.38***	-0.41***	-0.40***	-0.37***	-0.36***	-0.03	-0.03	-0.09*	-0.09*
	(-14.99)	(-14.93)	(-14.74)	(-14.67)	(-12.96)	(-12.89)	(-0.95)	(-0.86)	(-2.31)	(-2.24)
SIZE	0.39***	0.39***	0.39***	0.40***	0.42***	0.42***	0.26***	0.26***	0.26***	0.26***
	(31.35)	(30.91)	(29.63)	(29.51)	(32.11)	(32.04)	(25.14)	(25.21)	(24.59)	(24.67)
Constant	-5.17***	-5.18***	-5.51***	-5.48***	-5.70***	-5.67***	-5.19***	-5.14***	-5.27***	-5.22***
	(-36.21)	(-36.71)	(-43.85)	(-43.86)	(-46.23)	(-46.16)	(-42.86)	(-43.72)	(-43.42)	(-44.67)
Observations	666,135	666,137	666,135	666,137	666,135	666,137	666,135	666,137	532,932	532,933
Average pseudo R^2	7%	7%	8%	8%	9%	9%	29%	29%	29%	29%

Table 5 Retained earnings and the dividend to cash flow ratio

The dependent variable in all models is the dividend to cash flow ratio Div/CF. The life cycle relationship is measured by RE/TE and RE/TA. All variables are calculated as in Table 1. Following the Fama and Macbeth (1973) approach, the table reports mean coefficients and t-statistics from OLS regressions for each year in the period 2005-2018. The average R^2 is calculated from the time series of R^2. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.04***		0.03***		0.02***		0.02***		0.02***	
	(16.07)		(7.57)		(6.20)		(7.22)		(5.55)	
RE/TA		0.14***		0.06***		0.06***		0.06***		0.05***
		(8.64)		(5.45)		(4.64)		(5.37)		(4.20)
TE/TA			0.18**	0.17**	0.13**	0.11	0.13**	0.12*	0.15**	0.13*
			(3.65)	(3.24)	(3.20)	(2.73)	(3.43)	(2.94)	(3.38)	(2.93)
CASH/TA					0.16***	0.16***	0.12***	0.12***	0.12**	0.12**
					(5.46)	(5.47)	(4.10)	(4.10)	(3.65)	(3.66)
L_DIV							0.18***	0.18***	0.17***	0.17***
							(16.22)	(16.33)	(14.17)	(14.27)
L_EBITDA/TA									0.16***	0.16***
									(12.48)	(12.43)
EBITDA/TA	0.16***	0.15***	0.16***	0.16***	0.12***	0.12***	0.01	0.01	-0.07**	-0.07**
	(11.09)	(9.57)	(12.11)	(12.45)	(6.64)	(6.79)	(0.30)	(0.30)	(-3.55)	(-3.57)
AGR	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.01	-0.01	-0.03**	-0.03**
	(-4.94)	(-4.84)	(-4.33)	(-4.32)	(-4.28)	(-4.26)	(-2.15)	(-2.12)	(-3.70)	(-3.69)
SIZE	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.02***	0.02***	0.02***	0.02***
	(22.65)	(23.67)	(19.32)	(19.82)	(17.16)	(17.55)	(10.52)	(10.74)	(10.91)	(11.12)
Constant	-0.10***	-0.11***	-0.19***	-0.18***	-0.21***	-0.20***	-0.14***	-0.14***	-0.17***	-0.17***
	(-6.90)	(-7.96)	(-15.76)	(-14.82)	(-13.93)	(-13.17)	(-9.00)	(-8.52)	(-9.55)	(-9.03)
Observations	665,050	665,051	665,050	665,051	665,050	665,051	665,050	665,051	532,086	532,087
Average R^2	2%	2%	3%	3%	4%	3%	7%	7%	7%	7%

Table 6 Retained earnings and dividend policy of young and more established firms

We split the sample according to the firm age. Young firms are 6 years old, or younger. More established firms are older than 6 years. The dependent variable is the dividend dummy DIV in models 1-4 and the dividend to cash flow ratio Div/CF in models 5-8. The life cycle relationship is measured by RE/TE and RE/TA. All variables are calculated as in Table 1. Following the Fama and Macbeth (1973) approach, the table reports mean coefficients and t-statistics from logit and OLS regressions for each year in the period 2005-2018. The average (pseudo) R^2 is calculated from the time series of (pseudo) R^2. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

Sample	Young firms		More established firms		Young firms		More established firms	
Estimation method:	Year by year logit regressions				Year by year OLS regressions			
Dependent variable:	DIV	DIV	DIV	DIV	Div/CF	Div/CF	Div/CF	Div/CF
Model:	1	2	3	4	5	6	7	8
RE/TE	0.13*		0.28***		0.01		0.03***	
	(2.37)		(6.18)		(1.77)		(6.09)	
RE/TA		0.27		0.44***		0.03		0.06***
		(1.81)		(4.43)		(1.83)		(4.46)
TE/TA	0.71***	0.63***	0.79***	0.70***	0.11***	0.10**	0.15**	0.14*
	(4.99)	(4.03)	(9.63)	(6.86)	(4.18)	(3.46)	(3.44)	(2.99)
CASH/TA	0.61***	0.61***	0.51***	0.51***	0.09***	0.09***	0.12**	0.12**
	(6.41)	(6.44)	(7.70)	(7.83)	(6.57)	(6.57)	(3.42)	(3.43)
L_DIV	2.78***	2.78***	2.80***	2.80***	0.17***	0.17***	0.17***	0.17***
	(20.46)	(20.49)	(19.54)	(19.58)	(15.50)	(15.50)	(13.54)	(13.63)
L_EBITDA/TA	1.06***	1.06***	1.26***	1.26***	0.13***	0.13***	0.17***	0.17***
	(7.10)	(7.05)	(17.60)	(17.72)	(6.70)	(6.71)	(11.86)	(11.81)
EBITDA/TA	1.54)***	1.54***	1.71***	1.72***	-0.07*	-0.07*	-0.07**	-0.07**
	(11.60)	(11.42)	(14.68)	(14.88)	(-2.81)	(-2.81)	(-3.80)	(-3.81)
AGR	-0.01	-0.01	-0.10	-0.10	0.01*	0.01*	-0.04***	-0.04***
	(-0.21)	(-0.19)	(-2.17)	(-2.12)	(2.50)	(2.52)	(-4.15)	(-4.14)
SIZE	0.30***	0.30***	0.26***	0.26***	0.02***	0.02***	0.02***	0.02***
	(16.56)	(17.27)	(22.94)	(22.99)	(6.91)	(7.32)	(10.48)	(10.68)
Constant	-5.42***	-5.41***	-5.25***	-5.21***	-0.13***	-0.13***	-0.18***	-0.17***
	(-34.76)	(-35.42)	(-40.19)	(-41.31)	(-6.99)	(-6.81)	(-9.03)	(-8.60)
Observations	52,708	52,708	480,224	480,225	52,619	52,619	479,467	479,468
Average pseudo R^2	26%	26%	29%	29%				
Average R^2					8%	8%	7%	7%

Table 7 Retained earnings and dividend policy of large and small firms

We split the sample according to the median SIZE. Firms with a size above the median are classified as large firms, and firms below the median are classified as small firms. The dependent variable is the dividend dummy DIV in models 1-4 and the dividend to cash flow ratio Div/CF in models 5-8. The life cycle relationship is measured by RE/TE and RE/TA. All variables are calculated as in Table 1. Following the Fama and Macbeth (1973) approach, the table reports mean coefficients and t-statistics from logit and OLS regressions for each year in the period 2005-2018. The average (pseudo) R^2 is calculated from the time series of (pseudo) R^2. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

Sample	Small firms		Large firms		Small firms		Large firms	
Estimation method:	Year by year logit regressions				Year by year OLS regressions			
Dependent variable:	DIV	DIV	DIV	DIV	Div/CF	Div/CF	Div/CF	Div/CF
Model:	1	2	3	4	5	6	7	8
RE/TE	0.22***		0.29***		0.02**		0.03***	
	(4.83)		(5.44)		(4.01)		(6.72)	
RE/TA		0.37**		0.44**		0.04**		0.07***
		(3.65)		(4.22)		(3.55)		(4.53)
TE/TA	1.02***	0.93***	0.69***	0.58***	0.15*	0.14*	0.15**	0.13*
	(7.44)	(6.14)	(10.47)	(6.83)	(2.96)	(2.70)	(3.34)	(2.79)
CASH/TA	0.52***	0.52***	0.50***	0.51***	0.10**	0.10**	0.14**	0.14**
	(8.17)	(8.22)	(6.82)	(7.04)	(3.82)	(3.82)	(3.58)	(3.61)
L_DIV	2.80***	2.80***	2.81***	2.81***	0.17***	0.17***	0.17***	0.17***
	(18.96)	(19.06)	(21.67)	(21.65)	(13.16)	(13.28)	(13.70)	(13.73)
L_EBITDA/TA	1.24***	1.25***	1.26***	1.26***	0.13***	0.13***	0.21***	0.21***
	(29.76)	(29.40)	(9.55)	(9.59)	(10.71)	(10.65)	(8.43)	(8.39)
EBITDA/TA	1.61***	1.62***	1.85***	1.86***	-0.05*	-0.05*	-0.13**	-0.13**
	(13.28)	(13.44)	(13.73)	(13.83)	(-2.80)	(-2.81)	(-3.75)	(-3.78)
AGR	0.12	0.12	-0.25**	-0.24**	-0.01	-0.01	-0.03*	-0.03*
	(1.62)	(1.67)	(-5.41)	(-5.33)	(-1.70)	(-1.69)	(-2.47)	(-2.46)
SIZE	0.42***	0.43***	0.19***	0.20***	0.03*	0.03*	0.02**	0.02**
	(10.60)	(10.78)	(9.01)	(9.09)	(2.53)	(2.55)	(3.63)	(3.67)
Constant	-6.35***	-6.31***	-4.71***	-4.66***	-0.24*	-0.24*	-0.17**	-0.16**
	(-27.72)	(-27.18)	(-20.17)	(-20.67)	(-2.65)	(-2.61)	(-4.00)	(-3.96)
Observations	251,694	251,694	281,238	281,238	250,910	250,910	281,176	281,176
Average pseudo R^2	30%	30%	30%	30%				
Average R^2					6%	6%	8%	8%

Table 8 Dividend policy and the relationship with legal threshold for paying a dividend
The dependent variable is the dividend dummy DIV in model 1 and is the dividend to cash flow ratio Div/CF in model 2. The life cycle relationship is measured by ln Age. All variables are calculated as in Table 1. All models are estimated with OLS and include industry and year fixed effects. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

Model:	1	2
Estimation method:	OLS	OLS
Dependent variable:	DIV	Div/CF
ln_Age	0.03***	0.005***
	(19.07)	(5.19)
TE/TA	0.03***	0.14***
	(8.44)	(45.68)
CASH/TA	0.18***	0.17***
	(39.10)	(42.83)
EBITDA/TA	0.60***	0.11***
	(88.29)	(22.25)
AGR	-0.04***	-0.03***
	(-22.26)	(-14.15)
SIZE	0.05***	0.03***
	(67.96)	(52.71)
d_0_5	-0.09***	-0.09***
	(-23.80)	(-35.75)
d_5_10	-0.08***	-0.07***
	(-21.45)	(-29.97)
d_10_20	-0.06***	-0.06***
	(-20.58)	(-34.83)
d_20_30	-0.05***	-0.06***
	(-17.51)	(-31.86)
d_30_40	-0.05***	-0.05***
	(-16.80)	(-25.61)
Constant	-0.48***	-0.28***
	(-61.14)	(-53.11)
Industry FE	YES	YES
Year FE	YES	YES
Observations	666,137	665,051
R^2	9%	6%

Table 9 Firm age and dividend policy

The dependent variable is the dividend dummy DIV in model 1-3 and is the dividend to cash flow ratio Div/CF in model 4-6. The life cycle relationship is measured by ln_Age, Age and Age squared. All variables are calculated as in Table 1. Models 1-3 are estimated with logit regression, and models 4-6 with OLS. All models include industry and year fixed effects. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels respectively.

Model:	1	2	3	4	5	6
Estimation method:	Logit	Logit	Logit	OLS	OLS	OLS
Dependent variable:	DIV	DIV	DIV	Div/CF	Div/CF	Div/CF
ln_Age	0.22***			0.01***		
	(20.42)			(6.59)		
Age		0.01***	0.02***		0.0003***	0.00
		(16.24)	(11.71)		(6.14)	(0.58)
Age^2			-0.0001***			0.00
			(-5.18)			(1.80)
TE/TA	0.23***	0.29***	0.26***	0.14***	0.14***	0.15***
	(7.96)	(9.98)	(8.92)	(46.21)	(47.17)	(46.77)
CASH/TA	1.28***	1.27***	1.28***	0.17***	0.17***	0.17***
	(41.22)	(40.84)	(41.00)	(44.36)	(44.34)	(44.22)
EBITDA/TA	4.38***	4.29***	4.33***	0.13***	0.13***	0.13***
	(100.98)	(100.84)	(100.31)	(26.62)	(26.81)	(26.17)
AGR	-0.33***	-0.36***	-0.35***	-0.03***	-0.03***	-0.03***
	(-21.60)	(-23.41)	(-22.74)	(-13.70)	(-14.01)	(-14.23)
SIZE	0.38***	0.38***	0.38***	0.03***	0.03***	0.03***
	(71.13)	(72.39)	(71.76)	(52.94)	(53.30)	(53.13)
Constant	-6.71***	-6.29***	-6.35***	-0.29***	-0.28***	-0.28***
	(-90.93)	(-88.05)	(-88.15)	(-56.87)	(-55.93)	(-55.07)
Industry FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	666,127	666,127	666,127	665,051	665,051	665,051
Pseudo R^2	10%	10%	10%			
R^2				6%	6%	6%

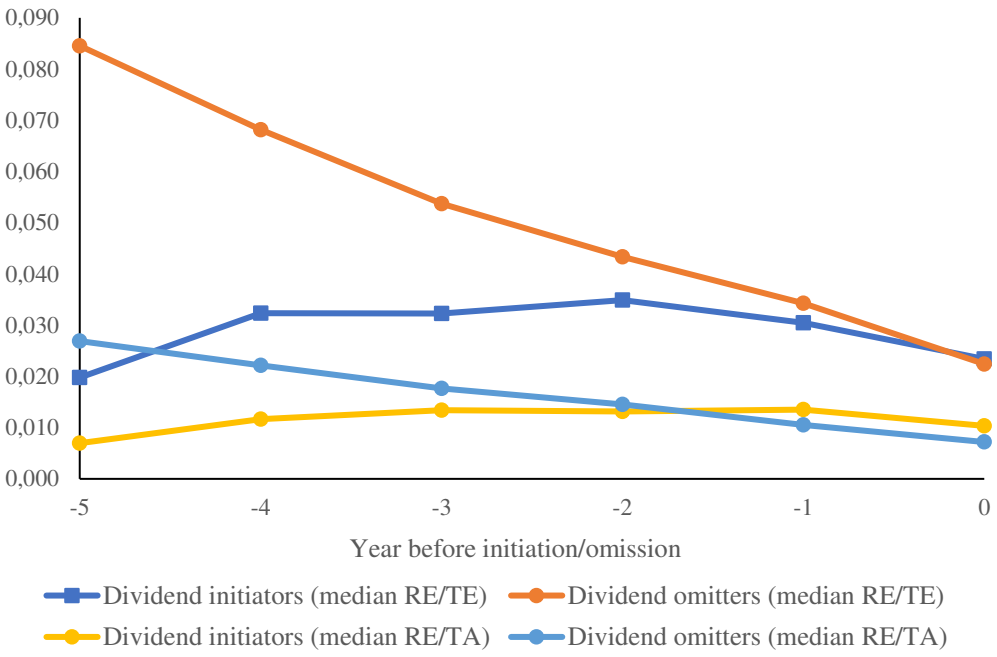

Fig. 1
Median retained earnings relative to total equity (RE/TE) and median retained earnings relative to total assets (RE/TA) over the five years before initiation (omission) for a sample of dividend initiators (omitters). We define a dividend initiator as a firm that paid a dividend after having not paid them for at least five consecutive years. We define a dividend omitter as a firm that omitted dividends after paying them for at least five consecutive years. We identified 11,406 dividend initiators and 3,343 dividend omitters in the period 2005-2018**.**

Appendix

This Appendix contains the following tables and figure:

Table A. 1 Summary Statistics of two subsamples: young firms and more established firms

This table reports summary statistics of our dividend policy measures for the full sample (Panel A), the subsample of young firms (6 years old or younger), (Panel B), and the subsample of more established firms (older than 6 years) (Panel C). ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

	Panel A All firms			Panel B Young firms			Panel C More established firms			t-statistics
	N	Mean	SD	N	Mean	SD	N	Mean	SD	(mean)
DIV	666,135	0.18	0.37	89,561	0.13	0.34	576,574	0.18	0.38	33.56***
Div/CF	665,050	0.11	0.39	89,426	0.07	0.28	575,624	0.12	0.41	31.88***
Div/E	656,117	0.28	1.11	87,871	0.18	0.80	568,246	0.30	1.15	29.34***

Table A. 2 Nonlinear relationship of retained earnings and dividend policy

Logit and OLS analyses of the relationship between the life cycle proxies (RE/TE and RE/TA) and dividends (the likelihood of paying out a dividend (DIV) and the amount of dividend paid (Div/CF), respectively) including the squared terms of the life cycle proxies. T-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively.

Model:	1	2	3	4
Estimation method:	Logit	Logit	OLS	OLS
Dependent variable:	DIV	DIV	Div/CF	Div/CF
RE/TE	0.58***		0.02***	
	(16.32)		(15.06)	
$(RE/TE)^2$	-0.65***		0.01**	
	(-14.86)		(3.66)	
RE/TA		1.16***		0.05***
		(16.30)		(10.04)
$(RE/TA)^2$		-1.91***		0.00
		(-15.69)		(0.15)
TE/TA	0.39***	0.43***	0.15***	0.14***
	(13.88)	(14.38)	(51.00)	(43.98)
CASH/TA	4.12***	4.09***	0.12***	0.12***
	(97.37)	(96.65)	(24.50)	(24.25)
EBITDA/TA	-0.39***	-0.39***	-0.03***	-0.03***
	(-25.62)	(-25.55)	(-14.87)	(-14.83)
AGR	0.40***	0.40***	0.03***	0.03***
	(78.95)	(79.04)	(56.49)	(56.59)
SIZE	1.25***	1.27***	0.17***	0.17***
	(40.30)	(40.73)	(43.86)	(43.85)
Constant	-6.33***	-6.36***	-0.28***	-0.28***
	(-88.51)	(-88.96)	(-55.97)	(-55.40)
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	666,125	666,127	665,050	665,051
R^2	10%	10%	6%	6%

Table A. 3 Retained earnings and the likelihood to pay a dividend with industry FE included

Year by year logit regressions and Fama and Macbeth (1973) methodology on the fourteen annual coefficients measuring the relationship of RE/TE and RE/TA and DIV with industry FE included. Table reports mean coefficients and t-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively. The average pseudo R^2 is calculated from the time series of pseudo R^2.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.21***		0.18***		0.17**		0.27***		0.25***	
	(9.38)		(6.42)		(5.34)		(7.97)		(6.03)	
RE/TA		0.57***		0.24**		0.23*		0.44**		0.38**
		(13.15)		(3.43)		(2.82)		(5.56)		(4.24)
TE/TA			0.76***	0.71***	0.32**	0.27**	0.81***	0.71***	0.82***	0.73***
			(8.81)	(7.18)	(4.26)	(3.07)	(10.34)	(7.65)	(9.71)	(7.16)
CASH/TA					1.22***	1.23***	0.54***	0.55***	0.48***	0.48***
					(22.48)	(22.78)	(9.74)	(9.87)	(7.66)	(7.79)
L_DIV							2.87***	2.87***	0.49***	2.79***
							(21.80)	(21.85)	(20.60)	(20.64)
L_EBITDA/TA									1.26***	1.26***
									(19.85)	(19.91)
EBITDA/TA	4.53***	4.50***	4.50***	4.52***	4.20***	4.21***	2.28***	2.29***	1.74***	1.74***
	(52.17)	(50.67)	(58.34)	(58.70)	(53.62)	(54.04)	(24.47)	(25.01)	(16.02)	(16.27)
AGR	-0.39***	-0.40***	-0.43***	-0.43***	-0.39***	-0.39***	-0.05	-0.05	-0.11*	-0.10*
	(-15.26)	(-15.22)	(-15.14)	(-15.10)	(-13.46)	(-13.41)	(-1.44)	(-1.37)	(-2.69)	(-2.64)
SIZE	0.38***	0.38***	0.39***	0.39***	0.41***	0.41***	0.26***	0.26***	0.26***	0.26***
	(35.58)	(35.23)	(33.72)	(33.58)	(36.26)	(36.20)	(27.77)	(27.87)	(27.99)	(28.11)
Constant	-5.89***	-5.90***	-6.22***	-6.20***	-6.34***	-6.33***	-5.62***	-5.58***	-5.72***	-5.68***
	(-33.48)	(-33.76)	(-41.49)	(-42.11)	(-43.22)	(-43.91)	(-38.50)	(-39.42)	(-35.73)	(-36.70)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	666,135	666,137	666,135	666,137	666,135	666,137	666,135	666,137	532,932	532,933
Average pseudo R^2	8%	8%	9%	9%	9%	9%	30%	30%	30%	30%

Table A. 4 Retained earnings and the dividend to cash flow ratio with industry FE included

Year by year OLS regressions and Fama and Macbeth (1973) methodology on the fourteen annual coefficients measuring the relationship of RE/TE and RE/TA and Div/CF with industry FE included. Table reports mean coefficients and t-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively. The average R^2 is calculated from the time series of R^2.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.03***		0.02***		0.02***		0.02***		0.02***	
	(15.33)		(6.52)		(5.45)		(6.55)		(4.99)	
RE/TA		0.13***		0.06***		0.05***		0.06***		0.05**
		(8.26)		(4.89)		(4.23)		(5.04)		(3.88)
TE/TA			0.18**	0.17**	0.13**	0.12*	0.14**	0.12*	0.15**	0.14*
			(3.61)	(3.24)	(3.20)	(2.76)	(3.43)	(2.97)	(3.37)	(2.95)
CASH/TA					0.15***	0.15***	0.11**	0.11**	0.11**	0.11**
					(5.21)	(5.22)	(3.93)	(3.93)	(3.52)	(3.53)
L_DIV							0.17***	0.17***	0.17***	0.17***
							(15.93)	(16.04)	(13.90)	(13.99)
L_EBITDA/TA									0.16***	0.16***
									(12.53)	(12.44)
EBITDA/TA	0.17***	0.16***	0.17***	0.17***	0.13***	0.13***	0.01	0.01	-0.07**	-0.07**
	(13.01)	(11.18)	(13.73)	(14.09)	(7.68)	(7.86)	(0.59)	(0.60)	(-3.32)	(-3.34)
AGR	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.03***	-0.02*	-0.01*	-0.03**	-0.03**
	(-5.41)	(-5.30)	(-4.71)	(-4.70)	(-4.73)	(-4.72)	(-2.52)	(-2.51)	(-3.97)	(-3.97)
SIZE	0.02***	0.02***	0.03***	0.03***	0.03***	0.03***	0.02***	0.02***	0.02***	0.02***
	(20.04)	(20.85)	(16.40)	(16.76)	(14.36)	(14.64)	(8.98)	(9.15)	(9.21)	(9.36)
Constant	-0.15***	-0.15***	-0.23***	-0.22***	-0.24***	-0.23***	-0.16***	-0.16***	-0.19***	-0.19***
	(-10.62)	(-11.45)	(-21.68)	(-20.24)	(-19.12)	(-17.92)	(-12.44)	(-11.70)	(-12.80)	(-12.04)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	665,050	665,051	665,050	665,051	665,050	665,051	665,050	665,051	532,086	532,087
Average R^2	2%	2%	3%	3%	4%	4%	8%	8%	8%	8%

Table A. 5 Retained earnings and the dividend to earnings ratio

Year by year OLS regressions and Fama and Macbeth (1973) methodology on the fourteen annual coefficients measuring the relationship of RE/TE and RE/TA and Div/E. Table reports mean coefficients and t-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively. The average R^2 is calculated from the time series of R^2.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.08***		0.06***		0.06***		0.06***		0.05***	
	(14.39)		(7.67)		(6.50)		(7.68)		(5.52)	
RE/TA		0.26***		0.13***		0.12***		0.13***		0.11**
		(7.34)		(4.73)		(4.12)		(4.79)		(3.45)
TE/TA			0.32*	0.30*	0.22*	0.20	0.25*	0.22*	0.26*	0.24*
			(2.86)	(2.51)	(2.46)	(2.06)	(2.72)	(2.30)	(2.65)	(2.28)
CASH/TA					0.29***	0.29***	0.19*	0.19*	0.19*	0.19*
					(4.53)	(4.54)	(2.99)	(3.00)	(2.57)	(2.58)
L_DIV							0.43***	0.43***	0.42***	0.42***
							(15.18)	(15.24)	(13.15)	(13.19)
L_EBITDA/TA									0.37***	0.37***
									(12.70)	(12.70)
EBITDA/TA	0.28***	0.27***	0.28***	0.29***	0.21***	0.22***	-0.07	-0.07	-0.25***	-0.24***
	(8.62)	(7.51)	(9.30)	(9.58)	(5.29)	(5.47)	(-1.65)	(-1.64)	(-5.68)	(-5.67)
AGR	-0.07***	-0.07***	-0.08***	-0.08***	-0.07***	-0.07***	-0.04*	-0.04*	-0.07**	-0.07**
	(-5.01)	(-4.90)	(-4.46)	(-4.44)	(-4.49)	(-4.47)	(-2.51)	(-2.48)	(-3.63)	(-3.61)
SIZE	0.06***	0.06***	0.06***	0.06***	0.07***	0.07***	0.04***	0.04***	0.04***	0.04***
	(19.11)	(19.70)	(16.93)	(17.26)	(15.10)	(15.37)	(8.54)	(8.70)	(8.94)	(9.10)
Constant	-0.19***	-0.20***	-0.34***	-0.33***	-0.37***	-0.37***	-0.22***	-0.21***	-0.27***	-0.26***
	(-4.95)	(-5.63)	(-12.65)	(-11.83)	(-11.46)	(-10.77)	(-6.27)	(-5.85)	(-7.21)	(-6.72)
Observations	656,117	656,118	656,117	656,118	656,117	656,118	656,117	656,118	525,178	525,179
Average R^2	1%	1%	2%	2%	2%	2%	5%	5%	5%	5%

Table A. 6 Retained earnings and the dividend to earnings ratio with industry FE included

Year by year OLS regressions and Fama and Macbeth (1973) methodology on the fourteen annual coefficients measuring the relationship of RE/TE and RE/TA and Div/E with industry FE included. Table reports mean coefficients and t-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively. The average R^2 is calculated from the time series of R^2.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.07***		0.06***		0.05***		0.05***		0.05***	
	(14.01)		(7.01)		(6.07)		(7.40)		(5.31)	
RE/TA		0.25***		0.12***		0.11**		0.12***		0.10**
		(7.00)		(4.40)		(3.89)		(4.68)		(3.34)
TE/TA			0.32*	0.30*	0.23*	0.20	0.25*	0.23*	0.27*	0.25*
			(2.82)	(2.50)	(2.47)	(2.09)	(2.73)	(2.32)	(2.66)	(2.30)
CASH/TA					0.28***	0.28***	0.18*	0.19*	0.18*	0.18*
					(4.27)	(4.29)	(2.84)	(2.85)	(2.44)	(2.45)
L_DIV							0.43***	0.43***	0.42***	0.42***
							(14.96)	(15.02)	(12.96)	(13.00)
L_EBITDA/TA									0.36***	0.37***
									(13.18)	(13.10)
EBITDA/TA	0.29***	0.27***	0.29***	0.29***	0.22***	0.22***	-0.07	-0.07	-0.24***	-0.24***
	(9.77)	(8.48)	(10.21)	(10.46)	(5.95)	(6.14)	(-1.79)	(-1.78)	(-5.52)	(-5.51)
AGR	-0.08***	-0.08***	-0.08***	-0.08***	-0.08***	-0.08***	-0.04*	-0.04*	-0.07**	-0.07**
	(-5.33)	(-5.22)	(-4.72)	(-4.71)	(-4.81)	(-4.79)	(-2.73)	(-2.71)	(-3.79)	(-3.77)
SIZE	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***	0.04***	0.04***	0.04***	0.04***
	(16.59)	(17.04)	(14.17)	(14.40)	(12.60)	(12.79)	(7.43)	(7.55)	(7.61)	(7.73)
Constant	-0.28***	-0.29***	-0.43***	-0.42***	-0.45***	-0.44***	-0.27***	-0.26***	-0.32***	-0.31***
	(-6.40)	(-6.81)	(-24.58)	(-22.86)	(-22.42)	(-20.67)	(-12.51)	(-11.52)	(-14.47)	(-13.24)
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	656,117	656,118	656,117	656,118	656,117	656,118	656,117	656,118	525,178	525,179
Average R^2	1%	1%	2%	2%	2%	2%	5%	5%	5%	5%

Table A. 7 Logit analyses: retained earnings and the likelihood to pay a dividend for the full sample of privately held firms

Year by year logit analysis and Fama and Macbeth (1973) methodology on the fourteen annual coefficients measuring the relationship of RE/TE and RE/TA and DIV for the full sample of privately held firms, including the firms that are not legally allowed to pay dividends. Table reports mean coefficients and t-statistics in parenthesis, based on robust standard errors clustered by firms. ***, **, and * denote statistical significance at the 0.1%, 1% and 5% levels, respectively. The average pseudo R^2 is calculated from the time series of pseudo R^2.

	Mean coefficients from 2005 to 2018, and t-statistics									
Model:	1	2	3	4	5	6	7	8	9	10
RE/TE	0.60***		0.54***		0.52***		0.45***		0.44***	
	(37.19)		(33.23)		(32.64)	0.91***	(19.93)		(17.08)	
RE/TA		1.37***		0.95***		(15.69)		0.91***		0.80***
		(38.24)		(18.84)				(13.60)		(10.59)
TE/TA			0.93***	0.87***	0.46***	0.40**	0.87***	0.77***	0.87***	0.77***
			(10.86)	(9.02)	(5.99)	(4.53)	(10.40)	(8.02)	(9.56)	(7.33)
CASH/TA						1.37***	0.66***		0.60***	0.60***
						(27.88)	(12.58)		(10.20)	(10.30)
L_DIV							2.93***		2.86***	2.88***
							(22.94)		(22.08)	(22.34)
L_EBITDA/TA									1.24***	1.26***
									(16.68)	(16.97)
EBITDA/TA	4.43***	4.47***	4.39***	4.47***	4.07***	4.16***	2.26***	2.31***	1.68***	1.74***
	(53.29)	(54.12)	(60.74)	(62.73)	(56.58)	(58.65)	(24.64)	(26.04)	(17.09)	(18.07)
AGR	-0.28***	-0.28***	-0.32***	-0.31***	-0.28***	-0.28***	0.04	0.04	-0.01	0.00
	(-13.99)	(-13.70)	(-14.14)	(-13.74)	(-12.29)	(-11.97)	(1.20)	(1.34)	(-0.23)	(-0.10)
SIZE	0.40***	0.41***	0.40***	0.41***	0.43***	0.44***	0.26***	0.27***	0.27***	0.27***
	(34.48)	(34.07)	(31.60)	(31.59)	(34.76)	(34.72)	(27.74)	(28.45)	(27.02)	(27.60)
Constant	0.50***	-5.55***	-5.80***	-5.86***	-6.01***	-6.08***	-5.42***	-5.46***	-5.50***	-5.52***
	(-40.81)	(-41.51)	(-48.15)	(-47.62)	(-51.24)	(-50.58)	(-49.40)	(-50.08)	(-51.29)	(-52.23)
Observations	841,557	842,797	841,557	842,797	841,557	842,797	841,557	842,797	677,738	678,229
Average pseudo R^2	10%	9%	10%	10%	11%	11%	31%	31%	31%	31%

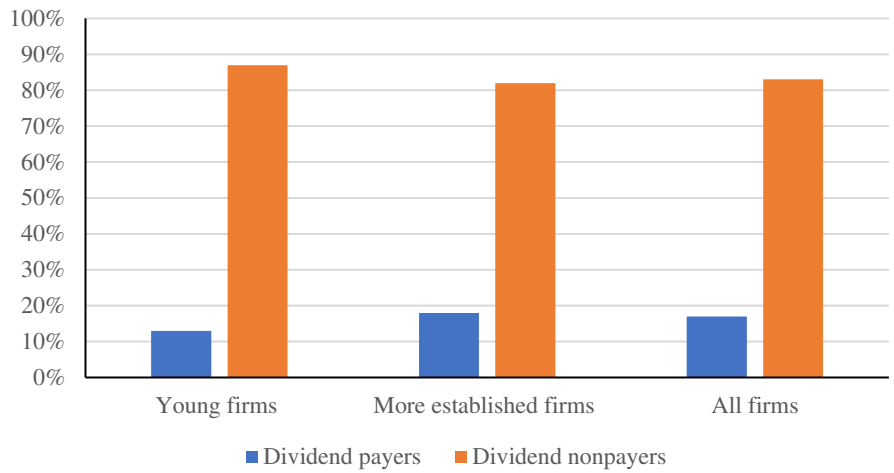

Fig. A. 1 Fraction of privately held firms paying dividends versus those not paying dividends (two subsamples: young firms and more established firms).