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Payouts and stock ownership☆

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ABSTRACT

Using a unique Swedish database that records the ultimate stockholdings in public firms, we decompose stock ownership by domiciles using votes rather than cashflows. We then study the impact of variables related to the lifecycle theory of dividends and the catering theory of dividends. We also examine the propensity of firms to pay dividends and/or activate a stock buyback program. Univariate analysis reveals a positive association between a firm's maturity and its likelihood to pay dividends. Logistic regression finds a positive relation between payouts and retained earnings to total assets. Foreign institutional investors are less likely to hold dividend-paying stocks than domestic institutional investors. The analysis finds no support for the catering theory of dividends. After controlling for stock ownership, our evidence is consistent with the lifecycle theory of dividends, which states that more mature firms are associated with dividends. It also supports the transaction cost hypothesis claiming that foreign investors face additional administrative costs when holding dividend-paying stocks.

1. Introduction

Assuming perfect capital markets and following Miller and Modigliani (M&M) (1961), dividend policy is irrelevant if a firm has a fixed capital investment and debt policy. Thus, investors should be indifferent if they receive a dollar in capital gains or if a firm distributes the same amount in dividends. However, when the analysis includes market frictions such as taxes and transaction costs, M&M's well-known dividend irrelevance proposition is no longer valid. Specifically, when dividends, capital gains, and proceeds distributed by stock buybacks and stock redemptions are taxed differently, some investors may prefer holding non-paying stocks. In contrast, others prefer holding dividend-paying stocks, resulting in a clientele effect. Prior research documents this dividend clientele for both individual and institutional investors (Graham and Kumar, 2006; Grinstein and Michaely, 2005). Evidence also shows that the composition of institutional investors regarding domiciles (i.e., domestic vs. foreign investors) is associated with different payout preferences due to transaction costs (Ferreira et al. (2010)).

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This paper uses detailed information on stock holdings and firm characteristics to estimate the effect on firm payouts. We presume that an investor's domicile can affect payouts resulting from different views on how a firm distributes cash to its stockholders due to information asymmetries, taxes, and transaction costs. The issue of whether domestic investors have an information advantage compared to foreign investors has been examined in prior literature with mixed results, see Dvorak (2005).

To investigate preferences for payouts for institutional investors concerning their domiciles, we construct a sample reflecting 303 listed Swedish firms between 2000 and 2016. In this context, Sweden provides an appropriate setting for several reasons. First, most firms listed on the Stockholm Stock Exchange (SSE) have stocks with different voting power (1/1 and 1/10 votes per share). For instance, SKF's holdings by the largest institutional investor represented 13.6% by cash flows but 29.2% by votes at the end of 2016. In another firm, H&M's holdings by the largest institutional investor were 38.5% by cash flows but 70.1% by votes during the same period. Thus, when analyzing payouts and stock ownership, where shareholders approve payouts during the general meeting with votes rather than the number of stocks held, controlling for firms with different voting power in their stocks is critical.

Second, we have access to detailed and reliable information on the ultimate stockholdings in firms obtained directly from the central securities registrar in Sweden (Euroclear Sweden), enabling us to classify institutional investors by domicile. For instance, foreign investors' holdings in Swedish Match, by votes, increased from 52.5% to 75.4% during our sample period. Similarly, foreign investors' holdings in Volvo increased from 29.1% to 43.4% during the same period. A critical aspect of these two firms is that the magnitude of the change in holdings is substantial.

Third, we have a hand-collected data set with detailed information of proceeds distributed to shareholders in the form of cash dividends, stock buybacks, and stock redemption programs.

Fourth, authorities removed restrictions on stock buybacks as a method to disburse cash to shareholders at the beginning of 2000. Hence, examining the evolution of payouts following the new legislation is important.

Finally, additional analysis of payouts is of interest given the tradition among Swedish firms of paying dividends in employee stock ownership programs. Additionally, funds and foundations representing a firm's employees can belong to the largest shareholder and be represented on the board of directors, thereby influencing payouts.[1]

As Fama and French (2001) report, the proportion of dividend-paying firms in the United States declined from 66.5% in 1926 to 20.8% in 1999. They attribute this development to the increased number of young non-dividend-paying firms. Floyd et al. (2015) report that at the end of 2012, the fraction of industrial dividend-paying firms in the United States increased to 28.1 %. Additionally, an increasing number of firms use stock buybacks to distribute earnings to their shareholders. The evidence of a lower propensity to pay dividends for public U.S. firms also seems applicable in other markets.[2] Kulchania (2013) shows that investor demand for stock buybacks and dividends is associated with a premium related to payout decisions.

In their lifecycle theory of dividends, DeAngelo et al. (2006) contend that a firm's likelihood of paying a dividend is related to its mix of earned and contributed capital.[3] Specifically, they conjecture that firms in the early stages of their lifecycles, characterized by firms having a low proportion of retained earnings to total equity accompanied by investment opportunities with positive net present values (NPVs), refrain from paying dividends. By contrast, mature firms, defined as those having a higher proportion of retained earnings relative to total equity and fewer investment opportunities, have a higher propensity to pay dividends. Using a large sample of public U.S. firms between 1973 and 2002, DeAngelo et al. (2006) find support for this theory. Namely, firms with high earned to contributed equity are more likely to pay dividends.

Coulton and Ruddock (2011) examine the lifecycle theory of dividends and control for firms with stock buybacks in Australia between 1993 and 2004. Their results support the theory that dividend-paying firms, on average, are larger, more profitable, have fewer growth opportunities, and a higher proportion of retained earnings in their capital structure than non-dividend-paying firms. Evidence shows similar support for the lifecycle theory of dividends in Thailand (Thanatawee, 2011) and Egypt (El-Ansary and Gomaa, 2012).

Banyi and Kahle (2014) provide further insights into payouts by using the same sample procedure as DeAngelo et al. (2006) and extending the sample period from 1973 to 2011. They claim that the number of initial public offering (IPO) firms, which generally is associated with non-dividend-paying firms, explains prior evidence of the declining propensity to pay dividends. Hence, their results support the lifecycle theory of dividends.

The extant literature documents that equity holdings by institutional investors have increased since the 1980s. This trend is also valid in Sweden, where domestic and foreign institutional investors like mutual funds, pension funds, and life insurance companies are tax-exempt. Hence, they should be indifferent between dividends and capital gains. However,

[1] As an example, at the end of 2016, the employee foundation "Oktogonen" in Handelsbanken was the largest shareholder with holdings representing roughly 10% of equity by votes. The foundation was also represented on the board of directors. Further, some large research foundations can only provide funds for research using dividends and hence, these foundations have good arguments for dividends.

[2] Denis and Osobov (2008) report lower fractions of dividend-paying firms in Canada, France, Germany, Japan, and the United Kingdom. Using a sample of 32 countries, Bildik et al. (2015) document a higher fraction of dividend-paying firms compared to U.S. firms between 1985 and 2011. According to DeAngelo et al. (2004), dividend payments are concentrated in a limited number of firms.

[3] Dickinson (2011) use cash flow patterns to identify five stages representing the life cycle: introduction, growth, mature, shake-out, and decline). According to Grullon et al. (2002), dividend-paying firms have fewer investments and growth opportunities. They also show that higher dividends are related to lower market risk.

when a foreign institutional investor receives dividends, the proceeds must be recorded in a Swedish bank. The investor incurs transaction costs resulting in costs for a legal certificate showing the tax-status and country origin, administrative costs, and bank fees. Thus, when a foreign institutional investor receives dividends, it faces two questions. Should it reinvest the proceeds in the same stock or other stocks, resulting in brokerage fees? Should it transfer the proceeds to its home country to eliminate potential foreign exchange risk, resulting in currency exchange costs? We conjecture that a portfolio or country manager allocates these proceeds using tactical asset allocation.

Sweden has also seen a substantial increase in equity holdings by different kinds of institutional investors. For instance, foreign investors increased their Swedish equity holdings from 7.0% in 1984 to 39.4% in 2016. By contrast, domestic individual investors' holdings dropped from 29.0% to11.9% during the same period (Statistics Sweden, 2018).[4] Dahlquist and Robertsson (2001) report that foreign investors with holdings in Swedish stocks prefer stocks with low dividend yields. Khalfan and Wendt (2020) report a negative relation between ownership concentration in firms and dividends in Sweden.

In this study, we provide new insights related to payouts and answer two questions. Are payouts related to a firm's stage in its lifecycle and stock ownership? Rozeff (1982) documents an association between holdings by investors and payouts. He shows that firms with a high level of institutional investors prefer cash dividends to substitute for monitoring devices. According to the catering theory of dividends (Baker and Wurgler, 2004), firms pay dividends when the market value of dividend-paying firms is higher than that of non-paying firms. Is this finding valid for Swedish firms when examining total payout?

Agency theory provides a direct framework for linking payout policy and stock ownership, as higher dividends can mitigate agency costs (Jensen and Meckling, 1976; Jensen, 1986). According to Faccio et al. (2001), payouts are higher in firms with links to controlling shareholders. In general, institutional investors have an information advantage and more resources to monitor firms than individual investors. Thus, high institutional ownership in a firm should mitigate information asymmetries and agency conflicts between firm management and shareholders, implying a more flexible payout policy. Further, the magnitude of institutional holdings can be substantial. Blume and Keim (2012) report that institutional shareholders' holdings in the U.S. stock market constituted about 67% of publicly traded stocks.[5] Gugler (2003) and Grinstein and Michaely (2005) document the importance of dividends and stock buybacks. They show that institutions have both preferences and incentives to monitor corporate governance-related issues. Crane et al. (2016) find a positive link between institutional ownership and higher dividends and stock buybacks.

We believe that additional study related to payout policy is vital for several reasons. First, the ownership structure, together with the dual-class series of shares and holding by institutional investors, can influence a firm's payout policy. It can also pressure management to act in some large investors' interest through the existing corporate governance system. For instance, using a compulsory redemption plan rather than cash dividends makes the proceeds to some large institutional investors tax-exempt. Second, information asymmetries between domestic and foreign investors can influence payout decisions. Third, both the fraction of dividend-paying firms in Sweden and the level of payouts are high compared to many other countries (Baker and De Ridder, 2019). Finally, despite existing criticism against stock buybacks, permitting repurchases is probably one of the most critical amendments in the Swedish Companies Act and worth examination.

We find that roughly six of 10 firms listed on the SSE paid a dividend, which is high compared to many other countries. Our evidence also shows that a surprisingly high percentage of firms continue to pay dividends. In fact, across all years, more than 90% of dividend-paying firms did so in the previous year. Following new legislation permitting stock buybacks, we find that dividends are still the preferred vehicle for distributing earnings to shareholders. Hence, stock buybacks have not replaced dividends.

Next, we examine whether our main results relate to the stage of the firm's lifecycle. Our evidence shows that dividend-paying firms have higher earned to contributed equity ratios (retained earnings divided by total equity or total assets, *RE*/*TE*, and *RE*/*TA*, respectively) as well as higher profitability and market capitalization.

Additional analysis shows that holdings by institutional investors are roughly 73% irrespective of the retained earnings when standardized on assets or equity. We also find that foreign investors increased their holdings in more mature firms. For firms with low *RE*/*TA* ratios, we document that the largest shareholder's holdings declined over time.

We also analyze payouts in a multivariate setting to relate changes in payouts to firms and ownership characteristics. Interestingly, we document no association between holdings by domestic or foreign institutional investors. That is, these investors pay little attention to changes in payouts. Using logistic regression for several payout forms, we document that a firm's position in its life cycle is positively related to dividends but not to stock buybacks. This finding is consistent with the view that dividends are common among firms. We also find a relation between holdings by foreign institutional investors and payouts. Specifically, these investors have fewer holdings in firms with dividends and have preferences for stock buybacks.

Our evidence also shows the propensity to pay dividends is higher for firms with higher *RE*/*TE*. We document a positive relation between payouts and variables related to a firm's lifecycle. Thus, we provide additional evidence of the lifecycle hypothesis, where firms tailor their payout policies to meet the demand from primarily foreign institutional investors caused by additional transaction costs. We document a difference in stock holdings between domestic and foreign investors, in which

[4] Since then, direct holdings by individual investors in mutual funds have roughly increased by the same magnitude.

[5] As reported by Statistics Sweden, institutional holdings in Swedish stocks at year-end 2016 are even higher, with domestic (foreign) institutional investors holding 48.7% (39.4%), leaving just 11.9% to individual investors.

the latter group shows a negative relation to payouts. This finding supports the transaction cost hypothesis where foreign investors face additional administrative costs.

Our study is related but distinct from prior payout studies. To better understand holdings by institutional investors representing different domiciles, we provide evidence that the composition of institutional investors is related to different payout preferences. Specifically, measuring ownership by voting power is superior in a country with specific corporate governance attributes, as in Sweden's case.[6] Our results also provide novel insights that stock buybacks have not replaced dividends, and firms do not cater to investor demand for dividends and stock buybacks in Sweden.

The remainder of our paper has the following organization. Section 2 describes the dataset used and explains the construction of the stock ownership variables. Section 3 presents the results, and Section 4 concludes.

2. Data and sample construction

Our hand-collected sample includes firm-specific variables obtained from annual reports between 2000 and 2016.[7] For each calendar year, we collect information from the companies listed on the SSE. The advantage of using this approach is that we avoid potential survivorship bias. The majority of firms in Sweden pay dividends annually, with a few paying bi-annually. In the latter case, we add dividends for the two periods. A few firms have a fiscal year that differs from the calendar year (broken fiscal year). We assign the firm variables to the calendar year with the most months in the firm's fiscal year for these firms. For instance, the fiscal year for the firm Systemair extends from May 1, 2013, to April 30, 2014, we assign the firm to the calendar year 2013. To be included in our sample, we require a firm to be a Swedish public company. We exclude firms with a Swedish Depositary Receipts (SDR) listing and foreign firms for which the primary listing is not the SSE. Following DeAngelo et al. (2004), we exclude financial firms. After applying these filters, our final sample includes 3534 firm-year observations in 303 public companies. We collect the following data from the annual reports: net profit, the total book value of assets, the total book value of equity, retained earnings, and various forms of payouts. Variables of particular interest are payouts and the mix between earned (*RE*) to total equity (*TE*) as well as earned to total assets (*TA*). In our analysis, we compute payouts as the ratio between cash dividends to net profit, as well as the sum of cash dividends and stock buybacks divided by net profit or (*TA*). Following the previous literature, we use both *RE*/*TE* and *RE*/*TA* when analyzing the firm's position in its lifecycle.

We merge the data above with detailed data on stock ownership in firms. From Euroclear Sweden, we obtain the ultimate ownership data for all public firms. This dataset is superior to many other studies examining stock ownership because it uses the official stock record holdings.[8] From this source, we first compute stock ownership by investors in a firm as the ratio between the sum of the holdings by votes in a firm stock divided by its total number of votes at the end of each fiscal year excluding treasury stocks. Our data enable us to classify stock ownership into three main groups: (1) domestic institutional investors, (2) foreign institutional investors, and (3) domestic individual investors. We collect firm-specific characteristics from Datastream. In our analysis, we conjecture that large shareholders can influence a firm's payout policy. Therefore, we introduce stock ownership into our analysis and explore the association between the propensity to pay dividends and several variables related to stock ownership.

According to Ferreira et al.'s (2010) transaction costs hypothesis, foreign institutional investors prefer to hold non-paying stocks in their portfolios because dividends from abroad imply administrative costs. Dahlquist and Robertson (2001) report that foreign investors prefer to hold stocks with low dividend yields. Following these results, we put forward our first hypothesis.

Hypothesis 1. A negative association exists between holdings by foreign institutional investors and firm payout.

Baker and De Ridder (2019) report that Swedish domestic institutional investors prefer dividends. Therefore, we state the following hypothesis:

Hypothesis 2. A positive association exists between holdings by domestic institutional investors and firm payout.

We analyze ownership concentration using the Herfindahl-Hirschman Index (*HHI*), defined as the sum of the squared fractions of equity holdings for all investors (n) in a firm:

$$HHI = \sum_{i=1}^{n} \left[\frac{N_{i,t} \times P_{i,t}}{\sum_{i=1}^{n} N_{i,t} \times P_{i,t}} \right]^2 \tag{1}$$

[6] Henrekson and Jakobsson (2012) describe the Swedish corporate control system.

[7] After a detailed examination of publicly available databases, we decided to hand-collect some data because we identified several shortcomings with the data in the databases. Specifically, we found errors where the firm specific variables showed the group figure rather than the figure for the parent company. We also noted issues with additional distributions to shareholders such as extra and special dividends and share redemption programs.

[8] Most empirical studies in the United States are based on quarterly 13f filings in line with the SEC regulations (i.e., reflecting institutional investors with more than $100 million in U.S. public stocks and holdings greater than $200,000 or more than 10,000 stocks).

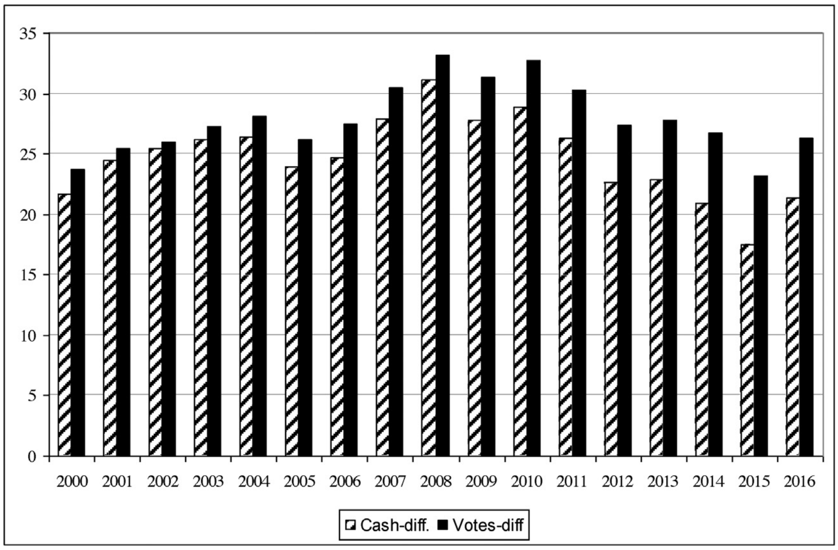

Fig. 1. Differences between domestic and foreign institutional stock holdings.
This figure shows the equally weighted difference (%) in stockholdings by both cash and votes between domestic and foreign institutional investors in firms listed on the SSE between 2000 and 2016, excluding financial firms.

where $N_{i,t}$ is the number of stocks in firm *i* at time *t* and $P_{i,t}$ is the closing price in stock *i* at time *t.* A low (high) *HHI* indicates a more (less) dispersed stock ownership. Although this variable is common to measure industry concentration, researchers have also used the *HHI* in empirically oriented finance studies (Ivkovic et al., 2008).

Fig. 1 highlights the importance of domestic and foreign investors' holdings by showing the difference between cash and votes across our sample. The equally weighted mean difference across years by cash and votes is 24.72 % and 27.86 %, respectively, and reflects all series of stocks.

3. Results

3.1. Descriptive statistics of sample firms and the size of distributions

Table 1 shows the frequency of dividend and non-dividend-paying firms for our sample between 2000 and 2016, reflecting a total of 3534 firm-year observations in 303 firms. Although Table 1 does not report the fraction of dividend-paying firms, the data show that, on average, 62.4% of the sample firms pay dividends, which is substantially higher than the 28.1% for U.S. industrial firms as reported by Floyd et al. (2015). The second column in Table 1 confirms that dividends are sticky. For instance, 87.1% of the companies that paid a dividend in 2016 also did so in the previous year. Before proceeding to a formal univariate analysis of firm variables, visual inspection of the data indicates that dividend-paying firms have higher market capitalization, greater *RE*/*TE*-ratios, and more profit than non-dividend-paying firms.

These results show that profitability is higher in dividend-paying than in non-paying firms. The evidence also raises the concern of using equally weighted observations across firms. More specifically, the average profitability for the first two sample years is −20.72% and −47.79% for non-paying firms. To assess this issue, we also computed the value-weighted profitability. This unreported analysis reveals that roughly 20% of all observations with a negative *ROA* paid dividends. Also, small-capitalization firms in the information technology (IT) sector drive figures reported in Table 1. Using value-weighted profitability, we find that *ROA* drops to roughly −10% for the first two sample years and is also lower than the figures reported for the remaining sample years. Overall, the composition of sample firms seems to influence our results. However, in our multivariate analysis, we explicitly control for profitability.

Table 2 reports the mean value for four variables related to payouts for firms with a positive net profit. The first column shows the ratio between the value of cash dividends and net profit. In contrast, the second column shows the value of buyback programs, including stock redemption programs relative to net profit. The third and fourth columns show total proceeds distributed to shareholders relative to net profit and total assets, respectively. The last row shows the equally-weighted mean values of the variables across the sample years. As the third column shows, our sample firms distribute 73.71% of their net profit to their shareholders on average.

Additionally, total proceeds were high in the early period with high volumes of dividends in 2002 (107.2%) and high buyback volumes in 2000 (25.2%), 2001 (42.8%), 2005 (28.8%), and 2007 (34.0%). A more detailed analysis of our sample firms shows that between 2005 and 2007, the total proceeds from five companies represented 41.2% of the aggregate value

Table 1
Sample characteristics.

Year	Dividend-paying firms						Non-paying firms				
	N	Payers in Year $t-1$, %	Market Cap. SEK Million	M/B	RE/TE, %	ROA, %	N	Market Cap. SEK Million	M/B	RE/TE, %	ROA,%
2000	121	88.4	16,058	3.07	31.99	7.75	85	2049	3.72	0.87	−20.72
2001	113	93.8	10,083	2.39	35.80	5.78	111	5471	2.94	1.91	−47.79
2002	115	88.7	8767	2.01	39.41	5.57	113	1569	1.61	−15.49	−32.27
2003	114	88.6	10,462	2.20	41.09	5.62	112	2830	2.78	−15.02	−16.93
2004	125	90.4	13,604	2.52	38.09	6.96	92	1114	2.86	−21.53	−9.60
2005	135	86.7	16,410	2.92	40.57	8.40	83	1683	3.96	−7.98	−6.97
2006	146	80.8	19,182	3.65	42.22	9.21	81	1639	4.63	−31.88	−9.85
2007	151	89.4	17,218	3.41	42.34	9.25	73	1854	3.44	−7.95	−8.34
2008	127	92.9	11,847	1.90	44.63	6.89	86	1172	1.39	10.44	−9.12
2009	128	86.7	16,222	2.71	47.96	6.59	81	2981	3.15	0.60	−17.85
2010	136	78.7	20,972	2.07	45.24	7.28	63	1556	4.60	−23.18	12.02
2011	128	93.8	17,672	2.24	45.56	7.74	56	1885	2.12	−4.82	−12.43
2012	125	95.2	19,769	2.24	43.68	7.09	59	2221	2.33	1.21	−13.49
2013	117	96.6	23,633	2.76	40.19	6.61	63	3546	3.35	−13.09	−10.32
2014	128	85.9	24,734	2.75	41.77	6.41	53	3117	3.34	24.48	−6.65
2015	142	93.7	24,188	3.16	39.58	7.57	52	5997	4.86	−1.33	−5.59
2016	155	87.1	22,503	3.40	36.47	8.01	65	4182	3.63	−13.44	−5.27

This table shows the characteristics of 303 firms grouped into dividend and non-dividend-paying firms. The sample comprises 3534 firm-year observations between 2000 and 2016. The first column shows the number of dividend-paying firms, the second column shows the fraction of payers in the previous year, and the next four columns show the mean firm characteristics for dividend-paying firms. The last five columns show results for non-paying firms. Market Cap. denotes market capitalization, computed as the total number of outstanding shares multiplied by the stock price at the end of each fiscal year expressed in Swedish Krona (SEK). Market-to-book ratio, M/B, is the market value of assets divided by the book value of assets. The market value of assets is equal to the market value of equity (using the stock price (closing price) at the end of the fiscal year multiplied by the number of outstanding shares) plus the book value of debt (book value of assets less the book value of equity). RE/TE is the ratio between retained earnings and total equity. Return on assets (ROA) is earnings before interest and taxes (EBIT) divided by total assets, with both variables computed at the fiscal year-end.

Table 2
Total distribution to shareholders.

	Dividends / Profit	Buybacks /Profit	(Dividends + Buybacks) / Profit	(Dividends + Buybacks) / Assets
2000	0.3621	0.2516	0.6137	0.0282
2001	0.5932	0.4282	1.0214	0.0216
2002	1.0721	0.1689	1.2410	0.0197
2003	0.6710	0.1629	0.8339	0.0294
2004	0.5276	0.0936	0.6212	0.0316
2005	0.5532	0.2883	0.8414	0.0454
2006	0.5761	0.1539	0.7300	0.0629
2007	0.5631	0.3403	0.9033	0.0672
2008	0.4950	0.1101	0.6051	0.0325
2009	0.6545	0.0347	0.6892	0.0318
2010	0.5836	0.0304	0.6140	0.0420
2011	0.5402	0.0522	0.5924	0.0397
2012	0.6063	0.0103	0.6167	0.0357
2013	0.6044	0.0869	0.6913	0.0402
2014	0.7380	0.0195	0.7575	0.0357
2015	0.5901	0.0643	0.6543	0.0399
2016	0.4872	0.0168	0.5040	0.0313
Average	0.6010	0.1360	0.7371	0.0373

This table shows the total distribution to shareholders of 266 dividend-paying firms listed on the SSE with a positive net profit for a fiscal year. The sample contains 2058 firm-year observations between 2000 and 2016. It reports the following equally weighted means across firms and each calendar year: the value of dividends divided by net profit, the value of stock buybacks and redemption of shares divided by net profit, total proceeds distributed to shareholders divided by net profit, and total proceeds distributed to shareholders divided by total assets. The last row shows the equally-weighted mean across the sample years of each variable.

of dividends and stock buybacks.[9] Taken together, these results not only indicate that total payouts in Swedish firms are high compared to many other countries but also reveal that stock buybacks have not replaced dividends.[10]

[9] For the first three years, aggregate payouts from Volvo represented 21% of total payouts on the SSE.
[10] Over the sample period, we find 39 firm-year observations with no cash distribution in the form of dividends but with a buyback program. Further inspection of our data indicates that six companies replaced dividends with buyback programs. In an unreported analysis, we find no significant impact on our results if we group these firms separately.

Table 3
Firm characteristics and lifecycle variables.

Panel A. Full sample

	Median	
	Dividend-paying Firms	Non-paying Firms
Retained earnings to total common equity (RE/TE)	0.4273	0.0559
Retained earnings to total assets (RE/TA)	0.1811	0.0389
Total common equity to total assets (TE/TA)	0.5370	0.6855
Profitability, ROA (%)	6.15	−1.42
Size (SEK million)	3,818.9	670.1

Panel B. Univariate analysis

	Only Dividend Paying Firms (1)	Dividends and Firms with Stock Buyback Programs (2)	Differences in Means (2 – 1)
RE/TE			
2000–2004	0.3545	0.4641	0.1096***
2005–2009	0.4551	0.4060	−0.0491*
2010–2014	0.4413	0.4376	−0.0037
2000–2016	0.4141	0.4182	0.0041
RE/TA			
2000–2004	0.2043	0.2638	0.0595***
2005–2009	0.2693	0.2277	−0.0416*
2010–2014	0.2377	0.2616	0.0239
2000–2016	0.2324	0.2406	0.0082
TE/TA			
2000–2004	0.5802	0.5471	−0.0331*
2005–2009	0.5680	0.5728	0.0048
2010–2014	0.5526	0.6405	0.0879*
2000–2016	0.5630	0.5890	0.0260
Profitability, ROA (%)			
2000–2004	6.17	5.39	−0.78
2005–2009	7.90	7.77	−0.13
2010–2014	6.83	9.08	2.25**
2000–2016	7.24	7.74	0.50
Size (SEK million)			
2000–2004	36,984	55,717	18,783
2005–2009	36,413	81,646	45,233
2010–2014	64,743	69,823	5080*
2000–2016	49,983	64,281	14,298

This table shows firm characteristics and lifecycle variables for SSE-listed firms between 2000 and 2016. Panel A splits the sample into dividend (n = 2206) and non-dividend-paying firms (n = 1328). It reports the median values of retained earnings to total common equity (RE/TE), retained earnings to total assets (RE/TA), total common equity to total assets (TE/TA), profitability (return on assets, ROA, defined as earnings before interest and taxes divided by total assets), total assets (Size) expressed in 2016 prices using the consumer price index from Statistics Sweden as a deflator. Panel B presents a univariate analysis between firms with only dividends and firms with dividends and buyback programs for three lifecycle variables and profitability. The last column in Panel B shows the differences in means between dividends and firms with buyback programs and only dividend-paying firms assuming unequal variance. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.

3.2. Firms with and without payouts

Table 3 complements Table 2. It shows the size and descriptive statistics and the univariate analysis for our key variables of interest after sorting firms into two groups: dividend and non-dividend-paying firms, representing 2206 and 1328 firm-year observations, respectively. These variables are correlated to firms' payout decisions and are the main variables used in prior studies (Banyi and Kahle, 2014; DeAngelo et al., 2006). Our statistics show the median value computed in a two-step approach. We begin by computing the median value for each calendar year and then computing the median across the sample years. The results in Panel A of Table 3 show apparent differences between firms. The first column shows that *RE*/*TE* is higher in dividend-paying firms compared to non-dividend-paying firms. We find similar results using *RE*/*TA*. Our third variable, *TE*/*TA*, reflects leverage and shows a higher value for non-dividend-paying compared to dividend-paying firms. The profitability variable, return on assets (*ROA*), defined as earnings before interest and taxes divided by total assets, shows that dividend-paying firms have positive profitability (6.15%). In contrast, non-dividend-paying firms have negative profitability (−1.42%) across all sample years. Finally, the last row shows that firm size, approximated by total assets, is higher for dividend-paying firms. In unreported analysis, we obtain similar results using the market capitalization value of equity. Overall, this evidence preliminarily supports the lifecycle theory of dividends whereby firms in the early stage are associated with low values of *RE*/*TE* or *RE*/*TA*, high leverage, low profitability, smaller size, and most importantly, nonpayment of dividends.

To determine whether a difference exists in variables related to the lifecycle theory of dividends across different periods, we partition the sample firms into two groups: firms with only cash dividends and firms with both cash dividends and

Table 4
Stock ownership, concentration and the lifecycle of dividends.

Year	Low (RE/TA)				Moderate (RE/TA)				High (RE/TA)			
	D_IO	F_IO	HHI	Top-1	D_IO	F_IO	HHI	Top-1	D_IO	F_IO	HHI	Top-1
2000	47.83	20.04	0.19	33.62	47.24	17.42	0.19	33.19	45.92	18.29	0.17	31.74
2001	47.65	16.44	0.30	46.14	51.07	18.22	0.16	30.34	45.66	17.50	0.18	32.67
2002	45.79	15.68	0.23	36.77	53.57	17.68	0.18	31.93	45.63	21.53	0.16	30.35
2003	46.36	16.39	0.26	40.68	52.86	18.16	0.18	31.76	50.33	14.03	0.18	31.38
2004	46.65	18.31	0.25	39.42	52.01	18.17	0.17	31.66	51.78	14.03	0.17	31.35
2005	36.90	21.96	0.15	28.61	51.33	19.52	0.19	33.66	48.82	21.38	0.13	27.27
2006	48.25	25.50	0.14	26.10	49.25	21.43	0.17	31.87	50.53	23.45	0.14	26.85
2007	58.33	20.64	0.17	30.66	52.86	19.80	0.18	32.84	51.16	23.61	0.14	27.07
2008	54.07	22.84	0.20	32.50	55.74	20.03	0.17	31.17	55.95	18.60	0.16	29.69
2009	61.97	17.56	0.18	32.71	53.52	23.75	0.17	31.80	50.53	22.95	0.16	29.93
2010	55.23	22.58	0.11	24.11	55.96	20.45	0.15	29.35	51.04	24.08	0.18	32.45
2011	55.00	23.98	0.10	21.84	56.18	20.79	0.17	31.61	51.76	26.22	0.16	31.06
2012	51.40	22.60	0.14	28.15	51.73	25.63	0.15	29.27	50.85	28.10	0.15	30.30
2013	52.07	27.37	0.16	30.45	52.19	25.63	0.16	30.60	50.45	27.68	0.15	29.53
2014	50.44	30.78	0.11	23.85	53.71	27.14	0.17	32.43	49.52	30.44	0.14	28.87
2015	50.76	30.23	0.12	25.64	50.84	27.93	0.18	33.23	47.68	30.88	0.14	28.38
2016	53.31	26.94	0.12	25.62	52.26	24.85	0.17	32.02	48.91	29.67	0.13	27.88
Average	50.71	22.34	0.17	30.99	52.49	21.56	0.17	31.69	49.80	23.08	0.16	29.81

This table shows the mean stock ownership in the sample firms where firms are sorted for each calendar year into three groups based on their (RE/TA) ratio. The low group contains the bottom 30 % of sample firms, the moderate group contains the next 40 %, and the high group contains the top 30 % (RE/TA) ratios. The four variables related to stock ownership are domestic institutional investors (D_IO), foreign institutional investors (F_IO), the Herfindahl-Hirschman Index (HHI), and holdings by the largest shareholder (Top-1). The last row in the table shows the annual equally-weighted mean of the variables, respectively.

buybacks. We proceed with univariate analysis, as presented in Panel B of Table 3. The mean difference (Column 2–1) in *RE*/*TE* is 0.0041 for the overall sample period, but it is not statistically significant at normal levels. In contrast, the mean difference in the first sub-period between 2000 and 2004 is 0.1096 and is statistically significant at the 1% level. This finding suggests that firms with both dividends and buyback programs had a higher ratio, thus indicating more mature firms in the period when the firms introduced stock buybacks. Using *RE*/*TA* to segment the sample provides similar results for the full sample period but with a smaller mean difference. The mean differences in *TE*/*TA* do not substantially differ between the two groups. For *ROA* and the full sample period, we do not find any statistically significant differences. Finally, as reported in the last four rows, total assets appear higher for firms with dividends and buyback programs, although the mean differences are not statistically significant except between 2010 and 2014. Overall, some evidence suggests that firms that paid cash dividends and activated buyback programs were more mature in the first five years after the new legislation related to stock buybacks.

3.3. Ownership structure, payouts, and catering

The separation between corporate ownership and control can imply that managers do not always act in their shareholders' best interests. Jensen and Meckling (1976) contend that managers' higher stock holdings give them an incentive to undertake value-maximizing decisions. Moreover, large shareholders can influence firm managers to make decisions that enhance firm value (Demsetz and Lehn, 1985; Jensen, 1986; Shleifer and Vishny, 1986). One way to reduce agency costs or value-destroying projects is for large shareholders, who are often institutional investors, to monitor firm management. Large shareholders can influence firm management by a "voice" or by an "exit." Further, as La Porta et al. (1998) maintain, a firm's largest shareholders can participate actively in firm management.

To study whether payouts and the stage of a firm's lifecycle are related to institutional holdings, we begin with sorting all dividend-paying firms, including buybacks by their *RE*/*TA*. We do this every year and then sort firms into deciles. We denote firms concerning the *RE*/*TA* in the first three deciles as low, the next four deciles as moderate, and the top three deciles as high. For each year, we then calculate the mean for four variables: (1) holdings by domestic institutional investors (*D_IO*), (2) holdings by foreign institutional investors (*F_IO*), (3) the Herfindahl-Hirschman index (*HHI*), and (4) holdings by the largest investor (*Top-1*). Table 4 reports our results and indicates that, on average, institutional investors in aggregate do not have higher or lower holdings in dividend firms after controlling for the firm's lifecycle stage. However, when examining total institutional ownership (*D_IO* and *F_IO*), we find that holdings increased more in firms with a high *RE*/*TA* than those with a low *RE*/*TA*. Further, foreign investors increased their holdings in firms with a high *RE*/*TA* from 18.29% to 29.67% or by 11.38 percentage points. Although ownership concentration, measured by the *HHI*, was relatively stable, some large changes occurred for low *RE*/*TA* firms. On average, the largest shareholder (*Top-1*) holdings were 33.62% in the young firms (Column 4) in 2000 and just 25.62 % in 2016, a drop of 8 percentage points. For more mature firms, we find a lower decline.

Our interpretation of the results is that foreign institutional investors are hesitant to invest in firms with a low *RE*/*TA* ratio, reflecting young firms. If these investors want exposure to the Swedish equity market, our results indicate that they

Table 5
Multivariate analysis of absolute changes in payouts.

	Payout decreases		Payout increases	
	(1)	(2)	(3)	(4)
Intercept	−0.6503*** (0.000)	−0.7484*** (0.000)	0.9098*** (0.000)	0.8883*** (0.000)
D_premium	−0.0438 (0.535)	−0.0430 (0.527)	−0.1710*** (0.005)	−0.1715*** (0.005)
D/P	0.0146*** (0.000)	0.0146*** (0.000)	0.0011 (0.655)	0.0015 (0.666)
SIZE (log)	0.0138** (0.041)	0.0155** (0.050)	−0.0403*** (0.000)	−0.0420*** (0.000)
ROA	0.6322*** (0.001)	0.5990*** (0.000)	0.5042* (0.067)	0.5278* (0.064)
M/B	−0.0012 (0.729)	−0.0006 (0.850)	0.0062* (0.099)	0.0062* (0.100)
$Payer_{t-1}$		0.1923*** (0.001)		0.0089 (0.913)
D_IO		−0.0447 (0.528)		0.0584 (0.410)
F_IO		−0.1312 (0.168)		0.0272 (0.759)
Number of obs.	444	444	1110	1110
R^2	0.046	0.088	0.048	0.092

This table shows the multivariate regression estimates for firms with a decrease or an increase in total payout between 2000 and 2016, where the dependent variable is the absolute change in total payouts. Models 1 and 2 show estimates for decreases, while models 3 and 4 show estimates for increases in payouts, respectively. The independent variables are as follows. Dividend premium (*D_premium*) is the definition by Baker and Wurgler (2004). *D/P* is the dividend yield defined as cash dividends divided by stock price at the end of the fiscal year. *SIZE* is the total number of outstanding shares multiplied by the stock price at the end of each fiscal year expressed in Swedish Krona (SEK) in natural logarithms. Profitability (*ROA*) is earnings before interest and taxes divided by total assets. Market-to-book ratio, M/B, is the market value of assets divided by the book value of assets. The market value of assets is equal to the market value of equity (using the stock price (closing price) at the end of the fiscal year multiplied by the number of outstanding shares) plus the book value of debt (book value of assets less the book value of equity). Market-to-book ratio, M/B, is the market value of assets divided by the book value of assets. The market value of assets is equal to the market value of equity (using the stock price (closing price) at the end of the fiscal year multiplied by the number of outstanding shares) plus the book value of debt (book value of assets less the book value of equity). $Payer_{t-1}$ is an indicator variable with the value of 1 if the firm paid a dividend the previous year and 0 otherwise. Control variables related to stock ownership in firms are as follows. *D_IO* is holdings by domestic institutional investors computed as the sum of holdings in a firm's stock divided by its total market capitalization at the end of each fiscal year. Foreign institutional holdings (*F_IO*) are the sum of all foreign institutional investors' holdings divided by the firm's market capitalization at the end of each fiscal year. We compute holdings using votes. Below the estimated coefficients are the *p*-values based on robust standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

prefer to hold stock in mature firms characterized by a high *RE*/*TA* ratio.[11] Our findings also show that the average holding by the largest investors declined over time for young firms.

Next, we use multivariate analysis to test whether an increase or decrease in the payout is related to our set of variables. In our analysis, we extend Baker and Wurgler (2004) and their catering theory of dividends to include stock buybacks. Hence, if the demand for firms with these payout characteristics is time-varying, it should lead to different stock prices in firms with and without payouts. Specifically, firm managers should cater to the demand for payouts when investors value these stocks more than non-paying firms. We follow the methodology proposed by Jiang et al. (2013). Specifically, we regress the absolute change in payout to a set of control variables: *Dividend premium* is the difference in the natural logarithm of book-value-weighted average *M*/*B* ratio for dividend payers and non-payers. *D*/*P* is the dividend at time *t* divided by stock price at *t*−1. *SIZE* is the natural logarithm of the market value of the common stock. Return on assets (*ROA*) is earnings before interest and taxes divided by total assets. *M*/*B* is the market value of assets divided by the book value of assets. The market value of assets is equal to the market value of equity (using the stock price (closing price) at the end of the fiscal year multiplied by the number of outstanding shares) plus the book value of debt (book value of assets less the book value of equity). $Payer_{t-1}$ is a dummy variable with the value of 1 if the firm had payouts in the previous year and 0 otherwise. *D_IO* and *F_IO* represent holdings by domestic and foreign institutional investors, respectively.

Two potential issues exist with our dataset when computing changes in payouts: (1) firms omitting a dividend and (2) firms initiating a dividend. Hence, we exclude omissions and initiations in our analysis. We lag all explanatory variables by one year.

Table 5 presents the results of four regressions relating the absolute change in payouts for firms with an increase and a decrease, respectively, controlling for firm characteristics and stock ownership variables. As Table 5 shows in the last two columns, the estimated coefficient on *Dividend premium* is negative (−0.1710 and −0.1715) and statistically significant at the 1% level for firms with increased payouts. Hence, an increase in the *Dividend premium* by one standard deviation and holding the other variables constant decreases the change in payouts by roughly 1.6 percentage points, which is economically small.[12] The estimated coefficient on *D*/*P* is positive and statistically significant at the 1% level for firms with payout decreases, suggesting that firms are likely to increase their payouts if the payout in the prior year is high. As reported in the last two

[11] In unreported results, we also use the *RE*/*TE* measure and find similar results. In addition, holdings by foreign investors in the bottom decile using *RE*/*TA* as well as *RE*/*TE* are about 12% for both groups.

[12] In unreported analysis, we find that the mean raw (standardized) payout premium is negative in 14 (9) of the 17 years.

columns, larger firms are associated with lower payout increases. Also, higher profitability and *M*/*B* ratios indicate larger increases in payouts. [13] We also find that holdings are not related to changes in payouts.

3.4. Logistic regression results

To further examine the association between the probability of payouts and various firm and ownership characteristics, we conduct a logistic regression analysis where the dependent variable is a dummy variable with the value of 1 for payers and 0 otherwise. The lifecycle theory of dividends predicts a positive association between the variable *RE*/*TA* and payouts and is the primary variable of interest in this analysis. Other controls are market capitalization, *SIZE*, profitability, *ROA*, *M*/*B*, the value of cash, and cash equivalents divided by total assets, *CASH*, and a binary variable indicating whether the firm had payouts in the previous year, $PAYER_{t-1}$. To further improve our insights related to payouts, we examine whether the catering theory of dividends and stock ownership in firms shed light on the propensity to pay dividends and use share repurchase programs by the variable *D_premium*.

Table 6 reports the results of two annual logistic regression models. In the first model, the dependent variable is 1 if the firm is associated with dividends and is 0 otherwise. In our second model, the dependent variable is 1 if the firm also has an ongoing buyback program and is 0 otherwise. We report results for three different periods: 2001−2016, 2001−2008, and 2009−2016. Our main variable of interest (*RE*/*TA*) is the sign of the estimated coefficient related to a firm's lifecycle. Column 1, reflecting the full sample period (2001−2016) and firms with dividends, shows that the estimated coefficient on *RE*/*TA* is positive and highly statistically significant (*t*-statistic = 2.92) and that firms are more likely to pay dividends if they have high *RE*/*TA* ratios. The positive and statistically significant coefficient on *RE*/*TA* is also positive in the two sub-periods examined and suggests that dividends are related to a firm's lifecycle. Column 2 shows the estimated results for firms with an ongoing stock buyback program. The estimated coefficient on *RE*/*TA* is statistically insignificant in all periods, which implies that this variable is unrelated to whether a firm has a stock buyback program.

We also find that larger firms, higher profitability, and dividend stickiness are positively related to the propensity to pay dividends. The results indicate that with a 1-standard deviation increase in the firm size from the unconditional mean, the relative probability of a dividend is 5.27% higher and 4.37% higher for buyback program, respectively.[14] Of particular interest is that the estimated coefficient of stickiness ($PAYER_{t-1}$) is positive and statistically significant at the 1% level in all periods and is therefore consistent with Lintner (1956), who reports that firms are reluctant to omit dividends. Our results also show that the propensity to pay dividends is negatively related to growth opportunities (*M*/*B*) and is consistent with prior studies. As Baker and Wurgler (2004) report, managers change a firm's payout policy when the market values dividend-paying firms more than non-dividend-paying firms. Our results indicate no strong support for the catering theory of dividends in Swedish firms, as the estimated coefficient is statistically insignificant. One plausible explanation for this finding is classifying most Swedish firms as dividend payers. As a result, the relative valuation of firms with and without dividends is less important. In unreported analysis, we replace *RE*/*TA* with *RE*/*TE* and find similar results.

Next, we introduce variables related to stock ownership in our analysis, where we posit that domestic and foreign institutional investors have different preferences for payouts. We group holdings by institutional investors for domiciles and denote holdings by domestic and foreign institutional investors as *D_IO* and *F_IO*, respectively. Finally, we count the number of institutional shareholders with a long position in the stock for domestic and foreign institutional investors and denote them as *D_IO-#* and *F_IO-#*.

Table 7 reports the logistic regression results, where we add control variables related to stock ownership besides the controls used in Table 6. As reported, domestic institutional investors' ownership generally does not affect the probability of a dividend payment or a share repurchase program. However, the estimated coefficient on (*F_IO*) for dividends is negative for all periods. It is statistically significant at the 1% level for the full sample period and between 2001 and 2008 and at the 5% level between 2009 and 2016. This evidence supports the transaction-costs hypothesis by Ferreira et al. (2010). Related to our findings are studies from Finland which report trading activity by foreign investors and also arbitrage opportunities surrounding the ex-dividend date (Felixson and Liljeblom (2008); Rantapuska (2008)). For Sweden, data limitations do not allow us to replicate their analysis.

In sum, the most important finding to emerge from Table 7 is that foreign investors are less likely to hold stocks with dividends, which is consistent with previous studies. The last column shows a positive association between domestic institutional investors' holdings and a buyback program after controlling fixed-firm effects. The coefficients on the ownership concentration and the number of shareholders for domestic and foreign investors lack statistical significance at normal levels.

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[13] Using time-series regressions of changes in the dividend premium and the Fama and French (1993) risk factors, Hoberg and Prabhala (2008) report that the dividend premium is positively related to the value and growth factor, HML (high minus low B/M ratios). Replicating their model, we find that the estimated coefficient on HML is negative but not statistically significant at conventional levels for our sample firms. In a regression with the three Fama-French factors, no estimated coefficient is statistically significant using robust standard errors. The adjusted R^2 for the regression is 0.146.

[14] Computed as follows, $\exp[0.402 \times \ln(1 + 1.9438/14.2628)] = 1.0527$ or 5.27% for dividends and $\exp[0.335 \times \ln(1 + 1.9438/14.2628)] = 1.0437$ or 4.37% for buybacks. Table 8 shows that after controlling for stock ownership in firms, the probability of a dividend and a buyback program is 7.12% and 3.95% higher, respectively.

Table 6
Regression results.

	2001 – 2016		2001 – 2008		2009 – 2016		2001 – 2016
	Dividend	Buybacks	Dividend	Buybacks	Dividends	Buybacks	Buybacks
Intercept	−6.369*** (−7.14)	−7.890*** (−6.93)	−4.874*** (−5.24)	9.537*** (−6.97)	−9.936*** (−5.17)	−8.437*** (−4.79)	–
SIZE (log)	0.402*** (5.84)	0.335*** (4.12)	0.262*** (3.62)	0.454*** (4.97)	0.705*** (4.49)	0.299** (2.52)	0.316** (2.43)
ROA	4.984*** (6.47)	3.990*** (3.66)	4.949*** (5.20)	4.457*** (3.15)	5.078*** (4.40)	2.644* (1.85)	3.530*** (4.15)
M/B	−0.107*** (−2.89)	−0.087* (−1.71)	−0.091** (−2.13)	−0.098 (−1.51)	−0.133*** (−2.59)	−0.008 (−0.15)	−0.167*** (−3.26)
RE/TA	0.555*** (2.92)	0.307 (1.35)	0.496* (1.71)	0.254 (0.84)	0.737*** (2.94)	0.344 (1.43)	0.239 (1.15)
CASH	−0.351 (−0.65)	0.834 (1.26)	−0.199 (−0.41)	−0.629m (−0.79)	−0.724 (−0.65)	3.943*** (3.40)	0.871 (1.12)
D_premium	−0.346 (−1.23)	0.041 (0.18)	−0.492 (−0.95)	1.493*** (2.87)	−0.434 (−1.18)	−0.208 (−0.64)	−0.101 (−0.40)
$Payer_{t-1}$	2.735*** (11.68)	0.455 (1.46)	3.028*** (10.31)	1.122*** (2.70)	2.526*** (5.92)	−0.238 (−0.55)	0.430* (1.92)
Firm fixed effects	No	No	No	No	No	No	Yes
Number of observations	3152	3152	1691	1691	1461	1461	1670
Pseudo R^2							0.047

This table shows logistic estimates of the likelihood of a dividend and a stock buyback. The dependent variable is equal to 1 if the firm is a dividend payer and 0 otherwise. Similarly, if the firm has an ongoing buyback program during the year, the dependent variable takes a value of 1 and 0 otherwise. The sample consists of 303 Swedish publicly traded firms listed on the SSE between 2001 and 2016. We measure all performance variables as of the end of the prior fiscal year. Results reflect three periods: 2001–2016, 2001–2008, and 2009–2016. The explanatory variables are: log of firm size (*SIZE*), which is the total number of outstanding shares multiplied by the stock price at the end of each fiscal year expressed in Swedish Krona (SEK); profitability (*ROA*) measured as earnings before interest and taxes divided by total assets; market-to-book ratio, *M/B,* is the market value of assets divided by the book value of assets. The market value of assets is equal to the market value of equity (using the stock price (closing price) at the end of the fiscal year multiplied by the number of outstanding shares) plus the book value of debt (book value of assets less the book value of equity), the ratio between retained earnings to total assets (*RE/TA*); cash (*CASH*) is the value of cash and cash equivalents divided by total assets; Baker and Wurgler (2004) define the dividend premium (*D_premium*), and $Payer_{t-1}$ is an indicator variable with the value of 1 if the firm paid a dividend the previous year and 0 otherwise. The last column shows the results of the logit regression with firm fixed effects. Below the estimated coefficients are the *t*-statistics based on robust standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7
Regression results with equity holding variables.

	2001 – 2016		2001 – 2008		2009 – 2016		2001 – 2016
	Dividend	Buybacks	Dividend	Buybacks	Dividends	Buybacks	Buybacks
Intercept	−8.008*** (−7.41)	−7.443*** (−5.61)	−6.891*** (−5.55)	−8.830*** (−5.31)	−11.81*** (−5.08)	−8.713*** (−4.22)	–
SIZE (log)	0.539*** (6.08)	0.301*** (2.68)	0.449*** (4.30)	0.375*** (2.83)	0.915*** (4.68)	0.416** (2.42)	0.216 (1.52)
ROA	4.769*** (6.13)	4.073*** (3.73)	4.680*** (4.93)	4.606*** (3.18)	4.932*** (4.39)	2.790** (1.98)	3.505*** (4.09)
M/B	−0.102*** (−2.63)	−0.086* (−1.71)	−0.086* (−1.78)	−0.095 (−1.49)	−0.145*** (−2.61)	−0.040 (−0.72)	−0.137*** (−2.62)
RE/TA	0.522*** (2.75)	0.334 (1.48)	0.478* (1.75)	0.264 (0.86)	0.699*** (2.68)	0.327 (1.37)	0.227 (1.09)
CASH	−0.220 (−0.39)	0.892 (1.38)	−0.169 (−0.33)	−0.537 (−0.66)	−0.505 (−0.43)	3.604*** (3.23)	1.038 (1.32)
D_premium	−0.245 (−0.88)	0.022 (0.10)	−0.332 (−0.63)	1.436*** (2.78)	−0.337 (−0.91)	−0.167 (−0.51)	−0.142 (−0.55)
$Payer_{t-1}$	2.641*** (11.62)	0.491 (1.57)	2.808*** (9.89)	1.181*** (2.83)	2.378*** (5.77)	−0.124 (−0.28)	(1.66)
D_IO-v	0.076 (0.17)	0.533 (0.71)	−0.489 (−1.04)	1.046 (1.25)	−0.687 (−0.73)	−1.143 (−0.94)	(1.73)
F_IO-v	−1.819*** (−3.41)	0.828 (0.94)	−2.284*** (−4.13)	0.927 (0.87)	−2.767** (−2.50)	1.031 (0.63)	1.538 (1.43)
HHI	1.557** (2.05)	−2.811*** (−3.02)	1.938*** (2.63)	−2.136* (−1.93)	1.275 (0.75)	5.482*** (−2.69)	−2.079 (−1.47)
D_IO-#	−0.000*** (−4.01)	−0.000 (−0.23)	−0.000*** (−2.74)	0.000 (0.03)	−0.000 (−1.37)	−0.000 (−1.54)	0.000 (0.25)
F_IO-#	0.000 (0.43)	−0.000 (−0.49)	0.000* (1.88)	−0.000* (−1.80)	−0.000 (−0.52)	0.000** (2.02)	0.000 (0.01)
Firm fixed effects	No	No	No	No	No	No	Yes
Number of observations	3147	3147	1689	1689	1458	1458	1670
Pseudo R^2							0.051

This table shows logistic estimates of the likelihood of a dividend and/or buyback firm. The sample consists of 303 Swedish publicly traded firms listed on the SSE between 2001 and 2016. We measure all performance variables at the end of each calendar year. The dependent variable is equal to 1 if a given firm in a given year pay a dividend or activate a stock buyback program, and 0 otherwise. Table 6 provides definitions for the first seven variables. The additional control variables are as follows: holdings by domestic institutional investors are the fraction of total voting rights (*D_IO-v*), holdings by foreign institutional investors are the fraction of total voting rights (*F-IO-v*), the Herfindahl-Hirschman Index (*HHI*) is the sum of squared holdings across all shareholders, number of domestic institutional investors (*DOM_I-#*), and foreign institutional investors (*FOR_I-#*). The last column shows the results of the logit regression with firm fixed effects. Below the estimated coefficients are the *t*-statistics based on robust standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Regression results with equity holding variables and firm size groups.

	Firm size group					
	Small-size firms		Medium-size firms		Large-size firms	
	Dividends	Buybacks	Dividends	Buybacks	Dividends	Buybacks
Intercept	−0.935** (−2.04)	−5.367*** (−4.43)	0.738 (1.00)	−2.138*** (−2.70)	−0.795 (−0.91)	−2.612** (−2.14)
ROA	6.569*** (6.91)	4.978*** (3.21)	4.361*** (2.84)	4.539*** (2.92)	2.958* (1.68)	5.513** (1.99)
M/B	−0.156** (−2.15)	−0.275*** (−2.26)	−0.085 (−1.59)	−0.215*** (−2.62)	−0.049 (−1.35)	0.041 (0.80)
RE/TA	0.688*** (3.49)	0.348 (1.11)	0.060 (0.16)	0.694 (1.65)	1.276** (2.54)	−0.233 (−0.67)
CASH	1.611*** (2.61)	1.354 (1.45)	−2.478*** (−3.15)	1.739* (1.92)	−1.751 (−1.07)	−3.627 (−1.53)
D_premium	−0.524 (−1.14)	−1.486*** (−2.85)	−0.708 (−1.44)	0.168 (0.43)	−1.168** (−2.03)	0.004 (0.01)
$Payer_{t-1}$	2.279*** (7.54)	0.928*** (2.13)	2.847*** (8.50)	0.040 (0.09)	4.086*** (9.03)	1.030 (1.48)
D_IO	−0.312 (−0.56)	0.618 (0.50)	0.651 (0.81)	0.352 (0.39)	−0.077 (−0.09)	0.340 (0.27)
F_IO	−1.167 (−1.41)	3.104** (1.98)	−2.947*** (−3.40)	0.652 (0.50)	−0.576 (−0.52)	−0.020 (−0.01)
HHI	0.740 (0.82)	0.455 (0.28)	0.932 (0.64)	−4.099** (−2.36)	−0.295 (−0.25)	−3.744*** (−2.67)
D_IO-#	−0.003** (−2.53)	0.001 (0.55)	−0.002*** (−2.75)	0.000 (0.21)	0.000 (0.37)	0.000 (0.65)
F_IO-#	0.000 (0.04)	0.000 (0.21)	0.000 (0.52)	−0.002 (−1.41)	0.000 (0.49)	0.000 (0.75)
Number of observations	1040	1040	1037	1037	1070	1070

This table reports the results of logit regression estimates with random effects and whether a firm pays a dividend and/or has a stock buyback program. The sample consists of 303 Swedish publicly traded firms listed on the SSE between 2000 and 2016. Tables 6 and 7 contain the definitions of the independent variables. The *t*-statistics are based on heteroskedasticity robust standard errors clustered at the firm level and appear in parentheses below the estimated coefficients. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 9
Regression results with payout ratios as dependent variables.

	2001–2016	2001–2008	2009–2016	2001–2016
Intercept	−178.9*** (−9.21)	−138.2*** (−5.12)	−254.3*** (−10.87)	−156.1*** (−5.81)
SIZE (*log*)	15.370*** (10.15)	12.620*** (5.79)	21.290*** (11.03)	13.520*** (6.52)
ROA	8.572 (1.01)	21.760* (1.74)	−2.596 (−0.23)	8.588 (0.97)
M/B	−1.720*** (−3.87)	−1.054* (−1.83)	−2.202*** (−3.02)	−1.165* (−1.83)
RE/TA	5.458** (1.99)	7.276* (1.82)	5.642* (1.70)	6.671** (2.10)
CASH	2.057 (0.35)	−6.160 (−0.86)	10.040 (1.04)	4.116 (0.53)
D_premium	0.402 (0.24)	−2.226 (−0.57)	1.118 (0.64)	−0.744 (−0.44)
$Payer_{t-1}$	4.258** (2.53)	1.159 (0.47)	5.606** (2.43)	3.420* (1.86)
D_IO	8.230** (2.04)	−0.731 (−0.14)	9.181 (1.14)	9.770 (1.52)
F_IO	10.790 (1.63)	−6.879 (−0.91)	7.970 (0.69)	17.110* (1.66)
HHI	−6.206 (−0.75)	−12.490 (−1.59)	0.388 (0.03)	−3.650 (−0.24)
D_IO-#	−0.007 (−1.41)	0.005 (0.58)	−0.018 (−1.51)	−0.018** (−2.14)
F_IO-#	0.020 (1.58)	0.012 (0.50)	0.008 (0.46)	0.022 (1.15)
Fixed effects	No	No	No	Yes
Number of observations	1018	552	466	1018
R^2	0.269	0.222	0.372	0.279

This table reports the results from ordinary least-squares (OLS) regressions with random effects in the first three columns and fixed effects in the last column explaining a firm's payout ratio. The dependent variable is the value of dividends and stock buybacks divided by net profit. The sample consists of 303 Swedish publicly traded firms listed on the SSE between 2001 and 2016. We measure all performance variables as of the end of each prior calendar year. Tables 6 and 7 provide definitions of all variables. Below the estimated coefficients are the *t*-statistics based on robust standard errors. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Taken together, adding variables related to equity ownership has no strong relation to a firm with a dividend and/or a stock buyback program. However, foreign institutional investors are less likely to hold dividend-paying stocks. Our evidence is broadly consistent with prior studies on the Swedish market, like Dahlquist and Robertsson (2001). We also note that our data do not support the catering theory of dividends.

Table 8 presents regression results after sorting firms at the end of each calendar year into three groups based on market capitalization. Small-, medium-, and large-size firms contain the first three, the next four, and the last three deciles, respectively. As reported, the lifecycle variable *RE*/*TA* has a positive correlation with the probability of a dividend for small and large firms. The estimated coefficients on *F_IO* are negative for the first two size groups, suggesting that foreign investors have less preference for holding dividend-paying stocks. The ownership concentration variable *HHI* has a negative correlation with buybacks for medium- and large-size firms, indicating that firms with higher ownership concentration in these firms are less likely to have buyback programs.

To shed additional light on payouts, we also examine whether our results hold when we use total payout ratios as the dependent variable in a multivariate setting. Table 9 presents the results of the multivariate analysis for four time periods. The first major finding is that higher *RE*/*TA* indicates higher payouts. For the overall sample period, this relation is significant at the 5% level. The positive sign on the *D_IO* is positive and supports our hypothesis that domestic institutional investors have preferences for dividends. As reported earlier, we do not find any strong support for the catering theory of dividends as the estimated coefficient on the dividend premium, *D_premium*, is statistically insignificant in all specifications. We also find that dividends are sticky. When adding variables related to ownership structure, domestic and foreign institutional investors' holdings positively correlate with payouts for the full sample period. As reported in the last column of Table 9, domestic and foreign institutional investors' holdings positively correlate with payouts after controlling for fixed effects.

To sum up, the findings support the lifecycle theory of dividends that firms with high retained earnings to total assets (*RE*/*TA*) are positively associated with payouts. Further, holdings by both domestic and foreign institutional investors have a positive correlation with the payout ratio.

4. Summary and conclusions

The composition of stock holdings in public listed firms plays a central role in empirical work in financial economics and its links to payouts. Yet, establishing the impact of investors with different domiciles is empirically challenging. We estimate the magnitude of different ownership structures using institutional investors' domiciles and their holdings in Swedish firms by votes rather than cash flows.

Our findings show that stock ownership is a critical determinant of payouts, as are variables related to the firm lifecycle. We examine this proposition by studying the probability of dividends and buybacks using comprehensive, hand-collected Swedish data between 2000 and 2016. In particular, we examine the relation between a firm's stage in its lifecycle and holdings by domestic and foreign institutional investors and its likelihood of paying dividends or using stock buybacks.

Our evidence shows that most firms in Sweden pay dividends and that dividends are sticky. Although some firms use stock buybacks, the main vehicle for distributing earnings to shareholders is dividends. Firms with dividends have higher *RE*/*TA*, suggesting that mature firms are more likely to pay dividends. Additionally, dividend-paying firms are larger and have higher profitability than non-dividend-paying firms. Our multivariate analysis suggests that the lifecycle variable (*RE*/*TA*) is positively related to firms' probability of paying dividends. We document a negative relation between foreign institutional investors' holdings and payout, which is consistent with our first hypothesis and supports Ferreira et al.'s (2010) transaction costs hypothesis. Higher holdings by domestic institutional investors are positively related to dividends and support our second hypothesis. Finally, our evidence offers no support that firms with payouts are associated with the catering theory of dividends (Baker and Wurgler, 2004).

Overall, our results suggest that payouts are related to a firm's ownership structure. In particular, our findings imply that the preferences of domestic and foreign institutional investors for payouts differ.

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