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Why do firms pay dividends? International evidence on the determinants of dividend policy ☆

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ABSTRACT

In the US, Canada, UK, Germany, France, and Japan, the propensity to pay dividends is higher among larger, more profitable firms, and those for which retained earnings comprise a large fraction of total equity. Although there are hints of reductions in the propensity to pay dividends in most of the sample countries over the 1994–2002 period, they are driven by a failure of newly listed firms to initiate dividends when expected to do so. Dividend abandonment and the failure to initiate by existing nonpayers are economically unimportant except in Japan. Moreover, in each country, aggregate dividends have not declined and are concentrated among the largest, most profitable firms. Finally, outside of the US there is little evidence of a systematic positive relation between relative prices of dividend paying and non-paying firms and the propensity to pay dividends. Overall, these findings cast doubt on signaling, clientele, and catering explanations for dividends, but support agency cost-based lifecycle theories.

1. Introduction

Why do some firms pay dividends while others do not? Since the publication of the original Miller and Modigliani (1961) irrelevance propositions, this question has puzzled financial economists. Traditionally, finance scholars emphasize explanations for dividends that are based on the desire to communicate information to shareholders or to satisfy the demand for payouts from heterogeneous dividend clienteles [see the Allen and Michaely (2003) survey]. Recently, however, DeAngelo, DeAngelo, and Skinner (2004) cast doubt on signaling and clientele considerations as first-order determinants of dividend policy by reporting that dividends in the US are increasingly concentrated among a small number of large payers.

An alternative view of dividends, proposed by DeAngelo and DeAngelo (2006), is that optimal payout policy is driven by the need to distribute the firm's free cash flow. They propose a life-cycle theory that combines elements of the Jensen (1986) agency theory with evolution in the firm's investment opportunity set of the type discussed in Fama and French (2001) and Grullon, Michaely, and Swaminathan (2002). In this theory, firms optimally alter dividends through time in response to the evolution of their opportunity set. The theory predicts that, in their early years, firms pay few dividends because their investment opportunities exceed their internally generated capital. In later years, internal funds exceed investment opportunities so firms optimally pay out the excess funds to mitigate the possibility that the free cash flows would be wasted. Consistent with this life-cycle view, DeAngelo, DeAngelo, and Stulz (2006) find that the propensity to pay dividends is positively related to the ratio of retained earnings to total equity, their proxy for the firm's life-cycle stage.

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Yet a further wrinkle in the dividend puzzle literature is presented in Fama and French (2001). Fama and French report a substantial decline in the proportion of firms paying dividends in the US. Although this decline is due in part to changes in the characteristics of firms that are publicly traded (i.e., more firms exhibit characteristics similar to those of nondividend-paying firms), Fama and French nonetheless report that, once they control for these characteristics, they still find a significant decline in the residual propensity to pay dividends. This evidence poses a further challenge to dividend theories in so far as candidate theories should be able to explain time series changes in the propensity to pay dividends.

We extend this literature by examining cross-sectional and time-series evidence on the propensity to pay dividends in several developed financial markets (the United States, Canada, the United Kingdom, Germany, France, and Japan) over the period 1989–2002. Specifically, we examine whether the characteristics of dividend payers and nonpayers are common across countries, whether these characteristics have changed over time, and whether firms in other countries exhibit a declining propensity to pay dividends in recent years. In addition, the use of international data allows us to provide further tests of the life cycle, signaling, clientele, and catering explanations by analyzing the concentration of dividend payments as well as the association between the Baker and Wurgler (2004a, b) dividend premium and the propensity to pay dividends in other countries.

Our evidence reveals common determinants of dividends across countries. Like Fama and French (2001), we find that the likelihood of paying dividends is associated with firm size, growth opportunities, and profitability.[1] In addition, we find that in all six countries, the likelihood of paying dividends is strongly associated with the ratio of retained earnings to total equity (the earned/contributed capital mix). The fraction of firms that pay dividends is high when firms' equity consists primarily of retained earnings and is low when retained earnings are negative. Notably, firms in each country become more likely over time to exhibit the characteristics of firms that do not pay dividends (i.e., the average firm is less profitable and has lower earned/contributed capital).

Controlling for these characteristics, we find some hints of declines in the propensity to pay dividends in most of the sample countries, particularly among those firms that appear to be at the margin for paying dividends; i.e., those with low to medium ratios of earned-to-contributed capital. However, outside of the US, the declines are small and the evidence is not particularly robust. Moreover, to the extent that there are propensity declines, they are driven primarily by the failure of newly listed firms to initiate dividends when expected to do so. Dividend abandonments and the failure to initiate by existing nonpayers are economically unimportant except in Japan. Even in Japan, however, we find that unexpected abandonments can be plausibly explained by financial difficulties experienced by Japanese firms during the economic slowdown of the 1990s. The bottom line, therefore, is that the data cannot reject the hypothesis that there has been no meaningful change in corporate dividend policies in the sample countries over the 1989–2002 period. While we also cannot reject the possibility that there have been small reductions in the propensity to pay dividends in some countries, such reductions are at most limited to newly listed firms.

The importance of the mix of earned/contributed equity as a determinant of dividend policies around the world casts doubt on the importance of signaling as a first-order determinant of dividend policies. As noted in DeAngelo, DeAngelo, and Stulz (2006), firms with low earned/contributed equity would appear to be the ideal candidates for dividend signaling because these firms are less mature and it is, therefore, more difficult to gauge their future prospects. Yet, these are precisely the firms that do not pay dividends.

We provide further evidence on the signaling, clientele, and life-cycle explanations by examining the concentration of dividends and earnings. Consistent with the DeAngelo, DeAngelo, and Skinner (2004) US evidence, we find that aggregate dividends do not decline over time. Moreover, dividends are concentrated among the largest, most profitable payers in all six countries. This concentration casts further doubt on signaling as a first-order determinant of dividends in that dividends appear to be paid by precisely those firms that are least in need of signaling their profitability (i.e., those with the highest earnings). Even if there was reduced demand for signaling over time, this demand would presumably arise from smaller, less profitable firms. Similarly, the concentration of dividends and earnings casts doubt on the central assumption of clientele theories that investors can satisfy their demand for dividends while still achieving suitable levels of diversification. This conclusion is reinforced by our finding that, in recent years, dividend payers account for more than 90% of the aggregate market capitalization in all countries except the US and Canada. Moreover, in these countries, the top 20% of dividend payers account for virtually all of the market capitalization of dividend payers. The concentration of dividends among the largest, most profitable firms is, however, consistent with the life-cycle theory's central prediction that the distribution of free cash flow is the primary determinant of dividend policy.

Finally, we explore the catering explanation by examining the association between the propensity to pay dividends and the Baker and Wurgler (2004a, b) dividend premium. Our evidence fails to provide much support for the catering hypothesis outside of the US. Little evidence exists that either the propensity to pay dividends or time-series changes in that propensity can be explained by changes in investor sentiment toward dividend-paying stocks. Moreover, we find little evidence that individual firms start and stop the payment of dividends in response to the market's relative valuation of dividend paying firms.

The remainder of the paper is organized as follows. Section 2 describes our sample selection procedure and

[1] Benito and Young (2001), Ferris, Sen, and Yui (2006), and Renneboog and Trojanowski (2005) find similar evidence on the determinants of dividends in the UK, while von Eije and Megginson (2006) report similar findings in a sample of European Union firms.

provides a description of the sample firms. Section 3 reports evidence on the determinants of dividends. Section 4 reports time-series trends in the propensity to pay dividends in our sample countries. Section 5 provides evidence on the concentration of dividends and earnings. Section 6 reports evidence on tests of the catering hypothesis. Section 7 concludes.

2. Sample selection and data description

Our sample is constructed using Worldscope data collected via Thomson One Banker Analytics. The initial sample includes all firms for which Worldscope provides information on total assets, common equity, net income, interest expense, and either market capitalization at fiscal year-end or the number of outstanding shares and fiscal year-end closing price. We also require total assets to be available both in the current and in the preceding year, the sample firms to have nonmissing information for common dividends, and the sample firms to have nonmissing information on the method of reporting long-term investments in which they have interest in excess of 50%.[2] We exclude firms for which the primary outstanding security is not common stock or for which information on the type of primary outstanding security is missing. Also, following Fama and French (2001),we exclude utilities [standard industrial classification (SIC) codes 4900-4949], financial firms (SIC codes 6000-6999), and firms with negative book equity. Finally, to alleviate distorting effects from off-balance sheet operations that are possible in some countries, we include only those firms that consolidate their major subsidiaries.

Worldscope coverage prior to 1985 is limited. In the Appendix A, we report the average number of firms that satisfy our data requirements in the countries studied by LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV, 2000). These data confirm the sparse coverage in all countries in the 1981–1985 period. In addition, our experimental design requires a sufficient number of dividend payers and nonpayers over an approximately 15-year period. This additional constraint limits the set of countries that we include in the sample to the US, UK, Canada, Germany, France, and Japan.

Because of the expanding coverage of Worldscope, the number of firms grows significantly between 1981 and 2002 in all six countries. Particularly steep increases in firm counts are observed between 1987 and 1989 for Canada, the UK, Germany, and France. In addition, our primary tests require data on book equity, and this data are generally not available in most of the countries prior to 1989. For these reasons, therefore, we analyze dividend polices in the selected countries over the 1989–2002 time period.

Nonetheless, the sample size in each country increases over time. These data limitations pose two empirical challenges. First, the shorter sample period limits our ability to fully address changes in the propensity pay dividends over time (though our ability to analyze cross-sectional determinants is not affected). We measure such changes over a 9-year period (1994–2002) as opposed to the Fama and French (2001) 21-year period (1978–1998). Had Fama and French limited their study to a 9-year measurement period, the declines in the propensity to pay dividends that they show would have been roughly cut in half. Second, we must be concerned that increases in the number of firms over time that are the result of changes in Worldscope coverage might produce biases in our estimates of the change in dividend propensity. For example, the data in the Appendix A show that virtually all firms covered by Worldscope in the 1981–1985 period are dividend payers. This implies that Worldscope first covers larger, more mature firms, then adds smaller, less mature firms over time. Because the latter firms are less likely to be dividend payers and our model for predicting dividend payers is imperfect, such a coverage pattern can show up empirically as a decline in the propensity to pay dividends even if no such decline exists. Throughout the paper, therefore, we discuss the various steps that we take to mitigate concerns about the changing sample size and note any residual caveats in the interpretation of our findings.

3. Determinants of the propensity to pay dividends

In this section, we describe the empirical determinants of the propensity to pay dividends in the sample countries.

3.1. Univariate analysis

Table 1 reports average characteristics of dividend payers and nonpayers. Fama and French (2001) report that dividend payers tend to be more profitable, have less valuable growth opportunities, and are larger firms than nonpayers. We measure profitability (E_t/A_t) as the ratio of earnings before interest (net income+interest expense if available+deferred taxes if available) to the book value of total assets and as the ratio of after-tax earnings to the book value of equity (Y_t/BE_t), where book equity is defined as common equity plus nonequity reserves if available. Growth opportunities are measured as the ratio of the market value of total capital (book value of total assets−book value of equity+market value of equity) to the book value of total assets (V_t/A_t) and the percentage change in total assets over the year (dA_t/A_t). The market value of equity is measured as the closing stock price at fiscal year-end times the number of shares outstanding. Firm size is measured as the book value of total assets (A_t) and reported in millions of US dollars. Local currencies are converted to US dollars at the exchange rates in effect at the end of 1998.

Consistent with Fama and French (2001), we find that dividend payers tend to be larger and more profitable firms. However, the relation between dividend payments and growth opportunities is not uniform across countries.

[2] Specifically, we use the common dividends field when available. If this information is missing, but information on total dividends and preferred dividends is nonmissing, we estimate common dividends as the difference between total dividends and preferred dividends.

Table 1
Characteristics of payers and nonpayers. Reported values are averages of annual median values for measures of profitability, growth opportunities, and firm size over the period of 1989–2002. Profitability (E_t/A_t) is measured as the ratio of earnings before interest but after tax to the book value of total assets. Growth opportunities (V_t/A_t) is measured as the ratio of the market value of the firm to the book value of total assets. Firm size (A_t) is measured as the book value of total assets and reported in millions of US dollars. Local currencies are converted to US dollars at the exchange rates in effect at the end of 1998. Earned equity (RE_t/BE_t) is measured as the ratio of retained earnings to total book equity

	Profitability		Growth opportunities		Firm size	Earned equity
Country	E_t/A_t	Y_t/BE_t	V_t/A_t	dA_t/A_t	A_t	RE_t/BE_t
US						
Payers	7.5	11.6	1.39	5.5	717	68.5
Nonpayers	4.0	3.6	1.45	7.7	98	5.1
Canada						
Payers	6.3	8.1	1.17	6.5	514	54.5
Nonpayers	2.0	0.0	1.23	8.5	92	7.0
United Kingdom						
Payers	7.7	12.9	1.35	6.9	122	59.2
Nonpayers	−1.2	−6.8	1.40	2.2	28	−26.0
Germany						
Payers	4.9	9.2	1.27	6.3	385	38.6
Nonpayers	1.2	−4.3	1.27	−1.2	182	−0.1
France						
Payers	5.6	10.8	1.18	6.8	304	71.2
Nonpayers	3.1	2.1	1.14	2.4	123	28.8
Japan						
Payers	2.7	4.2	1.25	2.9	671	48.3
Nonpayers	1.8	−1.0	1.34	−1.5	392	6.3

In the US, Canada, and the UK, dividend payers tend to have less valuable growth opportunities. In Germany, France, and Japan, however, the evidence is much more mixed. If anything, it appears that dividend payers tend to have more valuable growth opportunities. These findings confirm similar evidence on dividend payouts in LLSV (2000).

DeAngelo, DeAngelo, and Stulz (2006) report that the propensity to pay dividends is most strongly associated with the company's earned/contributed equity mix; that is, the proportion of the firm's equity that is internally generated. Measuring the earned/contributed equity mix as the ratio of retained earnings to the book value of total equity (RE_t/BE_t), we also find that dividend payers tend to have substantially higher ratios of retained earnings to total equity than do nonpayers.

Table 2 reports further evidence on the importance of earned/contributed equity in the dividend decision by first grouping the sample firms by RE_t/BE_t, then reporting the proportion of dividend payers in each group. The results indicate a strong and nearly monotonic relation between the earned/contributed equity mix and the proportion of firms that pay dividends in all six countries. The proportion of firms that pays dividends is low (near zero in some countries) when earned/contributed equity is negative, while the proportion is high (greater than 0.85 in all countries) when *RE/BE* is greater than 0.90.

Table 3 reports the evolution of firm characteristics though time in each country. We report averages of annual medians in three subperiods: 1989–1993, 1994–1998, and 1999–2002. The data indicate that, over time, firms in each country tend to be smaller (except in the UK) and less profitable. Moreover, in all countries except Japan, firms exhibit lower ratios of earned to total equity over time. Trends in market-to-book ratios are less uniform across countries and are often nonmonotonic. Considering all factors together, however, it appears that, over time, firms in each country become more likely to exhibit characteristics that are typical of nonpaying firms. We confirm this assessment in Section 4 when we calculate the expected proportion of dividend payers in a multivariate framework.

3.2. Multivariate analysis

To quantify the marginal effects of profitability, growth opportunities, size, and the earned/contributed equity mix on the probability of dividend payments, we estimate annual logit regressions similar to those in Fama and French (2001). The dependent variable in our regressions equals one if a firm pays dividends in year t and zero otherwise. We use the market-to-book ratio (V_t/A_t) and the percent change in a firm's total assets (dA_t/A_t, $dA_t = A_t - A_{t-1}$) as proxies for its growth opportunities and earnings before interest but after taxes divided by total assets (E_t/A_t) as a proxy for its profitability.[3] We also augment the specification with the measure of earned/contributed equity (RE_t/BE_t).

The proxy for firm size requires a special design to maintain comparability of the measure over time despite increases in the size of the sample and changes in its distribution by market capitalization. Fama and French (2001) address these difficulties by measuring firm size as the percent of NYSE-listed firms that have smaller market capitalization than the firm in question. We take a similar approach by using the percentage of firms in the benchmark population with smaller market capitalization as of the end of the firm's fiscal year. We define the benchmark population as the set of firms present in the sample during the base period of 1989–1993.

In Table 4, we estimate intercept and slope coefficients from annual regressions, then report averages of the annual coefficients and the corresponding Fama and MacBeth (1973) t-statistics. Consistent with our univariate

[3] Both measures of growth opportunities are potentially problematic. To the extent that market prices deviate from fundamental value, V/A is potentially clouded by investor sentiment. The asset growth measure, dA/A, is not affected by investor sentiment but is affected directly by earnings and by dividend payouts. Consequently, we also estimate the Table 4 regressions and the subsequent changes in the propensity to pay dividends using the growth in sales over the prior year, dS_t/dS_{t-1}, as a measure of growth opportunities and note throughout whether the use of this alternative measure has a meaningful impact on our findings.

Table 2
The proportion of payers as a function of earned and total equity. This table reports the proportions of payers among sample firms sorted by the ratio of retained earnings to total book equity (*RE/BE*). Firms with negative total book equity are excluded from the analysis. Proportions of payers and counts of firms with the earned equity measure within each interval are first calculated for individually for each year from 1989 to 2002. The table reports medians of annual proportions of payers and counts of firms with earned equity within each interval.

	Values of *RE/BE* in the range of										
	<0.00	0.00–0.10	0.10–0.20	0.20–0.30	0.30–0.40	0.40–0.50	0.50–0.60	0.60–0.70	0.70–0.80	0.80–0.90	0.90+
US											
Proportion of payers	0.074	0.192	0.160	0.253	0.297	0.351	0.392	0.531	0.679	0.764	0.854
Total number of firms	805.5	143.5	156.5	162	182.5	179.5	182.5	192.5	197.5	213.5	136.5
Canada											
Proportion of payers	0.138	0.367	0.342	0.359	0.467	0.469	0.673	0.711	0.863	0.764	0.886
Total number of firms	71.5	19.5	26.5	29.5	30	33.5	28	26	21	18	18
UK											
Proportion of payers	0.538	0.685	0.787	0.831	0.869	0.941	0.950	0.943	0.943	0.978	0.977
Total number of firms	196	32	43.5	51	66	79	97.5	107	115.5	131	69
Germany											
Proportion of payers	0.243	0.602	0.761	0.845	0.886	0.877	0.891	0.926	0.876	0.857	1.000
Total number of firms	39	18	22	25	27.5	28.5	20	14.5	14	4	1
France											
Proportion of payers	0.200	0.387	0.547	0.699	0.783	0.768	0.829	0.876	0.884	0.912	0.907
Total number of firms	25.5	10	13.5	17.5	23.5	30	37	45.5	59	64.5	49
Japan											
Proportion of payers	0.333	0.616	0.753	0.880	0.929	0.943	0.951	0.973	0.962	0.980	1.000
Total number of firms	131.5	46.5	72	121	169.5	209.5	188.5	156	116	58.5	13.5

findings, the likelihood of paying dividends is positively related to firm size, profitability, and the earned/contributed equity mix in all six countries. However, the effect of growth opportunities on the likelihood of dividend payments is less homogeneous. In the US, Canada, and the UK, the slopes on both growth opportunity proxies are for the most part significantly negative. In the other countries, the slope on V_t/A_t is negative and significant only in Japan. At the same time, the slope on dA_t/A_t is positive in all three countries.[4]

We obtain qualitatively similar results if we use lagged sales growth, dS_t/dS_{t-1}, as the proxy for growth opportunities (not reported in a table). The payment of dividends is significantly negatively associated with dS_t/dS_{t-1} in the US, Canada, and the UK, while no clear association between dividends and sales growth is evident in the other three countries.

In addition, because the Fama and MacBeth (1973) approach understates standard errors when both firm effects and time effects are present in panel data, we conduct two other robustness tests. (These results are not reported in a table.) First, we compute *t*-statistics for the regression coefficients in Table 4 using the Newey and West (1987) procedure that is robust to autocorrelation out to four lags. Our results are qualitatively identical in the sense that all coefficients that are statistically significant at the 0.01 level in Table 4 continue to be significant using the Newey and West procedure. Second, we follow the approach described in Petersen (2007) and compute standard errors clustered by firm and by calendar year. Again the results are qualitatively identical with the exception that the coefficients on RE_t/BE_t are statistically insignificant in Germany and Japan ($t = 1.3$ for each).

Table 4 also estimates the logit models separately for those firms that paid a dividend in the prior year (payers) and those that did not (nonpayers). For the most part, the slope coefficients are qualitatively similar for payers and nonpayers, indicating common determinants of the decision to initiate dividends and to continue paying dividends. The one exception to this statement is the coefficient on V_t/A_t, which is significantly positive for payers in Canada, Germany, and France. The intercepts in the logit models are significantly positive for dividend payers in the US, UK, and Japan. The intercepts for nonpayers are significantly negative in all countries. These findings imply a degree of path dependence in dividend policies. That is, controlling for firm characteristics, firms that currently pay dividends have a preference for continuing to do so, while firms that do not currently pay dividends prefer not to initiate them. Thus, dividend policies in all countries exhibit the stickiness observed originally for US firms in Lintner (1956) and Fama and Babiak (1968).

[4] In untabulated results, we also find that the relations between dividend payment and firm characteristics are generally consistent through time.

Table 3
The evolution of firm characteristics. Reported values are period averages of annual median values for measures of profitability, growth opportunities, firm size, and the earned/contributed capital mix. Profitability (E_t/A_t) is measured as the ratio of earnings before interest but after tax to the book value of total assets. Growth opportunities (V_t/A_t) is measured as the ratio of the market value of the firm to the book value of its total assets. Firm size (A_t) is measured as the book value of total assets and reported in millions of US dollars. Local currencies are converted to US dollars at the exchange rates in effect at the end of 1998. Earned/contributed equity (RE_t/BE_t) is measured as the ratio of retained earnings to the book value of equity.

	E_t/A_t (%)			V_t/A_t			A_t			RE_t/BE_t (%)		
Country	1989–1993	1994–1998	1999–2002	1989–1993	1994–1998	1999–2002	1989–1993	1994–1998	1999–2002	1989–1993	1994–1998	1999–2002
US	7.0	6.4	3.0	1.34	1.56	1.35	268	173	125	56.1	29.2	−4.4
Canada	4.7	5.4	2.5	1.13	1.26	1.21	216	227	73	40.7	31.7	17.3
UK	7.9	7.5	4.3	1.28	1.46	1.30	75	89	95	61.1	49.7	38.4
Germany	4.4	4.5	3.1	1.30	1.25	1.20	405	296	150	35.4	30.8	22.7
France	5.8	5.0	4.5	1.11	1.17	1.26	308	235	130	69.0	68.1	57.0
Japan	3.7	2.3	1.6	1.55	1.19	0.97	889	609	363	44.1	45.7	46.5

3.3. *Summary*

The evidence in Tables 1–4 yields several conclusions. First, the empirical determinants of the propensity to pay dividends are remarkably similar across countries. In all six countries, larger, more profitable firms and those with greater earned/contributed equity are more likely to pay dividends, while the effect of growth opportunities is more mixed. Second, in the last decade, the composition of the population of firms in all countries changes toward greater representation of firms with characteristics typical of nonpayers. Finally, separate regressions for firms with different lagged dividend status reveal common determinants of dividend initiations and continuations.

4. International evidence on changes in the propensity to pay dividends

Fama and French (2001) report that the proportion of dividend payers among publicly traded, nonfinancial, nonutility US firms has declined substantially in the last two decades. The proportion of payers in their sample peaks in 1978, reaching 66.5%. It falls sharply thereafter, so that only 20.8% of firms pay dividends in 1999.[5] Moreover, the number of dividend payers declines from 1,988 in 1978 to 1,045 in 1998.[6] DeAngelo, DeAngelo, and Stulz (2006) further report that, although the mix of earned/contributed equity is an important determinant of dividends in the US and that, over time, a greater proportion of US firms exhibit negative earned equity, this, too, does not explain the declining propensity to pay dividends.

Fig. 1 displays the number and percentage of dividend payers in each of the countries that we study. As is evident in the graphics, the proportion of dividend-paying firms declines over time in all six countries. The steepest declines are observed in the US and Canada (from 61.0% to 19.0% and from 69.2% to 19.9%, respectively), while the smallest reduction in the proportion of payers is observed in Japan (from 89.1% to 83.8%). It is also noteworthy that the raw number of dividend payers declines between 1998 and 2002 in all countries except Germany and Japan.

4.1. *Baseline estimates of changes in the propensity to pay dividends*

In Table 5, we attempt to quantify the roles of changing firm characteristics and a declining propensity to pay dividends in explaining the reduction in the proportion of

[5] Julio and Ikenberry (2004) show a rebound in the proportion of US firms paying dividends starting in 2000. However, once they control for firm and industry characteristics, they still find that the actual proportion of dividend payers in the post-2000 period is well below the expected proportion.

[6] The Fama and French (2001) evidence does not imply a reduction in dividends. DeAngelo, DeAngelo, and Skinner (2004) show that aggregate real dividends increase over the Fama and French sample period.

Table 4
Logit regressions to explain dividend payout decisions. The dependent variable equals one if the firm pays dividends in year t and zero otherwise. The explanatory variables are *Size*, V_t/A_t, dA_t/A_t, E_t/A_t, and RE_t/BE_t. *Size* is the percent of firms in the benchmark population with smaller market capitalization at the end of a firm's fiscal year t. V_t, A_t, E_t, RE_t, and BE_t are the firm's market value in year t, its total assets, earnings before interest, retained earnings, and book equity, respectively. $dA_t = A_t - A_{t-1}$. The reported values of the regression coefficients are obtained by averaging the coefficients from annual regressions over the sample period of 1989–2002. The t-statistics are obtained by dividing average coefficients by their standard deviations over the sample period and multiplying the result by the square root of the number of years in the sample period.

	Average coefficient						t-Statistic					
	Int	*Size*	V_t/A_t	dA_t/A_t	E_t/A_t	RE_t/BE_t	*Int*	*Size*	V_t/A_t	dA_t/A_t	Et/A_t	RE_t/BE_t
US												
All firms	−1.79	3.79	−0.49	−1.63	3.86	1.15	−17.02	50.89	−13.94	−5.39	7.28	12.57
Payers	1.42	4.27	−0.39	−0.74	7.32	0.39	9.71	9.27	−4.81	−1.47	7.50	3.87
Nonpayers	−3.90	1.39	−0.28	−0.34	4.29	0.22	−27.59	10.66	−3.71	−2.18	4.71	5.14
Canada												
All firms	−2.00	3.92	−0.36	−2.14	3.43	2.06	−16.27	22.64	−4.46	−7.30	3.94	9.13
Payers	−1.55	4.12	1.74	−0.72	7.46	1.05	−2.90	10.23	3.31	−0.85	3.27	4.27
Nonpayers	−3.84	3.12	−1.31	−2.11	11.09	1.83	−5.38	3.72	−4.18	−3.04	3.55	3.69
United Kingdom												
All firms	0.75	3.40	−0.41	−0.74	6.49	0.30	4.53	18.43	−8.73	−3.16	9.94	3.06
Payers	1.71	3.73	−0.06	1.24	4.30	0.24	9.47	9.82	−0.45	3.41	4.38	1.90
Nonpayers	−1.39	0.87	−0.15	−0.06	5.79	0.38	−7.72	3.11	−3.66	−0.29	7.13	3.43
Germany												
All firms	−0.42	1.76	0.17	2.52	4.82	1.28	−1.61	5.92	0.86	3.64	3.44	4.51
Payers	−0.42	1.54	1.29	3.02	12.49	1.51	−0.55	2.03	2.59	1.86	1.94	3.16
Nonpayers	−1.82	1.49	−0.53	2.70	6.53	1.28	−7.32	3.02	−1.85	2.82	2.70	5.36
France												
All firms	−1.24	2.60	0.13	0.72	4.85	2.11	−5.88	12.12	1.03	1.92	5.04	7.53
Payers	0.16	2.64	0.45	0.69	9.57	1.29	0.36	6.04	2.29	1.54	5.37	3.49
Nonpayers	−3.13	2.06	−0.11	0.17	7.28	1.69	−8.68	4.91	−0.46	0.28	2.25	7.47
Japan												
All firms	0.77	3.03	−0.42	2.67	−0.33	2.10	3.65	12.09	−6.36	6.04	−0.12	4.53
Payers	2.51	2.59	0.11	3.73	7.53	2.37	4.50	4.40	0.31	2.10	1.87	2.07
Nonpayers	−2.23	1.87	−0.14	3.76	−0.54	1.35	−4.44	3.45	−0.62	2.52	−0.20	4.37

dividend payers in each of the sample countries. We first estimate logit models similar to those in Table 4 that relate the probability of paying dividends to firm size, growth opportunities, profitability, and earned equity for a base period of 1989–1993.[7] These regressions are estimated for the full sample of dividend payers and nonpayers.[8] Using the average annual coefficients from the base period, we then calculate the probability of dividend payments for each firm in subsequent years based on their characteristics in that year. The expected percent of dividend payers is obtained by averaging the individual probabilities across firms in each year and multiplying the result by one hundred.

As shown in Table 5, the expected percentage of dividend payers declines over the forecast period of 1994–2002 in all countries except Japan. Although the expected proportion of payers differs across countries, the magnitude of the decline in that proportion is similar in the US, Canada, UK, Germany, and France, ranging from 15.3% (France) to 21.9% (Germany). Evidence of a decline in the expected proportion of dividend payers in each country is consistent with our univariate findings and supports the conclusion that shifts in the characteristics of

[7] We find qualitatively similar results if we estimate the expected propensity to pay dividends using the original Fama and French (2001) specification that does not include the earned/contributed equity mix. That is, we find a declining propensity to pay dividends in all six countries. However, with the exception of a single year in France, dropping RE_t/BE_t from the model results in strictly higher estimates of unexpected reductions in the percentages of payers. The median difference between the estimates from the two models ranges from 1.1% in the UK to 3.1% in the US and are statistically significant. We also obtain similar results using three alternative base periods: 1990–1994, 1991–1995, and 1992–1996.

[8] The requirement of retained earnings reduces the sample size slightly relative to the sample sizes summarized in the Appendix A. However, our qualitative findings on the declining propensity to pay dividends are not sensitive to the inclusion of the earned equity variable. We find slightly larger declines when we estimate the expected

(*footnote continued*)
proportion of dividend payers using the original Fama and French specification.

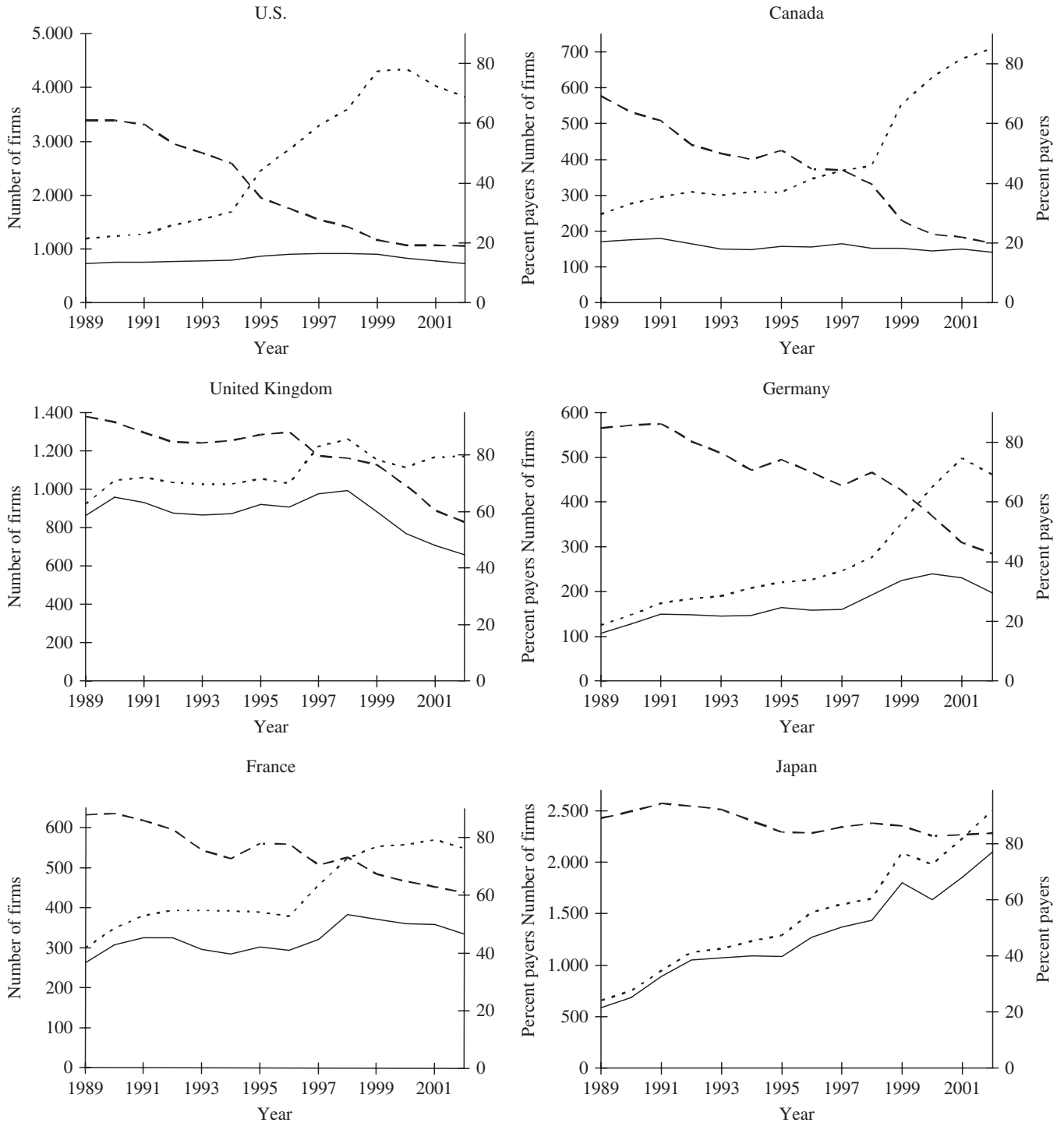

Fig. 1. Annual number of observations and percentage of dividend payers by country. The sample includes all companies in the US, Canada, UK, Germany, France, and Japan in the Worldscope database over the period 1989–2002 that satisfy the data availability requirements.

publicly traded companies account for a large proportion of the decline in dividend payers in each country.

Changes in the propensity to pay dividends can be measured as the difference between the expected and the actual proportion of payers. That is, controlling for changes in the characteristics of publicly traded companies, changes in the unexpected proportion of payers reflect changes in the propensity to pay dividends. As shown in Table 5, these differences are generally positive, but small (though they tend to be larger in the more recent years). Moreover, in the UK, the difference is positive in only five of the 9 years. If we use dS_t/dS_{t-1} as our measure of growth opportunities (not reported in a table), declines in the propensity to pay dividends are uniformly positive in the US, Canada, the UK, and Japan and are larger than those reported in Table 5. However, median declines in the propensity to pay dividends are close to zero in Germany and France.

Table 5
Out-of sample estimates from logit regressions of the percent of firms paying dividends. Annual logit regressions are estimated to explain which firms pay dividends from 1989 to 1993 using all firms present in the sample. The explanatory variables are *Size*, V_t/A_t, dA_t/A_t, E_t/A_t, and RE_t/BE_t. *Size* is the percent of firms in the benchmark population with smaller market capitalization at the end of a firm's fiscal year *t*. V_t, A_t, E_t, RE_t, and BE_t are the firm's market value in year *t*, its total assets, earnings before interest, retained earnings and book equity, respectively. $dA_t = A_t - A_{t-1}$. Actual percent is the percent of payers. The values in the expected percent column are obtained by averaging regression coefficients for 1989–1993, applying the average coefficients to estimate the probability that each firm would pay dividends in subsequent years, averaging that probability across firms for each year, and multiplying the result by one hundred.

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002
United States									
Number of firms	1,688	2,435	2,834	3,263	3,564	4,263	4,308	3,987	3,789
Actual percent	46.5	35.3	31.5	27.9	25.4	21.0	19.2	19.2	19.1
Expected percent	49.6	38.6	35.9	33.2	31.8	28.0	27.9	30.5	32.7
Expected–actual	3.1	3.3	4.3	5.3	6.5	7.0	8.7	11.2	13.6
Canada									
Number of firms	310	306	345	367	380	497	452	461	471
Actual percent	48.1	51.0	44.9	44.4	40.0	29.8	28.5	28.9	26.5
Expected percent	53.6	55.5	50.9	47.1	45.1	38.7	36.8	37.6	36.7
Expected–actual	5.5	4.5	6.0	2.7	5.1	9.0	8.3	8.8	10.1
United Kingdom									
Number of firms	1,025	1,054	1,030	1,022	985	899	1,032	1,166	1,169
Actual percent	85.1	87.2	88.1	85.3	85.4	82.1	70.6	60.5	56.3
Expected percent	86.3	86.4	85.3	84.2	83.0	82.6	75.8	70.5	67.7
Expected–actual	1.2	−0.8	−2.8	−1.2	−2.4	0.5	5.1	10.0	11.5
Germany									
Number of firms	208	221	227	232	234	253	324	350	328
Actual percent	70.7	74.2	70.0	66.8	74.4	73.9	61.4	57.4	51.2
Expected percent	78.1	77.1	75.7	78.0	78.8	80.0	82.3	66.2	56.2
Expected–actual	7.4	2.9	5.6	11.2	4.4	6.1	20.9	8.8	5.0
France									
Number of firms	393	390	380	370	350	325	484	507	479
Actual percent	72.5	77.7	77.6	74.6	80.3	77.2	66.5	65.3	63.0
Expected percent	82.4	81.5	80.2	83.2	83.0	82.8	79.3	72.0	67.1
Expected–actual	9.9	3.8	2.5	8.6	2.7	5.6	12.7	6.7	4.0
Japan									
Number of firms	1,235	1,291	1,515	1,593	1,640	1,663	1,167	1,278	1,365
Actual percent	88.1	84.1	83.8	85.9	87.2	85.4	84.1	84.7	85.6
Expected percent	90.7	90.6	90.3	90.4	90.1	88.7	90.9	91.0	90.7
Expected–actual	2.6	6.5	6.4	4.5	2.9	3.3	6.9	6.3	5.1

4.2. Earned/contributed capital and changes in the propensity to pay dividends

DeAngelo, DeAngelo, and Stulz (2006) decompose reductions in the propensity to pay dividends in the US as a function of earned/contributed equity and find that the propensity reduction is approximately twice as large among firms that are plausible candidates to pay dividends (i.e., those with positive retained earnings) as it is in their full sample. Because earned/contributed equity appears to be such a strong determinant of dividend policy in our sample and the proportion of firms with negative retained earnings has increased over time, we conduct a similar test.

For the year 2002, we partition the sample firms by *RE/BE*, then report both the percentage of firms in each *RE/BE* group and the difference between the actual and the expected percent of payers in that group. The results, reported in Table 6, show that the reduction in the propensity to pay dividends is larger in the low-to-middle ranges of *RE/BE*. The reduction exceeds 10% in all countries except Germany for low, but positive, values of *RE/BE* and exceeds 20% for some ranges of *RE/BE* in the US, UK, and Canada.[9] In five of the six countries, the reduction in propensity to pay dividends is greater when *RE/BE* is between 0.0 and 0.2 than it is for the full sample of firms in that country. Under a null hypothesis that propensity reductions are equal across *RE/BE* categories and using a binomial sign test, the probability of this occurring is 0.108.

[9] Our estimates of propensity reduction are smaller for the US than those reported in DeAngelo, DeAngelo, and Stulz (2006). The reason for this is the difference in benchmark periods in the two studies. DeAngelo, DeAngelo, and Stulz estimate their benchmark model over the 1973–1977 period, while we use the 1989–1993 period.

Table 6
Unexpected reductions in the propensity to pay dividends in 2002 by retained earnings/total equity (*RE/BE*). For each country, we report the proportion of the sample firms that fall into each category of *RE/BE* and the unexpected reductions in the percentage of dividend payers in each category. The unexpected reduction in payers is measured as the difference between the expected and the actual percent of dividend payers. The expected percent of payers is obtained by averaging regression coefficients for 1989–1993 using the model in Table 4, applying the average coefficients to estimate the probability that each firm would pay dividends in 2002, summing these probabilities across firms, dividing by the total number of firms, and multiplying the result by one hundred.

	All	RE/BE					
		<0.0	0.0 to 0.2	0.2 to 0.4	0.4 to 0.6	0.6 to 0.8	>0.8
US							
Percent of firms	100	53.0	8.8	9.2	10.0	10.6	8.4
Expected–actual percent	13.6	6.8	25.4	27.6	29.7	19.0	3.0
Canada							
Percent of firms	100	42.9	9.8	13.4	14.6	11.5	7.9
Expected–actual percent	10.1	5.1	14.9	21.6	14.0	18.7	−7.7
UK							
Percent of firms	100	38.1	8.0	9.6	14.0	15.5	14.9
Expected–actual percent	11.5	17.5	23.0	12.9	4.3	5.2	2.0
Germany							
Percent of firms	100	39.9	12.5	14.3	15.5	12.8	4.9
Expected–actual percent	5.0	6.9	2.3	−1.2	3.2	9.0	8.7
France							
Percent of firms	100	21.7	7.9	10.0	17.5	21.9	20.9
Expected–actual percent	4.0	−0.4	13.2	13.5	6.6	2.5	0.0
Japan							
Percent of firms	100	12.7	10.3	17.6	27.2	23.7	8.4
Expected–actual percent	5.1	9.5	13.4	5.9	3.3	2.5	−0.3

Reductions in the propensity to pay dividends are small in the highest groups of *RE/BE*. In fact, there is an increased propensity to pay for firms with *RE/BE* greater than 0.80 in Canada and Japan. Thus, it appears that those firms with the longest history of profitability (as evidenced by their high *RE/BE*) and the highest probability of paying dividends (see Table 2) are unlikely to abandon dividends.

Finally, if we examine those firms with negative retained earnings, we find mixed results. In the US, Canada, and France, the declines in propensity to pay dividends are very low among those firms that have negative retained earnings. For these firms, the reduction in propensity to pay dividends is never more than 7%. These findings are consistent with the observation that the proportion of dividend payers is small to begin with for firms with negative retained earnings in these countries (see Table 2). Reductions in the propensity to pay dividends among firms with negative retained earnings are higher in the UK (17.5%), Germany (6.9%), and Japan (9.5%). Notably, however, the proportion of firms with negative retained earnings that pay dividends is much higher in these countries than in the US, Canada, and France (see Table 2).

The picture that emerges from Table 6 is that, if there are reductions in the propensity to pay dividends, they appear to be concentrated among those firms most likely to be at the margin for paying dividends. Reductions in the propensity to pay dividends are trivial among those firms that do not appear to be reasonable candidates to pay dividends to begin with (i.e., those with negative retained earnings in the US, Canada, and France) and those whose cumulative profitability make them unlikely candidates for abandoning dividends.

4.3. The impact of new lists and biases in Worldscope coverage

Although the evidence in Tables 5 and 6 offer hints of a declining propensity to pay dividends in some of the sample countries, the magnitude of the declines is economically small. Such modest declines in payment propensity might simply be due to the relatively short forecast period used in our study. Alternatively, however, the modest declines in propensity that we observe could result from a combination of expanding Worldscope coverage of firms over time and the imprecision of our empirical model of the decision to pay dividends. The fact that virtually all firms covered by Worldscope in the 1981–1985 period are dividend payers implies that Worldscope first covers larger, more mature firms, then adds smaller, less mature firms over time. If our model overstates the expected proportion of dividend payers

among newly added firms, this would show up empirically as a decline in the propensity to pay dividends even if no such decline exists. Similarly, an influx of newly listed companies over time in the sample countries could produce negative prediction errors even in the absence of changes in payment propensity.

To explore these issues, we conduct two additional tests. In the first, we measure the change in the propensity to pay dividends in the US using data from the merged Center for Research in Security Prices (CRSP) and Compustat database instead of Worldscope data. We construct this Compustat sample using the data definitions in Fama and French (2001). Because Compustat coverage in the US is complete over the sample period, it is free from any selection biases associated with expansions in Worldscope coverage. Thus, if a propensity to pay analysis using Compustat data yields similar inferences to that using Worldscope data, this provides some reassurance that our findings are not due to biases related to expanding Worldscope coverage.

Panel A of Table 7 compares estimates of changes in the propensity to pay dividends in the US using Worldscope and Compustat data. Consistent with a bias toward more mature firms in the early years of the sample, the proportion of dividend payers is much greater in the Worldscope data than in the Compustat data prior to 1998. The proportions of payers in the Compustat and Worldscope samples become similar between 1998 and 2002. Despite this coverage bias, however, the declines in the propensity to pay dividends are similar in the two samples across the entire forecast period. Both samples show a decline in the propensity to pay dividends that is larger in the later years of the sample. Although the reduction in the propensity to pay dividends is slightly greater in most years in the Worldscope data, the similarity of the results across the two data sources suggests that biases in Worldscope coverage are not the primary drivers behind the differences between the expected and the actual percentage of dividend payers that we show.

As a second test, we analyze changes in the propensity to pay dividends in all six countries using only those firms that are covered by Worldscope during the benchmark period of 1989–1993. If our findings in Table 5 are driven by expanding Worldscope coverage toward firms that are less likely to pay dividends or to new lists, we should

Table 7
Tests of the impact of Worldscope coverage biases on changes in the propensity to pay dividends. Annual logit regressions are estimated to explain which firms pay dividends from 1989 to 1993 using all firms present in the sample. The explanatory variables are *Size*, V_t/A_t, dA_t/A_t, E_t/A_t, and RE_t/BE_t. *Size* is the percent of firms in the benchmark population with smaller market capitalization at the end of a firm's fiscal year *t*. V_t, A_t, E_t, RE_t, and BE_t are the firm's market value in year *t*, its total assets, earnings before interest, retained earnings, and book equity, respectively. $dA_t = A_t - A_{t-1}$. The expected percent of payers are obtained by averaging regression coefficients for 1989–1993, applying the average coefficients to estimate the probability that each firm would pay dividends in subsequent years, averaging that probability across firms for each year, and multiplying the result by one hundred. Panel A compares estimates for US firms using the Worldscope data with those using Compustat data. Panel B shows estimates of changes in the propensity to pay dividends when the sample is limited to those firms in the forecast period, 1994–2002, that are also present in the benchmark period, 1989–1993, i.e., the constant composition sample.

Panel A. US Firms: Worldscope versus Compustat

	Worlscope sample			Compustat sample		
Year	Number of firms	Number of payers	Expected–actual	Number of firms	Number of payers	Expected–actual
1994	1,688	785	3.1%	4,543	1,178	1.8%
1995	2,435	859	3.3	4,687	1,182	1.3
1996	2,834	894	4.3	5,003	1,146	2.7
1997	3,263	909	5.3	4,914	1,097	3.0
1998	3,564	904	6.5	4,501	1,038	4.9
1999	4,263	895	7.0	4,217	969	5.8
2000	4,308	828	8.7	4,033	874	7.5
2001	3,987	766	11.2	3,517	793	8.3
2002	3,789	724	13.6	3,288	742	9.5

Panel B. Constant composition sample

	US		Canada		UK		Germany		France		Japan	
Year	*N*	Expected–actual	*N*	Expected–actual	*N*	Expected–actual	*N*	Expected–actual	*N*	Expected–actual	*N*	Expected–actual
1994	1,539	1.8%	292	5.0%	985	1.3%	186	5.5%	372	10.3%	1,164	3.1%
1995	1,512	0.0	277	4.6	952	−0.5	182	2.8	351	4.0	1,154	7.4
1996	1,505	0.5	250	2.8	900	−2.7	170	5.9	322	1.8	1,147	8.3
1997	1,485	1.4	232	−2.4	852	−2.2	162	12.9	299	7.8	1,144	5.9
1998	1,405	0.7	215	0.7	765	−3.2	153	3.6	270	1.9	1,135	3.6
1999	1,316	1.8	193	6.9	679	−0.8	149	2.7	238	4.3	1,114	4.5
2000	1,236	4.2	147	1.1	594	−0.3	143	1.9	215	0.8	1,010	12.2
2001	1,169	7.5	129	−2.5	549	3.1	136	−3.4	200	0.1	1,002	11.1
2002	1,129	9.8	128	0.8	503	4.0	112	4.5	186	−0.5	1,028	8.6

observe smaller reductions in the propensity to pay dividends within this constant composition sample. Our findings, reported in Panel B of Table 7, indicate that median annual changes in the propensity to pay dividends are 1.8%, 3.6%, and 1.9% in the US, Germany, and France, respectively. Although the difference between the expected and actual percent of payers is positive in nearly every year in these countries, the differences are economically much smaller than those reported for the full sample in Table 5 and could plausibly be viewed as being within the bounds of normal model error. Moreover, there is little evidence of a systematic decline in the propensity to pay dividends in Canada or in the UK using the constant composition sample. These findings suggest that any unexpected reductions in dividend propensity reported in Table 5 are driven primarily by firms that enter the sample after 1993. The only exception is Japan, where changes in the propensity to pay dividends in the constant composition sample are slightly larger than those in the full sample.

If we conduct the constant composition analysis for US firms over the full Fama and French sample period (1978–2002), we obtain much smaller estimates of reductions in the propensity to pay dividends than if we conduct the analysis using the full sample. For example, using the full sample, the median decline in the propensity to pay dividends is 7.5% and the propensity reduction reaches a high of 14.2% in 2002. By contrast, using the constant composition sample, the highest propensity reduction is 4.8% in 2000, while the median propensity reduction is −1.0% (i.e., an increase in the propensity to pay dividends). These findings imply that propensity reductions observed in the US are driven by firms that enter the sample after 1978.

4.4. Dividend abandonment or failure to initiate?

Finally, to provide further evidence on time-series changes in the propensity to pay dividends, we examine whether observed unexpected shortfalls in the number of dividend payers are due primarily to the abandonment of dividends by existing payers or to an unexpected failure to initiate dividends by nonpayers.

The bottom row of Table 8 reports the total number of firms and the difference between the expected and the actual number of dividend payers in each country in 2002. The expected number of payers is calculated by first averaging the annual coefficients from the Table 4 regressions for the benchmark period 1989–1993. We then apply these coefficients to the actual firm characteristics (e.g., *A*, *V/A*, *dA/A*, *E/A*, and *RE/BE*) in 2002 to compute the probability of paying dividends for each firm. We sum the individual probabilities to get the expected number of payers.

As shown in Table 8, the shortfall in dividend payers (expected number of payers—actual number of payers) in 2002 ranges from a high of 515 in the US to a low of 16 in Germany. To assess the relative importance of dividend abandonment versus the failure to initiate dividends, we first divide the 2002 sample firms into those that were in the sample at the beginning of our forecast period (1993) and those that enter the sample after 1993. We then subdivide each of these categories into dividend payers and nonpayers, where "1993 payers" are those firms that pay dividends as of 1993 and "post-1993 payers" are those that enter the sample after 1993 and initiate dividends sometime between 1993 and 2002. Table 8 reports the shortfall in dividend payers within each subcategory.

The striking observation from Table 8 is that the shortfall in dividend payers in 2002 is due primarily to the failure to initiate dividends by firms that enter the sample after 1993. This subcategory accounts for more than 80% of the shortfall in each country except Japan. Outside of the US, there is little evidence of a failure to initiate dividends by firms that are in the sample prior to 1993. Again, we find similar results in the US using the Compustat sample instead of Worldscope. This implies that the results are due more to newly listed firms than to expanded coverage of existing firms by Worldscope.

Similarly, little evidence exists that the shortfall in dividend payers is due to firms unexpectedly abandoning dividends. The exception to this statement is Japan, where there is an unexpected shortfall of 40 firms among the 1993 dividend payers. This accounts for nearly 60% of the total shortfall of 69 firms in that country. The prevalence of abandonments in Japan is consistent with Dewenter and Warther (1998), who report that Japanese firms are

Table 8
Dividend abandonment versus failure to initiate. For each country, we compute the shortfall in dividend payers in 2002 as the difference between the expected number of payers and the actual number of payers. The expected number of dividend payers is computed by summing the probabilities of payment for each individual firm in that country. Probabilities are computed using the average values for the coefficient estimates from the Table 4 regressions estimated annually over the period 1989– 1993. The coefficient estimates are then applied to the individual firm's characteristics. We report a breakdown of the total shortfall by when the firm enters the sample and by its dividend status.

	US		Canada		UK		Germany		France		Japan	
	Firms	Shortfall	Firms	Shortfall	Firms	Shortfall	Firms	Shortfall	Firms	Shortfall	Firms	Shortfall
1993 payers	575	−78	70	−7	428	8	77	−1	147	−7	775	40
1993 nonpayers	513	185	42	6	56	7	21	2	33	2	46	16
Post–1993 payers	299	−66	73	−14	314	−14	136	−8	195	−10	510	−6
Post–1993 nonpayers	2,402	474	286	63	371	133	94	23	104	34	34	19
Total	3,789	515	471	48	1,169	134	328	16	479	19	1,365	69

more willing to cut dividends than are US firms, and Charitou (2000), who shows a relatively high rate of dividend cuts in response to accounting losses by Japanese firms in the early 1990s. To the extent that Japanese firms encounter an increase in financial problems during our sample period, the effects of this on dividend policy might not be fully captured by our benchmark model. Consistent with this conjecture, our further analysis reveals that financial troubles appear to play an important role in the abandonment of dividends by Japanese firms. Specifically, we compute interest coverage ratios (earnings before interest, taxes, depreciation, and amortization/interest expense) for firms in the subset of 1993 payers that abandon dividends by 2002. For the 40 firms with the highest probability of paying dividends (i.e., abandonment is least expected), the median interest coverage ratio is 2.9. By contrast, the median interest coverage ratio of dividend payers over the same period is 15.9. We conclude, therefore, that the higher rate of dividend abandonment in Japan appears to be driven more by financial distress than by a more general policy decision to back away from dividend payments.[10]

4.5. Summary and discussion

Overall, our evidence offers hints of a decline in the propensity to pay dividends in some of the sample countries, particularly among those firms that are at the margin for paying dividends. However, our more refined analysis raises several doubts about whether this evidence reflects systematic changes in dividend policies. First, the propensity declines in our sample are much smaller than those reported for US firms in Fama and French (2001). Second, the evidence in some countries is not particularly robust. For example, there is little evidence of a propensity decline in the UK, while the corresponding declines in Germany and France are not robust to alternative measures of firm growth opportunities. Third, unexpected reductions in the proportion of dividend payers among Japanese firms can just as plausibly be explained as responses to transitory earnings problems during that country's economic slowdown of the 1990s as to any meaningful changes in dividend policies. Fourth, in all other countries, we find no material changes in the dividend policies of firms that were listed prior to 1993. Any declines in the propensity to pay dividends that we observe appear to be driven by newly listed firms that fail to initiate dividends when expected to do so.

The shortfall in payers among new lists raises the possibility that our findings are due more to the overestimation of the expected numbers of dividend payers by an imprecise benchmark model than to any systematic change in dividend policies. Although our benchmark model is as comprehensive as any others in the literature, newly listed firms could, nonetheless, exhibit some characteristics that are not included in the benchmark model, but that make them less likely to pay dividends. Fama and French (2004) observe that the characteristics of newly listed firms in the US have changed such that the cross-sectional distribution of profitability is considerably more left-skewed while that of growth is considerably more right-skewed. Such a shift in the characteristics of listed firms raises the probability that relevant characteristics are not picked up by benchmark models for expected dividends, thereby resulting in measured reductions in the propensity to pay dividends.

Our findings complement and extend those of other recent studies of payout policies outside of the US. Like us, Benito and Young (2001) and Renneboog and Trojanowski (2005) conclude that there is little evidence of a reduction in the propensity to pay dividends in the UK. However, in each case, the samples studied by the authors are somewhat limited and the authors do not control for all of the other potential determinants of dividend propensity. Specifically, the Renneboog and Trojanowski (2005) sample consists of UK firms that are present in the Worldscope data for at least three years between 1992 and 1998, and they simply report the proportion of firms that pay dividends each year. Benito and Young (2001) control for cash flow, leverage, profitability, firm size, and growth opportunities, but they do not control for *RE/BE* and forecast the propensity to pay dividends only over the period 1995–1999.

Two studies that analyze propensity changes over longer periods of time are Ferris, Sen, and Yui (2006) and von Eije and Megginson (2006). Ferris, Sen, and Yui study payout policies in the UK between 1988 and 2002 and conclude that there has been a reduction in the propensity of British firms to pay dividends. However, a closer look at their data reveals that their findings are driven by the last 2 years of their sample period, 2001 and 2002. The median change in the propensity to pay dividends over their full forecast period is just 0.5%. Thus, their conclusion that there has been a reduction in the propensity to pay dividends in the UK seems too strong.

von Eije and Megginson (2006) report a decline in the proportion of dividend payers among firms in the 15 countries comprising the European Union between 1989 and 2003. Controlling for profitability, size, and growth opportunities, they report positive differences between the expected and actual proportion of payers. They conclude that there has been a decline in the propensity to pay dividends among European Union firms. However, their sample size also increases substantially over time. In light of our evidence on the role of new lists, we conjecture that the propensity declines that they observe are driven by the failure to initiate dividends by the new entrants to their sample. Consistent with this conjecture, von Eije and Megginson (2006) report no decline in the number of payers in their sample.

Finally, any international evidence of a decline in the propensity to pay dividends cannot be attributed to either a substitution of repurchases for dividends or to a reduced willingness of managers to pay dividends that is fueled by

[10] Although dividend abandonment is empirically unimportant in countries outside of Japan, we also examine evidence of financial troubles for firms abandoning dividends in these countries and find similar results. That is, firms unexpectedly abandoning dividends have significantly lower interest coverage ratios than those firms that continue to pay dividends. This evidence reinforces the conclusion that the model for estimating the propensity to pay dividends is imperfect.

Table 9
Aggregate real and nominal dividend payments. Real dividends are calculated by adjusting nominal dividends (in local currencies) for the growth in prices in that country relative to their 1990 levels. Annual values of the consumer price indexes for the sample countries are obtained from Datastream.

Year	1990	1994	2000	2002
US				
Number of firms in sample	1,242	1,694	4,346	3,828
Number of payers	758	789	835	728
Percent payers (%)	61.0	46.6	19.2	19.0
Total nominal dividends, in billions	$56.1	$62.0	$84.2	$83.3
Total real dividends, in billions	56.1	54.7	63.9	60.5
Mean real dividend per payer, in millions	74.0	69.3	76.5	83.1
Median real dividend per payer, in millions	10.3	9.6	7.6	8.2
Canada				
Number of firms in sample	277	310	628	710
Number of payers	177	149	144	141
Percent payers (%)	63.9	48.1	22.9	19.9
Total nominal dividends, in billions	$6.1	$5.7	$6.8	$6.7
Total real dividends, in billions	6.1	5.2	5.6	5.2
Mean real dividend per payer, in millions	34.5	34.7	39.0	37.1
Median real dividend per payer, in millions	9.5	9.0	9.8	10.7
United Kingdom				
Number of firms in sample	1,047	1,026	1,114	1,170
Number of payers	959	873	771	659
Percent payers (%)	91.6	85.1	69.2	56.3
Total nominal dividends, in billions	£12.8	£15.4	£24.7	£24.9
Total real dividends, in billions	12.8	13.5	18.3	17.8
Mean real dividend per payer, in millions	13.4	15.4	23.8	27.0
Median real dividend per payer, in millions	1.2	1.3	1.7	1.9
Germany				
Number of firms in sample	148	208	433	461
Number of payers	127	147	240	197
Percent payers (%)	85.8	70.7	55.4	42.7
Total nominal dividends, in billions	€3.5	€3.2	€12.6	€10.9
Total real dividends, in billions	3.5	3.5	12.6	10.6
Mean real dividend per payer, in millions	27.6	23.6	52.4	53.6
Median real dividend per payer, in millions	4.6	4.3	4.3	4.9
France				
Number of firms in sample	349	393	560	551
Number of payers	307	285	363	336
Percent payers (%)	88.0	72.5	64.8	61.0
Total nominal dividends, in billions	€4.1	€4.6	€12.5	€13.2
Total real dividends, in billions	4.1	4.2	10.5	10.7
Mean real dividend per payer, in millions	13.5	14.9	29.0	32.0
Median real dividend per payer, in millions	3.2	2.4	1.5	1.9
Japan				
Number of firms in sample	751	1235	1,980	2,505
Number of payers	687	1,088	1,638	2,100
Percent payers (%)	91.5	88.1	82.7	83.8
Total nominal dividends, in billions	¥1,464.1	¥1,761.9	¥1,982.6	¥2,204.8
Total real dividends, in billions	1,464.1	1,644.7	1,825.5	2,064.1
Mean real dividend per payer, in millions	2,131.1	1,511.7	1,114.5	9,82.9
Median real dividend per payer, in millions	783.0	434.6	222.6	210.8

an increased weight of stock options in executive compensation contracts.[11] Firms repurchasing shares in the UK typically pay dividends as well, while share repurchases were not liberalized in France, Germany, and Japan until the late 1990s. Similarly, stock option compensation did not become common in countries outside of the US until the late 1990s.[12] Moreover, the

[11] See Grullon and Michaely (2002) and Skinner (2008) for evidence on the substitution of repurchases for dividends in the US and Fenn and Liang (2001) and Lambert, Lanen, and Larcker (1989) for evidence on the link between dividend payments and the use of executive stock options in the US.

[12] See Bouzoraa (1998), Masui (1998), and Prokisch (1998) for evidence from France, Japan, and Germany, respectively. Evidence on share repurchases in the UK can be found in Renneboog and Trojanowski (2005). In unreported regressions, we find no relation between the

Table 10
The concentration of dividends, market capitalization, and earnings. The reported percent values are period averages of the corresponding percent values in individual years. In each year, firms in each country are ranked by the total amount of cash dividends paid in that year. Because of negative earnings in 2001, Nortel Network Corporation (Canada) is excluded from calculations for that year as an outlier.

	Dividends			Market capitalization			Earnings before interest		
	1989–1993	1994–1998	1999–2002	1989–1993	1994–1998	1999–2002	1989–1993	1994–1998	1999–2002
US									
All payers	100.0	100.0	100.0	90.1	78.5	62.0	92.9	87.1	122.3
Top 20% payers	86.7	88.5	90.4	69.5	62.9	51.7	73.8	67.7	100.3
Top 200 payers	90.7	90.3	92.8	74.4	64.9	54.4	78.6	69.6	104.3
Canada									
All payers	100.0	100.0	100.0	87.0	76.8	72.8	96.4	89.5	95.3
Top 20% payers	79.3	76.6	80.9	60.9	51.6	55.6	67.1	60.0	68.8
Top 50 payers	86.6	87.0	90.9	68.7	60.1	64.0	76.0	70.5	96.1
United Kingdom									
All payers	100.0	100.0	100.0	98.9	98.1	93.0	99.6	100.3	123.7
Top 20% payers	91.7	92.6	93.6	88.8	88.1	85.8	90.2	90.6	111.7
Top 200 payers	92.7	93.2	95.7	90.0	88.8	87.7	91.4	91.3	116.7
Germany									
All payers	100.0	100.0	100.0	93.3	90.3	92.5	97.9	92.1	106.0
Top 20% payers	85.9	86.8	92.9	73.1	78.3	86.1	85.0	81.3	96.1
Top 50 payers	93.7	92.2	93.7	84.3	82.7	86.6	93.0	85.7	97.8
France									
All payers	100.0	100.0	100.0	94.5	91.7	92.1	95.7	89.5	93.4
Top 20% payers	82.8	85.6	93.6	72.3	76.3	85.7	73.9	71.9	77.9
Top 50 payers	78.7	81.2	89.1	68.0	71.4	79.1	69.9	66.7	69.4
Japan									
All payers	100.0	100.0	100.0	97.2	94.8	96.4	97.8	95.8	98.7
Top 20% payers	73.3	77.6	82.8	65.9	72.8	83.9	74.7	78.0	88.3
Top 400 payers	91.5	86.8	84.1	86.1	81.9	84.7	90.1	85.4	89.2

robust importance of firm size, profitability, and the earned/contributed equity mix in dividend decisions cast doubt on dividend signaling as a first-order determinant of corporate dividend policies. The firms that pay dividends (i.e., larger, more profitable firms with positive earned equity) are those that appear to be least in need of signaling their prospects, while those that fail to initiate (i.e., newly listed firms) seem most in need of signaling.

5. The concentration of dividends and earnings

Although the propensity to pay dividends has declined in the US over the past two decades, DeAngelo, DeAngelo, and Skinner (2004) report that aggregate real dividends paid by industrial firms increase over the same period. Table 9 reports similar evidence for our sample countries. Total real dividends increase between 1990 and 2002 in all countries except Canada. Although this is due in part to the expanded Worldscope coverage over the sample period (particularly in Germany, France, and Japan), mean and median real dividends per payer increase in every country except Japan. Moreover, consistent with a concentration of dividends among large payers, a large difference exists in most countries between mean and median real dividends. We find similar results if we include in the analysis only those firms that are present in the sample throughout the 1990–2002 period. (These results are not reported in a table.) Aggregate real dividends increase for these constant composition samples in all six countries.

Table 10 provides further evidence on dividend concentration by reporting the percentage of all dividends paid by the top 20% of dividend payers in each country. We report these data for three subperiods: 1989–1993, 1994–1998, and 1999–2002. In each country, the top 20% of payers account for at least 73.3% of aggregate dividends in all subperiods and frequently account for more than 90% of dividends. Because these concentration statistics based on percentages might be affected by a reduction in the number of very small payers [see, e.g., the DeAngelo, DeAngelo, and Skinner (2004) US evidence], we also report concentration data for a fixed number of dividend payers in each country.[13] The results are similar. Dividends

(*footnote continued*)
propensity to pay dividends and share repurchase activity in any of the countries that we study.

[13] We vary the number by country to reflect differences in the number of observations in each country.

are highly concentrated among the largest payers. Moreover, if anything, this concentration has increased slightly over time except in Japan.

Table 10 also provides evidence on the concentration of earnings and market capitalization among dividend payers. Consistent with the evidence for US firms in DeAngelo, DeAngelo, and Skinner (2004), a strong correlation exists between the concentration of dividends and the concentration of earnings. In each country, the top dividend payers account for more than two-thirds of aggregate earnings in the 1999–2002 subperiod. In three of the six countries (US, UK, and Germany), top dividend payers account for more than 90% of aggregate earnings.

Finally, the evidence in Table 10 indicates a striking concentration of market capitalization among the top dividend payers in the UK, Germany, France, and Japan. In these countries, dividend payers account for more than 92% of the aggregate market capitalization in the 1999–2002 period. This concentration is not evident in the US and Canada. Because DeAngelo, DeAngelo, and Skinner (2004) find that nonpayers with high market capitalizations tend to be concentrated in technology industries, we explore this further. We identify high-tech firms as those in SIC codes 357 (computer equipment), 366 (communications equipment), 367 (communications components), and 737 (software and computer services). We find that, although firms in these industries account for 30% and 23% of the market capitalizations in the US and Canada, respectively, in the 1999–2002 period only 5% of the high-tech firms in the US and 7% of the high-tech firms in Canada pay dividends. (These results are not reported in a table.) By contrast, high-tech firms account for only 5% (UK) to 18% (Germany) of the market capitalization in the other four countries. However, in these countries, a greater proportion of high-technology firms pay dividends, between 28% (Germany) and 84% (Japan). These findings hint at the possibility that industry-specific growth opportunities among technology firms play some role in the declining propensity to pay dividends in the US and Canada, but not in the other countries.[14]

The evidence of concentration of dividends among firms with high earnings appears inconsistent with clientele and signaling explanations of the propensity to pay dividends. Equilibrium clientele theories are based on the assumption that the set of assets available to investors allows them to build sufficiently well-diversified portfolios with the desired dividend level and risk characteristics. It seems implausible that investors with a preference for zero dividends could build a well-diversified portfolio if over 90% of the market's capitalization is in dividend paying stocks (as is true in the UK, Germany, France, and Japan).

Similarly, if the propensity to pay dividends was primarily driven by signaling considerations, we would expect dividends to be paid primarily by those firms most in need of signaling, i.e., smaller, less profitable firms. In fact, the patterns in the data are opposite of this prediction. Dividends in all countries are paid by the biggest, most profitable firms.

The bottom line is that the data provide little support for equilibrium clientele or signaling considerations as first-order determinants of dividend policies in the countries that we study. By contrast, the concentration of dividends among the largest, most profitable firms is what one would expect if the primary determinant of dividends is the payout of free cash flow. In this sense, our findings provide strong support for the life-cycle theory of dividends.

6. Can changes in the propensity to pay dividends be explained by catering incentives?

Under the Baker and Wurgler (2004a, b) catering hypothesis, managers cater to investor demand for dividends by paying dividends when investors place a valuation premium on dividend payers and not paying dividends when there is no such valuation premium on dividend payers. This hypothesis seems difficult to reconcile with the large-scale and concentration of dividend payments reported in Tables 9 and 10. As argued in DeAngelo, DeAngelo, and Skinner (2004), evidence of concentration of dividends and earnings suggests that declines in the propensity to pay dividends cannot be attributed to "factors that put across-the-board downward pressure on dividends" (p. 452), as would be the case with the catering explanation. Put differently, why would investor demand for dividends be limited to the most profitable firms? Similarly, the catering hypothesis is difficult to reconcile with our observation that reductions in the propensity to pay in our sample countries are concentrated among new lists.

Nonetheless, Baker and Wurgler (2004a) report that the dividend premium is related to the rate of dividend initiations and omissions. Furthermore, Baker and Wurgler (2004b) show that the dividend premium explains a substantial portion of the decline in the propensity of US firms to pay dividends in the post-1977 period.[15]

In Table 11, we shed further light on the catering hypothesis by reporting annual dividend premiums and the unexpected percent of dividend payers in each country. Following Baker and Wurgler (2004a, b), the dividend premium is defined as the difference between the log of the weighted-average market-to-book ratio of payers and that of nonpayers, where the weight is the book value of total assets. The expected percent of dividend payers is again determined by first estimating the Table 4 regressions annually over the 1989–1993 period, then applying the average coefficients to the actual

[14] The declining propensity to pay dividends observed in the US and Canada is not observed solely in high-technology industries. If we exclude these industries from our analysis in Table 5, we continue to observe propensity reductions in both the US and Canada that are of similar magnitude to those reported in Table 5.

[15] Li and Lie (2006) extend the catering theory to dividend increases and decreases and find that the decision to change dividends is related to the dividend premium. Contrary to the catering hypothesis, however, Hoberg and Prabhala (2005) find that, once they control for risk, catering incentives are no longer significant in explaining the decline in the propensity to pay dividends among US firms.

Table 11
Dividend premiums and the unexpected proportion of dividend payers. Market-to-book (*M*/*B*) ratio columns report aggregate ratios (aggregate market value of firms in the group divided by their aggregate book value). The dividend premium is the difference between the logs of the weighted-average market-to-book ratios of payers and nonpayers, where the weight is the book value of total assets. Expected–actual is the difference between the expected percentage of dividend payers based on the out-of-sample estimates in Table 5 and the actual percentage of payers for that calendar year.

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002
US									
M/B nonpayers	1.67	1.95	1.96	2.16	2.29	2.97	2.63	1.99	1.55
M/B payers	1.51	1.68	1.77	2.04	2.21	2.13	1.98	1.78	1.68
Dividend premium	−9.6	−15.2	−10.2	−5.8	−3.7	−33.3	−28.6	−11.2	8.2
Expected–actual	3.1	3.3	4.3	5.3	6.5	7.0	8.7	11.2	13.6
Canada									
M/B nonpayers	1.32	1.33	1.56	1.59	1.42	1.62	1.46	1.48	1.28
M/B payers	1.24	1.27	1.33	1.36	1.29	1.42	1.48	1.34	1.24
Dividend premium	−6.0	−4.8	−15.5	−16.1	−9.1	−13.6	1.0	−10.2	−3.7
Expected–acual	5.5	4.5	6.0	2.7	5.1	9.0	8.3	8.8	10.1
United Kingdom									
M/B nonpayers	1.27	1.58	2.10	1.78	2.10	3.78	2.57	1.46	0.99
M/B payers	1.52	1.63	1.71	1.89	2.08	2.37	1.72	1.54	1.35
Dividend premium	17.8	3.4	−20.8	5.9	−1.4	−46.7	−40.0	4.8	30.8
Expected–acual	1.2	−0.8	−2.8	−1.2	−2.4	0.5	5.1	10.0	11.5
Germany									
M/B nonpayers	1.24	1.24	1.29	1.32	1.42	1.65	1.66	1.14	1.05
M/B payers	1.22	1.24	1.31	1.40	1.54	1.73	1.33	1.26	1.10
Dividend premium	−1.6	0.6	1.8	5.4	8.2	5.0	−22.3	10.3	4.1
Expected–acual	7.4	2.9	5.6	11.2	4.4	6.1	20.9	8.8	5.0
France									
M/B nonpayers	1.04	1.00	1.15	1.26	1.24	1.53	1.68	1.64	1.21
M/B payers	1.12	1.12	1.23	1.38	1.49	1.77	1.58	1.42	1.31
Dividend premium	7.3	11.7	7.0	8.6	18.7	14.7	−6.1	−14.8	7.8
Expected–acual	9.9	3.8	2.5	8.6	2.7	5.6	12.7	6.7	4.0
Japan									
M/B nonpayers	1.28	1.27	1.19	1.02	1.02	1.05	1.05	1.03	0.93
M/B payers	1.30	1.30	1.29	1.20	1.17	1.50	1.36	1.19	1.10
Dividend premium	1.5	2.7	7.6	16.2	13.4	35.6	25.6	14.4	16.8
Expected–acual	2.6	6.5	6.4	4.5	2.9	3.3	6.9	6.3	5.1

firm characteristics in the subsequent years. The unexpected percent of dividend payers is equal to the difference between the percentage expected from the regression estimates and the actual percentage of dividend payers in the sample. The reported values of the dividend premium are calculated as of calendar year-ends for all countries except Japan, where they are calculated as of March 31 in each year. The choice of the different date for Japan is determined by the observation that the majority of Japanese firms use March 31 as the fiscal year-end date, while for the majority of firms in other countries the end of a fiscal year coincides with calendar year-end.

As shown in Table 11, the values of the dividend premium are consistently negative in the US and Canada and largely positive in Germany, France, and Japan. In the UK, the dividend premium is consistently positive until 1996, mostly negative from 1996 to 2000, then positive again in 2001 and 2002. In contrast to the differences in the dividend premium across countries, the difference between the expected and the actual percent of dividend payers is generally positive in all countries. Moreover, in some individual cases, wide swings exist in the dividend premium from year-to-year, with little change in the difference between the expected and the actual percent of payers. For example, in the UK between 1994 and 1999, the dividend premium ranges from 17.8% to −46.7%, yet the difference between the expected and actual percent of payers ranges from only 1.2% to −2.4%. Similarly, in Japan the dividend premium ranges from 1.5% to 35.6%, but the difference between the expected and actual percent of payers ranges only from 2.6% to 6.9%.

Another way of analyzing the catering hypothesis is to examine the set of firms that change their dividend status (i.e., payer or nonpayer) more than once during the sample period. We label these firms dividend ''switchers.'' Under the catering hypothesis, firms start and stop paying dividends in response to the market's dividend premium. Thus the frequency of these dividend switchers and the correlation between the direction of the switch and the dividend premium provides further evidence on the importance of the catering hypothesis.

In Table 12, we report the annual frequency with which dividend switchers initiate or resume dividends and omit

Table 12
Dividend premiums and the frequency of initiations and omissions by dividend switchers. Dividend switchers are defined as firms that change from being a dividend payer to being a nonpayer, or vice versa, more than once during the sample period of 1989–2002. The dividend premium is the difference between the logs of the weighted-average market-to-book ratios of payers and nonpayers, where the weight is the book value of total assets.

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
US													
Number of firms	1,234	1,273	1,441	1,550	1,688	2,435	2,834	3,263	3,564	4,263	4,308	3,987	3,789
Number of omissions	5	14	11	18	25	10	20	21	16	15	34	37	24
Number of initiations	9	11	14	19	16	21	18	14	15	21	25	17	11
Dividend premium	−6.0	−11.7	−7.6	−9.4	−9.6	−15.2	−10.2	−5.8	−3.7	−33.3	−28.6	−11.2	8.2
Canada													
Number of firms	277	295	310	300	310	306	345	367	380	497	452	461	471
Number of omissions	3	8	10	9	3	2	8	3	8	5	5	8	12
Number of initiations	2	7	3	5	5	10	4	13	3	6	9	8	2
Dividend premium	−0.5	3.1	−7.9	−13.9	−6.0	−4.8	−15.5	−16.1	−9.1	−13.6	1.0	−10.2	−3.7
United Kingdom													
Number of firms	1,046	1,060	1,035	1,026	1,025	1,054	1,030	1,022	985	899	1,032	1,166	1,169
Number of omissions	16	45	53	43	33	20	17	27	18	24	25	23	23
Number of initiations	13	14	21	36	41	39	32	30	23	18	18	11	12
Dividend premium	13.2	18.7	7.1	15.8	17.8	3.4	−20.8	5.9	−1.4	−46.7	−40.0	4.8	30.8
Germany													
Number of firms	148	174	184	190	208	221	227	232	234	253	324	350	328
Number of omissions	1	3	12	13	14	7	13	12	6	8	13	9	18
Number of initiations	2	7	3	5	7	11	9	7	19	10	10	14	9
Dividend premium	−18.6	−18.9	−7.0	0.3	−1.6	0.6	1.8	5.4	8.2	5.0	−22.3	10.3	4.1
France													
Number of firms	349	381	394	394	393	390	380	370	350	325	484	507	479
Number of omissions	6	20	15	29	24	4	8	19	5	10	6	16	11
Number of initiations	6	8	12	15	10	22	18	9	24	6	12	15	9
Dividend premium	−4.1	1.2	4.6	4.5	7.3	11.7	7.0	8.6	18.7	14.7	−6.1	−14.8	7.8
Japan													
Number of firms	749	948	1,126	1,160	1,235	1,291	1,515	1,593	1,640	1,663	1,167	1,278	1,365
Number of omissions	2	3	8	20	49	53	25	15	16	36	47	18	13
Number of initiations	12	16	6	5	7	11	16	55	43	29	17	32	28
Dividend premium	−14.6	−23.4	−2.9	1.5	1.5	2.7	7.6	16.2	13.4	35.6	25.6	14.4	16.8

or abandon dividends. Despite wide swings in the dividend premium from year-to-year, the frequency of switchers is low in all six countries. The median annual percentage of firms that switch their dividend status in a given year is less than 5% in four of the countries (US, Canada, UK, and Japan) and is below 10% in the other two countries (France, 6.8%, and Germany, 8.2%). Moreover, the direction of the switch does not appear to be tied closely to changes in the dividend premium. Although the catering hypothesis predicts a preponderance of omissions around negative changes in the dividend premium and a preponderance of initiations around increases in the dividend premium, the data indicate that the number of initiations frequently exceeds the number of omissions in those years in which the change in dividend premium is most negative. Similarly, omissions frequently outnumber initiations in those years in which the change in dividend premium is most positive. If we calculate the difference in the number of initiations and the number of omissions each year (net initiations) and compute the correlation between this number and the change in the dividend premium in that year, we find that the median correlation across countries is a statistically insignificant 0.009. The median correlation between net initiations and the level of the dividend premium is −0.03. The bottom line, therefore, is that few firms switch their dividend status more than once over the sample period and even fewer appear to do so in response to changes in the dividend premium.

Although a full test of the catering hypothesis is beyond the scope of this paper, these and our prior findings cast considerable doubt on the catering hypothesis as a first-order explanation for the dividend payment patterns that we report in the sample countries.[16]

7. Summary and conclusions

The empirical determinants of the propensity to pay dividends appear to be remarkably similar across countries. In all six countries that we study, dividends are affected by firm size, profitability, growth opportunities, and the earned/contributed equity mix. Larger and more profitable firms and those with a greater proportion of earned equity are more likely to pay dividends, while the effect of growth opportunities on the likelihood of dividend payments is mixed. Although some prior studies (e.g., LLSV, 2000) show the importance of firm size, profitability, and growth opportunities outside of the US, our study is the first, to our knowledge, to provide international evidence on the importance of the earned/contributed equity mix in dividend policies.

After controlling for the empirical determinants of dividends and the evolution of these characteristics over time, we find some hints that the phenomenon of declining propensity to pay dividends, first reported for US firms in Fama and French (2001), extends to other developed financial markets. That is, the actual proportion of dividend payers is below the expected proportion in all six countries in the last few years of our sample period of 1989–2002. However, these propensity declines are fairly small, they are not always robust, and they are driven by the failure of new lists to initiate dividends when expected to do so.

We conclude, therefore, that the data do not allow us to reject the possibility that there has been no meaningful change in corporate dividend policies in our sample countries. While we also cannot reject the possibility that there have been small propensity reductions in the sample countries, such reductions are at most limited to newly listed firms. In this sense, one important contribution of our study is that we narrow the scope of the disappearing dividends phenomenon to the dividend decisions of newly listed firms.

The Fama and French (2004) evidence on the characteristics of newly listed firms in the US offers some insight into why these firms have been less likely to initiate dividends in recent years. Accordingly, a promising area for future research would be a systematic analysis of whether similar changes in these same characteristics (i.e., more left-skewed profitability and more right-skewed growth opportunities) exist in other markets as well. If so, any apparent global reduction in the propensity to initiate dividends might simply reflect secular changes in earnings and growth prospects of young firms.

The fact that aggregate dividends have not declined over time in the sample countries and are concentrated among the largest, most profitable firms in each country casts doubt on signaling and clientele explanations for the propensity to pay dividends. Moreover, outside of the US we fail to find much support for the hypothesis that changes in dividend policies are driven by managers catering to investor sentiment for dividends. Our findings are, however, consistent with a life cycle-based theory of dividend policy. According to this theory, firms trade off the flotation cost savings against the agency costs of cash retention. As firms mature (as proxied by greater earned relative to contributed equity), the expected costs of retention increase, perhaps due to greater free cash flow problems. Consequently, the propensity to pay dividends increases. Both the evidence of a strong positive association between the earned/contributed equity mix and the propensity to pay dividends and the finding that dividends are concentrated among those firms with greatest earnings in all six countries that we study can be readily explained by a model (such as the life-cycle theory) in which the distribution of free cash flow is the primary determinant of dividend policies.

Appendix A

See Table A1.

[16] Ferris, Sen, and Yui (2006) conclude that catering incentives have an important influence on the propensity to pay (PTP) dividends in their sample of UK firms. However, this conclusion appears to be driven by the final two years of their 1995–2002 sample period. Between 1995 and 2000, large changes occur in the dividend premium, yet these changes produce only trivial changes in the propensity to pay dividends. Only in 2001 and 2002 is there any evidence of a reduction in the propensity to pay dividends and a corresponding reduction in the dividend premium. We conclude, therefore, that little evidence exists that catering incentives have much influence on UK dividend policies.

Table A1
Average number of firms satisfying data availability requirements by country

	All firms				Dividend payers				Nonpayers			
Country	1981–1985	1986–1990	1991–1995	1996–2002	1981–1985	1986–1990	1991–1995	1996–2002	1981–1985	1986–1990	1991–1995	1996–2002
Civil law												
Argentina	0	2	11	25	0	2	7	14	0	1	4	11
Austria	1	7	21	52	0	6	17	38	0	1	4	14
Belgium	6	14	30	53	5	12	25	37	0	2	4	16
Denmark	17	36	83	108	15	28	58	80	3	7	25	28
Finland	13	27	62	98	13	26	48	86	0	1	14	12
France	100	199	390	515	72	173	307	348	28	27	83	167
Germany	54	90	195	356	45	76	151	201	9	14	45	155
Indonesia	0	0	34	91	0	0	34	53	0	0	0	38
Italy	11	62	110	124	9	58	80	88	2	5	30	35
Japan	124	490	1,152	1,938	121	435	1,038	1,639	3	56	114	299
Korea (South)	0	5	57	155	0	5	47	111	0	0	10	43
Mexico	10	17	41	67	5	11	28	32	6	6	13	35
Netherlands	28	47	88	112	24	40	68	77	5	7	20	35
Norway	3	28	68	114	2	14	38	55	1	14	30	59
Philippines	0	2	14	49	0	1	9	19	0	0	4	30
Portugal	0	1	17	35	0	1	13	25	0	0	4	11
Spain	4	16	66	77	3	15	45	52	1	2	22	25
Sweden	28	45	108	204	28	44	83	124	0	2	25	79
Switzerland	18	47	91	139	15	43	72	104	3	4	19	35
Taiwan	0	0	22	172	0	0	10	68	0	0	12	104
Turkey	0	0	4	22	0	0	4	13	0	0	0	9
Common law												
Australia	40	83	154	348	39	69	116	190	2	14	38	158
Canada	114	180	305	524	94	126	160	151	20	53	145	373
Hong Kong	12	30	77	335	12	27	72	194	1	3	5	140
India	0	0	0	2	0	0	0	2	0	0	0	0
Ireland	0	23	43	51	0	20	30	31	0	3	14	21
Malaysia	18	32	127	330	17	29	118	247	1	3	9	83
New Zealand	7	12	25	47	7	11	22	39	0	1	3	8
Singapore	19	23	75	214	17	22	69	159	2	1	6	56
South Africa	47	67	119	216	46	65	112	133	1	2	7	83
Thailand	0	1	61	150	0	0	53	81	0	0	8	69
UK	207	581	1,041	1,160	201	544	893	842	6	37	148	318
US	5	808	1,685	3,749	3	509	792	853	2	299	893	2,896

References

Allen, F., Michaely, R., 2003. Dividend policy. In: Constantinides, G., Harris, M., Stulz, R. (Eds.), Handbook of the Economics of Finance. North-Holland, Amsterdam.

Baker, M., Wurgler, J., 2004a. A catering theory of dividends. Journal of Finance 59, 1125–1165.

Baker, M., Wurgler, J., 2004b. Appearing and disappearing dividends: the link to catering incentives. Journal of Financial Economics 73, 271–288.

Benito, A., Young, G., 2001. Hard times of great expectations? Dividend omissions and dividend cuts by UK firms. Unpublished working paper, Bank of England.

Bouzoraa, D., 1998. France. European Taxation 38, 393–398.

Charitou, A., 2000. The impact of losses and cash flows on dividends: evidence from Japan. Abacus: Journal of Accounting, Finance, and Business Studies.

DeAngelo, H., DeAngelo, L., 2006. The irrelevance of the MM dividend irrelevance theorem. Journal of Financial Economics 79, 293–316.

DeAngelo, H., DeAngelo, L., Skinner, D.J., 2004. Are dividends disappearing? Dividend concentration and the consolidation of earnings. Journal of Financial Economics 72, 425–456.

DeAngelo, H., DeAngelo, L., Stulz, R.M., 2006. Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. Journal of Financial Economics 81, 227–254.

Dewenter, K., Warther, ., 1998. Dividends asymmetric information and agency conflicts: evidence from a comparison of dividend policies of Japanese and US firms. Journal of Finance 53, 879–904.

Fama, E.F., Babiak, H., 1968. Dividend policy: an empirical analysis. Journal of the American Statistical Association 63, 1132–1161.

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

Fama, E.F., French, K.R., 2004. New lists: fundamentals and survival rates. Journal of Financial Economics 73, 229–269.

Fama, E.F., MacBeth, J., 1973. Risk, return, and equilibrium: empirical tests. Journal of Political Economy 81, 607–636.

Fenn, G.W., Liang, N., 2001. Corporate payout policy and managerial incentives. Journal of Financial Economics 60, 45–72.

Ferris, S., Sen, N., Yui, H., 2006. God save the queen and her dividends: corporate payouts in the UK. Journal of Business 70, 1149–1173.

Grullon, G., Michaely, R., 2002. Dividends, share repurchases, and the substitution hypothesis. Journal of Finance 57, 1649–1684.

Grullon, G., Michaely, R., Swaminathan, B., 2002. Are dividend changes a sign of firm maturity. Journal of Business 75, 387–424.

Hoberg, G., Prabhala, N., 2005. Disappearing dividends: the importance of idiosyncratic risk and the irrelevance of catering. Unpublished working paper, University of Maryland, College Park, MD.

Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76, 323–329.

Julio, B., Ikenberry, D.L., 2004. Reappearing dividends. Journal of Applied Corporate Finance 16 (Fall), 89–100.

Lambert, R.A., Lanen, W.N., Larcker, D.F., 1989. Executive stock option plans and corporate dividend policy. Journal of Financial and Quantitative Analysis 24, 409–425.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 2000. Agency problems and dividend policies around the world. Journal of Finance 55, 1–33.

Li, W., Lie, E., 2006. Dividend changes and catering incentives. Journal of Financial Economics 80, 293–308.

Lintner, J., 1956. Distribution of incomes of corporations among dividends, retained earnings, and taxes. American Economic Review 46, 97–113.

Masui, Y., 1998. Japan. European Taxation 38, 416–419.

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

Newey, W., West, K., 1987. A simple, positive definite, heteroskedasticity and autocorrelation consistent covariance matrix. Econometrica 55, 703–708.

Petersen, M., 2007. Estimating standard errors in finance panel data sets: comparing approaches. Unpublished working paper, Northwestern University, Evanston, IL.

Prokisch, R., 1998. Germany. European Taxation 38, 398–403.

Renneboog, L., Trojanowski, G., 2005. Patterns in payout policy and payout channel choice of UK firms in the 1990s. Unpublished working paper, European Corporate Governance Institute, Brussels, Belgium.

Skinner, D.J., 2008. The evolving relation between earnings, dividends, and stock repurchases. Journal of Financial Economics, forthcoming.

Von Eije, H., Megginson, W., 2006. Dividend policy in the European Union. Unpublished working paper, University of Oklahoma, Norman, OK.