Analyst Dividend Forecasts and Their Usefulness to Investors

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ABSTRACT

In contrast to the disappearing dividends view prevalent in the literature, we document extensive dividend payments by firms and significant variability within firms and across 16 countries during 2000–2013. We predict that within-firm variability in dividends increases investor demand for forward-looking dividend information, and analysts respond by producing informative dividend forecasts. We find that analyst dividend forecasts are available for most dividend-paying firms and are more prevalent for firms with higher variability of dividends. Analyst dividend forecasts are more accurate than alternative proxies based on extrapolations of past dividends. Finally, dividend forecasts (i) are incrementally useful to investors beyond information in other fundamentals such as earnings and cash flow forecasts, (ii) help investors interpret earnings quality, and (iii) are associated with investors' portfolio allocation decisions.

Keywords*:* analyst dividend forecasts; dividend forecast accuracy; information content of dividend forecasts; dividend signaling.

Data Availability: Data are available from the public sources cited in the text.

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I. INTRODUCTION

Over the past decade, the academic thinking on dividends has been framed by two perspectives. On one hand, research suggests that dividends are 'sticky' in the sense that companies are believed to be reluctant to alter them (Lintner 1956; Aharony and Swary 1980; Cyert, Kang and Kumar 1996; Fama and French 2001; Brav et al. 2005). On the other hand, more recent research argues that dividends are declining in importance, being displaced by stock repurchase programs (Denis and Osobov 2008; Hoberg and Prabhala 2009; Baker Chang, Dutta and Saadi 2012). Neither perspective implies a need for analyst dividend forecasts. However, motivated by recent studies on rising dividend payouts that we discuss below, our study examines factors associated with analysts providing explicit dividend forecasts and their usefulness to investors.

Our premise is that an increasing importance of dividends to investor portfolio returns, driven by increasing dividend payouts and dividend variability, increases investor demand for explicit dividend forecasts. Recent evidence suggests the frequency and magnitudes of dividends are increasing, especially among U.S. firms. For example, Floyd, Li and Skinner (2015) report that the proportion of U.S. industrial payers doubles between 2001 and 2012, and 58.8% of U.S. dividend payers increased their annual dividend over the period 2001–2012, which doubled aggregate dividends.[1] Kahle and Stulz (2021) and Michaely and Moin (2021) document these trends continue through 2019. Similar trends are present globally, as Vieira (2011) reports that during 1994–2004, an average of 66% of French firms and 81% of UK firms increased dividends. As dividend frequency and magnitudes increase, so should investor demand for dividend forecasts as dividends become a more significant component of returns. Indeed, Dimson, Marsh, and Staunton (2008) report that the dividend yield accounted for 90% of the real return from global equities over the

[1] In the U.S., the Jobs and Growth Tax Relief Reconciliation Act of 2003 reduced the tax rate on dividends to 15%, increasing the advantage of dividends over share repurchases as a way of distributing excess cash to shareholders (Chetty and Saez 2005; Brown, Liang and Weisbenner 2007).

period 1900–2005. Further, conditional on investor demand incentivizing analysts to provide dividend forecasts, we investigate the usefulness of dividend expectations to assessments of earnings quality. Positive earnings surprises accompanied by positive dividend surprises indicate more sustainable earnings given reinforcing dividend news (Bhattacharya 1979; Kane, Lee and Marcus 1984; John and Williams 1985; Miller and Rock 1985; Ofer and Thakor 1987; Skinner and Soltes 2011).

It is not obvious analysts would release dividend forecasts for at least two reasons. First, the cost of producing dividend forecasts may outweigh their usefulness to investors. For example, dividend forecasts could be redundant with other estimates present, such as cash flow forecasts or extrapolative dividend forecasts. Second, forecasts of dividends require complementary forecasts of other fundamentals, like long-term cash flows and earnings, both of which exhibit significant forecast errors (Givoly, Hayn and Lehavy 2009; Chan, Karceski and Lakonishok 2003; Call, Chen and Tong 2013). Consequently, analysts may be reluctant to formally release dividend forecasts if they are subject to large errors with potential negative reputation effects (Ertimur, Mayew and Stubben 2011).

The first part of the study examines whether analysts respond to demand for dividend forecasts and how accurate these forecasts are. Specifically, to understand the demand for analysts to provide dividend forecasts and whether they are useful, our first set of tests investigate several features of dividend forecasts, including (i) the frequency with which analysts forecast dividends for firms from multiple countries, (ii) whether increased variability in firm-level dividend policies is associated with a higher propensity to release dividend forecasts, (iii) the relative accuracy of dividend forecasts compared to extrapolative dividend estimates, and (iv) the incremental informativeness of such forecasts beyond other analyst estimates.

The second part of the study extends the analysis of the usefulness of dividend forecasts to investors by examining two possible uses of analyst dividend forecasts. First, we build on dividend signaling models and examine whether investors respond to analyst forecast-based dividend surprises consistent with them providing information about the persistence of earnings news and earnings growth. Second, we test whether dividend forecasts are associated with portfolio allocation decisions, particularly among investors who benefit from tax-advantaged dividend treatment.

Our tests use all I/B/E/S annual dividend forecasts spanning 2000–2013 for the U.S., twelve European countries, Australia, and two Asian countries. Our sample deliberately captures heterogeneous settings — markets where dividends are both ubiquitous and less frequent (non-U.S. vs. U.S. samples) and where dividend guidance is either routine or rare (Japan vs. other countries),[2] which creates variation in investor demand for dividend information and in the possible usefulness of dividend forecasts. We find that analysts provide dividend forecasts for 87.9% of all dividend-paying firms, with an average of 14 dividend forecasts per firm-year. In the U.S., the proportion of dividend payers with at least one dividend forecast available from I/B/E/S increases from 3% in 2001 to 96% in 2013; the proportion of dividend forecasts available for European dividend payers increases from 78% to 90%, and for dividend payers in Australia, Japan, the U.K. and Hong Kong from 52% to 84%.

To understand why investors would demand dividend forecasts, we examine the association between variability in firm-level dividend policies and analysts' propensity to forecast dividends for that firm.[3] On average, 54% (21%) [25%] of dividend payers increase (decrease) [maintain] the annual dividend compared to the previous year. As predicted, logistic regressions confirm a strong

[2] The Japanese market is unique, because managers must simultaneously announce the current year's dividends and earnings as well as forecasts of next year's dividends and earnings (Conroy, Eades and Harris 2000).
[3] By correlating variability in dividend payments to analysts' supply of dividend forecasts, we can infer how dividend uncertainty is associated with investor demand for dividend information. See DeFond and Hung (2003), Givoly et al. (2009), Call et al. (2013), Bilinski (2014) and Bilinski and Eames (2019) for similar analysis for cash flow and revenue forecasts.

association between variability of dividend payments and analysts' propensity to report dividend forecasts — a one standard deviation increase in dividend volatility increases the likelihood of analysts reporting dividend forecasts by 21%. This result is noteworthy given a well-documented analyst preference to follow firms with *less* volatile fundamentals (Lang and Lundholm 1996). We also find that dividend forecasts are more likely to be available for firms with high institutional ownership, especially those with high concentrations of pension funds and endowments that are either fully or largely exempt from dividend income taxes (Allen, Bernardo and Welch 2000; Del Guercio 1996; Gompers and Metrick 2001). Analysts should be particularly influenced by institutional demand for dividend forecasts because those investors affect their compensation and career outcomes (Jackson 2005; Beyer and Guttman 2011; Maber, Groysberg and Healy 2014).

Next, to provide supporting evidence on the link between dividend variability and investor demand for analyst dividend forecasts, we confirm that analysts' dividend forecasts are more accurate than various time-series dividend forecasts that investors could readily implement. Consistent with the documented variability of dividends, which would result in poor time-series extrapolations, analyst dividend forecasts are on average 45.9% more accurate than random walk dividend estimates — the most commonly used time-series dividend forecast (Benartzi, Michaely and Thaler 1997; Yoon and Starks 1995; Hail, Tahun and Wang 2014). Further, initiations and omissions of dividends are especially important events for investors (Asquith and Mullins 1983; Michaely, Thaler and Womack 1995). We find that analysts exhibit some ability to predict dividend initiations and omissions, a feat not possible with time-series models. For example, analysts do *not* release dividend forecasts in the year of omission for 45% of firms that end up dropping a dividend, and explicitly forecast a zero dividend for 24.3% of such firms; for initiations, analysts provide dividend forecasts for 42% of firms prior to the announcement of dividend initiation.

We then examine the more important question of whether dividend forecasts convey new information, as demand for such forecasts is only sustainable if they are informative. Dividend forecast revisions are associated with significant price reactions, even after controlling for contemporaneous earnings and cash flow forecasts, stock recommendations and target prices. A one standard deviation increase in a dividend forecast revision is associated with a 5.2% higher price response. For comparison, similar revisions in earnings (cash flow) forecasts are associated with an 8.1% (2.7%) incremental price response. Focusing on concurrent dividend and earnings announcements also reveals that investors react positively to firms that beat analyst dividend expectations; a one standard deviation increase in a dividend (earnings) [cash flow] surprise is associated with a 7.3% (6.1%) [3.2%] incremental price response, consistent with strong information content of dividends relative to other fundamentals.

In the second part of our analysis, we highlight two possible uses of analyst dividend forecasts. A compelling argument for the importance of dividends is their signaling value for future earnings (Miller and Rock 1985). Dividend signaling models suggest managers increase dividends when they expect higher future earnings. Thus, positive earnings surprises accompanied by positive dividend surprises should indicate more sustainable earnings than positive earnings *without* reinforcing dividend news. Indeed, we find that investors react more positively when the sign of dividend news is consistent with the sign of earnings news. We also demonstrate that, conditional on the sign of earnings news, firms that beat dividend expectations in the current period are incrementally more likely to report subsequent earnings growth. Importantly, we link to prior literature by showing that time-series dividend forecasts lend *no support* to the dividend signaling hypothesis, consistent with evidence in Lang and Litzenberger (1989), DeAngelo, DeAngelo and Skinner (1996) and Benartzi et al. (1997). Allen and Michaely (2003, p. 73) review the dividend signaling literature and conclude, “[T]he overall accumulated evidence does not support the assertion that dividend changes convey information about future earnings.” In contrast, we show that analysts' dividend forecasts, not dividend changes, *are* associated with future earnings.

Our final test documents that changes in institutional investor holdings are associated with analyst dividend forecast revisions, and the association is particularly strong for (low dividend tax) pension funds and endowments. A one standard deviation increase in a dividend (earnings) forecasts is associated with a 2.3% (2.1%) increase in institutional holdings, consistent with numerous studies highlighting the importance of dividends to these investors.[4]

Our study joins recent research challenging the common perception in the accounting and finance literatures that dividends are sticky and declining in importance, which would suggest little demand for dividend forecasts. The trends of increased dividend initiations in the U.S., significant increases in global dividend payouts, and overall variability of dividend payments support investor demand for analyst dividend forecasts. The study also fills an important gap in the literature on the signaling value of analyst dividend forecasts and their usefulness in assessing earnings persistence. The latter result offers useful insight into the 'dividend puzzle' regarding higher valuations of dividend-paying firms (Baker, Powell and Veit 2002), as well as to the mixed evidence on the association between dividend changes and dividend announcement returns, and between dividend changes and future earnings (Lang and Litzenberger 1989; DeAngelo et al. 1996; Benartzi et al. 1997). By specifically using analysts' dividend forecasts as proxy for investor expectations, our results confirm the intuition that investors view dividends as barometers of the persistence of future earnings.

II. DATA

We collect individual analysts' annual dividend forecasts for fiscal years 2000–2013, together

[4] Del Guercio (1996) and Schanzenbach and Sitkoff (2007) report that bank trust departments avoid non-dividend-paying firms, and Gompers and Metrick (2001), Bennett, Sias and Starks (2003) and Grinstein and Michaely (2005) document that institutional investors avoid investing in firms that do not pay dividends. Harris, Hartzmark and Solomon (2015) highlight that some mutual funds pay a premium to purchase stocks before dividend payments to artificially increase reported dividend income, and investors reward these funds with higher net inflows.

with actual values from I/B/E/S.[5] If actual dividends are missing, we use information from Compustat for U.S. firms and Compustat Global for non-U.S. firms. We start in 2000 because, as we show next, dividend forecasts for U.S. firms are not available before that date. We collect share price information from CRSP and the Compustat Global Security Daily files. We exclude firms where the default reporting currency is different from the currency in which the stock trades. The final sample includes 651,759 dividend forecasts for 12,137 firms issued by 19,427 analysts employed by 890 brokers.

Table 1 reports the annual proportion of firms paying dividends for firms with any analyst coverage on I/B/E/S. The proportion of U.S. dividend payers with analyst coverage is 21.5% in 2000 and increases to 57.6% in 2013. The relatively small proportion of dividend payers in the U.S. in early 2000s is consistent with Fama and French (2001) and DeAngelo, DeAngelo and Skinner (2004), and the increase in the proportion of dividend payers after 2001 is consistent with Julio and Ikenberry (2004), Floyd et al. (2015), Kahle and Stulz (2021), Michaely and Moin (2021) and Factset Dividend Quarterly (2013). The proportion of non-U.S. payers is comparatively stable over the sample period averaging 73.5% in 2000 and 75.0% in 2013.[6]

[Insert Table 1 around here]

Figure 1a plots time trends in the availability of dividend forecasts across firms broadly grouped as (i) the U.S., (ii) Australia, Japan, the U.K. and Hong Kong (aggregated based on common legal backgrounds), and (iii) Europe. There are no dividend forecasts reported on I/B/E/S for U.S. dividend-paying firms before 2001, but the proportion of U.S. firms with dividend forecasts increases from 3% in 2001 to over 96% in 2013. These results are consistent with Table 1 evidence showing an

[5] We use annual dividend forecasts because (i) in most countries outside the U.S., firms pay annual dividends, (ii) the majority of previous studies examine annual dividend announcements (Lonie, Abeyratna, Power and Sinclair 1996; DeAngelo and DeAngelo 1990; DeAngelo et al. 2004) and (iii) DeAngelo and DeAngelo (1990) highlight that dividend policy is most often determined once per year at fiscal year-end.

[6] The decline in the proportion of dividend payers in the U.K. is consistent with Kilincarslan and Ozdemir (2018) and Driver, Grosman and Scaramozzino (2020) who document significant delistings from the London Stock Exchange that are almost offset by new listings. Although new listing firms are less likely to be dividend payers, Driver et al. (2020) also note that total dividends almost double during the same period.

increasing frequency of dividend payments in the U.S., which presumably motivates analysts to forecast dividends.[7] The proportion of dividend payers with dividend forecasts in Australia, Japan, the U.K. and Hong Kong increases from 52% in fiscal year 2000 to 84% in 2013, consistent with trends in prior studies (e.g., Coulton and Ruddock 2011; Henry 2011; Bergmann 2016). The proportion of dividend payers with dividend forecasts in Europe increases from 78% in 2000 to 90% in 2013.

[Insert Figure 1 around here]

Figure 1b reports time-trends in the availability of dividend forecasts for individual analysts following dividend-paying firms, and trends mirror those from Figure 1a. The proportion of analysts reporting dividend forecasts for U.S. dividend payers increases from 0% in 2000 to 46% in 2013. The comparable increases for dividend payers in Australia, Japan, the U.K. and Hong Kong (Europe) are from 28% (46%) in 2000 to 70% (77%) in 2013. We note that once analysts have provided dividend forecasts for a firm, there is at least one dividend forecast for each firm-year over the remaining sample period (or until the firm stops paying dividends) for 91.8% of cases (untabulated).[8]

Table 2 presents distributional data on dividend forecasts for firms with analyst coverage. The overall average annual proportion of dividend payers is 75.5%. The U.S. exhibits the lowest percentage of dividend payers (42.7%), and Japan has the highest (91.6%), in line with earlier evidence (Hail et al. 2014; Goldstein et al. 2015; Trabelsi, Aziz and Lilti 2019). On average,

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[7] Unavailability of analyst dividend forecasts in the U.S. before 2001 can explain why these forecasts are absent in prior research and possibly why they are viewed as relatively unimportant. For example, Liu, Nissim and Thomas (2002, p. 147) note that "analyst forecasts of future dividends are not available on I/B/E/S." The spike in the availability of dividend forecasts in (i) the U.S. and (ii) Australia, Japan, Hong Kong and the U.K. in the first two sample years reflects a combination of increased analyst dividend forecasting and increased I/B/E/S reporting efforts. Whether driven by dividend forecast expansion or I/B/E/S collection efforts, both are consistent with an increased demand for dividend forecasts.

[8] In untabulated results, we find (i) no evidence that dividend forecasts cluster in any fiscal quarter and (ii) the average duration between the dividend forecast release and the actual dividend announcement is 230 days.

dividend forecasts are available for 87.9% of all dividend payers. Although dividends are conceptually paid out of earnings, cash flow forecasts can help investors assess a firm's ability to pay dividends. The proportion of dividend payers with both dividend and cash flow forecasts is 63.7%.[9] The per year average number of dividend forecasts is 14.4, approximately half the average number of earnings forecasts (34.3 per year). The number of dividend forecasts is also less than the average number of revenue forecasts (20.4 per year), but comparable to the average number of cash flow forecasts (12.6 per year).

[Insert Table 2 around here]

Overall, Figures 1 and Tables 1–2 reveal a significant and increasing trend in the proportion of U.S. firms paying dividends, and widespread availability of dividend forecasts for dividend payers globally. The increased availability of analyst dividend forecasts is consistent with investor demand for these estimates.

III. INVESTOR DEMAND FOR ANALYST DIVIDEND FORECASTS

In this section, we revisit the common assumption in the accounting and finance literature that dividends are sticky, which implies low demand for analyst dividend forecasts as investors can easily extrapolate recent dividends. We first provide evidence on annual changes in dividend-per-share and payout ratios. Then, we examine our prediction that higher variability in dividend payments, combined with the increasing trend in the frequency of dividend payments, increases investor demand for dividend forecasts. Further, if analyst dividend forecasts are more accurate than alternative estimates, this will also support demand for these forecasts. Thus, we also benchmark the

[9] The seemingly high proportion of dividend and cash flow forecasts for dividend-paying firms can be explained by two factors. First, dividend-paying firms tend to be the largest firms in any market we examine and often form part of the main local market index. To illustrate, 425 constituent firms of the S&P500 index paid out dividends in 2015. Dividend payers tend to have broad analyst coverage and likely include a disproportionally high number of cash flow forecasts. Second, Call et al. (2013) report that the proportion of firms with EPS and cash flow forecasts increases from 26.2% in 2000 to 56.4% in 2008.

accuracy of analyst dividend forecasts against that of dividend estimates from common extrapolative approaches.

Figure 2a reports the average proportion of firms increasing or reducing dividends-per-share versus maintaining the same dividend. Across sample countries, an average of 54% of firms increase dividends, 21% reduce dividends, while only 25% maintain dividends across fiscal years.[10] In the U.S., 62% of firms increase dividends compared to the prior year, and 11% of firms reduce dividends. Figure 2b reports changes in annual dividend payout *ratios*, and the trends are similar to those in Figure 2a.

[Insert Figure 2 around here]

Next, we relate variability in dividend payments to analysts' propensity to provide dividend forecasts. The dependent variable in a logistic regression (*Div forecast*) equals 1 if a firm has available at least one dividend forecast in the next fiscal year *t*, and 0 otherwise. The main explanatory variable is dividend variability (*Dividend STD*) — the standard deviation of asset-scaled dividends measured over the previous five years. The logistic model is:

$$\begin{aligned} Pr(Div\ forecast_{t+1}) &= \beta_0 + \beta_1 \ln Dividend\ STD_t + \beta_2 \ln Earnings\ STD_t + \beta_3 \ln Cashflow\ STD_t \\ &+ \beta_4 IO_t + \beta_5 \%\ pension\ funds_t + \beta_6 \ln MV_t(USD) + \beta_7 \ln {}^{B}/_{M_t} \\ &+ \beta_8 Loss\ dummy_t + \beta_9 ROA_t + \beta_{10} Importance\ of\ equity\ markets \\ &+ \beta_{11} Net\ dividend\ tax + \beta_{12} Legal\ enforcement + \beta_{13} Financial\ transparency \\ &+ \beta_{14} Earnings\ smoothing + Year\ fixed\ effects + Industry\ fixed\ effects \\ &+ \eta_{t+1}. \end{aligned} \quad (1)$$

The set of controls includes firm characteristics likely associated with dividend uncertainty and,

[10] Figure 2a uses I/B/E/S dividend-per-share actuals that are adjusted for changes in share numbers (e.g., due to stock splits or repurchases), so the results are not due to a denominator effect. If an I/B/E/S dividend actual is missing, we use Compustat and Compustat Global dividend data scaled by the number of shares outstanding from I/B/E/S summary pricing files. The trend in Figure 2a is virtually the same when we use changes in the Compustat item DVC (i.e., total dividends other than stock dividends). Also, we observe similar frequencies in dividend increases before and after the financial crisis, but the number of dividend reductions is markedly higher during the financial crisis. Finally, to assess the effect of delistings, we calculate changes in dividend-per-share for a constant sample of dividend payers that survive our sample period. The untabulated results for this sample are similar to the main sample: 57% of firms increase, 20% reduce and 24% maintain a constant dividend. For the U.S., the comparable fractions are 62%, 18%, 20%, respectively.

thus, investor demand for analyst dividend forecasts (see definitions in the Appendix). They include earnings and cash flow volatility measured over the previous five years (*Earnings STD* and *Cash Flow STD*), a loss in the prior year (*Loss*), profitability (*ROA*), market capitalization (*MV* (*USD*)), and growth opportunities (*B/M*). We also separately control for institutional holdings (*IO*) and the proportion of institutional holdings held by pension funds and endowments (*% pension funds*).

To capture cross-country variation in demand for dividend information, we include *Importance of equity markets*, as demand for dividend information should increase as investors obtain a larger proportion of their income from equity markets. We control for the level of dividend taxes (*Net dividend tax*), as timely dividend information is useful in tax planning. Forecasting dividends should be more challenging in countries characterized by low *Financial transparency*, low *Legal enforcement* and high *Earnings smoothing*, which should stimulate investor demand for explicit analyst dividend forecasts. The model also includes year and industry fixed effects, and for robustness, we re-estimate Eq. (1) with firm fixed effects.

Panel A of Table 3 presents descriptive statistics for variables in Eq. (1) partitioned based on the availability of dividend forecasts. The sample includes all dividend payers in the intersection of Compustat/Compustat Global and I/B/E/S. Higher volatility in fundamentals should stimulate investor demand for analyst dividend forecasts. Indeed, relative to dividend payers *without* dividend forecasts, dividend payers *with* dividend forecasts exhibit 37% higher dividend volatility (0.006 vs. 0.008), and 32% and 21% higher earnings and cash flows volatility (0.029 vs. 0.039 and 0.030 vs. 0.037, respectively). Not surprisingly, dividend volatility is lower than earnings or cash flows volatility (all scaled by total assets). In unreported results, the mean (median) coefficient of variation is 0.333 (0.249) for dividends versus 0.850 (0.486) for earnings, both exhibiting considerable variation.

Also as predicted, institutional ownership and holdings by pension funds and endowments are higher for firms with dividend forecasts, consistent with institutional demand for dividend forecasts. Dividend forecasts are more common for firms that are larger, with lower book-to-market ratios, with higher profitability, and in countries with higher dividend taxes. Dividend forecasts are also more frequent for firms in countries with lower legal enforcement and lower financial transparency, where investors suffer from asymmetric information (Leuz, Nanda and Wysocki 2003; Tucker and Zarowin 2006). Panel B reports Pearson correlations between variables and we note that these conform to expectations.

[Insert Table 3 around here]

Panel C of Table 3 presents regression estimates for Eq. (1). We also report standardized coefficients to facilitate interpretation and comparison of coefficients. The results confirm a positive and economically significant association between dividend volatility and analyst propensity to report dividend forecasts. A one standard deviation increase in dividend volatility increases the likelihood of an analyst dividend forecast by 21% for the model with firm fixed effects. The effect of dividend volatility is stronger than that for earnings or cash flow volatility, suggesting dividend forecasts are a primary response to dividend variability, not overall business uncertainty.

We also confirm that analysts are more likely to report dividend forecasts for high institutional ownership firms, particularly those with high concentrations of holdings by pension funds and endowments. A one standard deviation increase in holdings by pension funds and endowments increases the likelihood of analyst dividend forecasts by 25.7% for the model with firm fixed effects. Overall, the results in Table 3 are consistent with analysts issuing dividend forecasts when investor demand for these forecasts is high.[11]

[11] We also examined whether the availability of analyst dividend forecasts could reflect the presence of management dividend guidance. For the full sample, 15.4% of firm-years include earnings guidance, but only 6.4% of firm-years include dividend guidance (untabulated). The U.S. exhibits the most prolific earnings guidance, with 35.2% of firm-years having management earnings forecasts (comparable to 27% in Chuk, Matsumoto and Miller 2013), but only 4.0% of firm-years have dividend guidance. Thus, it is unlikely that dividend guidance is the explanation for our results.

The accuracy of analyst dividend forecasts compared to time-series dividend estimates

Together, the evidence presented in Figures 1-2 and Tables 1-3 is consistent with analysts responding to investor demand for explicit dividend forecasts that is correlated with dividend uncertainty. We next examine properties of analyst dividend forecasts. Investors will demand dividend forecasts only if they are informative and more accurate compared to alternative forecasts. Thus, our next set of tests examines the accuracy of dividend forecasts relative to other possible (time-series) expectations. We expect the rise in the availability of dividend forecasts we document to be associated with these forecasts being more accurate than time-series based extrapolations. However, this prediction is not obvious given the association between dividend forecast availability and dividend volatility (i.e., suggesting forecasting is more difficult), along with prior research indicating time-series estimates are sometimes more accurate than analysts' forecasts (Bradshaw et al. 2012).

We first calculate analysts' dividend per share (*FDPS*) forecast errors equal to the absolute difference between the actual and forecasted dividend for the fiscal year *t*+1, scaled by the stock price measured at the end of the previous fiscal year: $FDPS\ error_{t+1} = \frac{|Actual\ DPS_{t+1} - FDPS_{t+1}|}{P_t}$. Panel A of Table 4 reports the average (unsigned) error of analyst dividend forecasts for individual countries using all forecasts issued by analysts for dividend paying firms in a fiscal year. Across the 16 countries, the mean dividend forecast error is 0.76% (of share price).[12] Analysts in Japan exhibit the lowest error (0.19%), which likely reflects dividend guidance in Japan (Conroy et al. 2000). Analysts in Finland and Australia have the highest forecast errors (1.25% and 1.21%,

[12] Call, Hewitt, Watkins and Yohn (2020) find that EPS forecast accuracy improves for more recent vintages of I/B/E/S data, consistent with coverage bias by I/B/E/S. We compared a 2-year earlier vintage of our data, and found small decreases in dividend forecast errors across overlapping periods in the two samples (0.79% using the earlier vintage vs. 0.76% in Table 4). Nevertheless, conclusions from other tests are unaffected when using the earlier vintage data. The small impact in our setting likely reflects the fact that the Call et al. (2020) results are concentrated in "younger, less followed firms with lower profits and stronger earnings growth" (p. 2), which are less likely to be reflected in our sample of dividend payers.

respectively).[13]

[Insert Table 4 around here]

To put the dividend forecast error results into perspective, we also tabulate the average (unsigned) error of analysts' cash flow (*FCFPS error*) and earnings (*FEPS error*) forecasts, with forecast errors calculated similarly to dividend forecast errors.[14] Mean cash flow forecast error is 5.28% of share price, 2.6 times higher than mean earnings forecast error of 2.06% (the ratio of cash flow to earnings forecast errors is comparable to approximately 3 in Givoly et al. 2009).

The forecasting process for dividends is fundamentally different from that for earnings and cash flows, so the comparative evidence in Table 4 is descriptive and cannot speak to the relative quality of analyst dividend forecasts.[15] This motivates our next test that compares the accuracy of analyst dividend forecasts to the accuracy of dividend estimates based on common time-series approaches and to transformations of analyst EPS estimates. We use six time-series dividend forecasts that are common in the literature (Shevlin 1982; Yoon and Starks 1995; Liu et al. 2002; Botosan and Plumlee 2005), which are labeled *Naïve DPS 1-6* and defined in the Appendix. We primarily focus on the simplest forecast (based on a random walk, *Naïve DPS* 1). We compute forecast errors in a similar way to the analyst dividend forecast error.

Panel A of Table 5 reports mean and standard deviation of absolute forecast errors for the six

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[13] Low dividend forecast accuracy in Finland can be attributed to the 2005 dividend tax increase from 29% to 40.5%, followed by changes in dividends (Kari, Karikallio and Pirttila 2009; Liljeblom 2008). The dividend imputation tax system in Australia, where the corporate tax is passed through to investors as "franking" credits attached to dividends, tends to increase dividend variability as firms optimize frequency and magnitudes of dividend payments, and analysts must anticipate these changes (Pattenden and Twite 2008; McClure et al. 2018).

[14] We also examined dividend forecast bias (i.e., signed error). Compared to the significant optimism in analyst EPS forecasts (Francis and Philbrick 1993; Bartov, Givoly and Hayn 2002), we find little evidence of optimism in analyst dividend forecasts. The average bias is small and, in five countries (including the U.S.), average dividend forecasts are actually slightly pessimistic.

[15] Our mean EPS forecast error of 2.06% is close to the average EPS forecast error of 2.56% in Bilinski, Lyssimachou and Walker (2013); the mean cash flow forecast error for U.S. firms of 4.12% is close to 3.68% in Call et al. (2013). The DPS forecast errors are similar to evidence in Brown, Clarke, How, and Lim (2002) and Brown, How and Verhoeven (2008). In untabulated results, the correlation between dividend and earnings forecast errors is 0.35, suggesting dividend forecasts are unlikely to reflect mechanical payout-ratio-adjusted EPS forecasts. The correlation between dividend and cash flow forecasts errors is 0.33.

time-series dividend forecasts. Random walk forecasts, *Naïve DPS 1*, have the lowest error, and *Naïve DPS 6* forecasts (that assume growth in dividends) have the next lowest error. Shevlin (1982) also finds that random walk dividend forecasts exhibit lower error compared to the Lintner model in predicting dividends for Australian firms.

[Insert Table 5 around here]

Panel B of Table 5 reports the mean difference between the error in analyst dividend forecasts and the error of each time-series dividend forecast. Consistent with Panel A, analyst dividend forecasts are more accurate than all models. To provide economic significance, the last column reports the *percentage* difference between mean analyst forecast error, $\overline{FDPS\ error}$, and the mean random walk dividend forecast error, $\overline{Naïve\ DPS\ error\ 1}$, the time-series forecast closest in accuracy to analyst dividend forecasts. The mean percentage difference is −45.9%, consistent with analyst forecasts being materially more accurate than time-series estimates.[16] Overall, analysts' dividend forecasts are superior to those from common time-series models or transformation of analyst EPS forecasts, which supports the inference that investors demand analyst dividend forecasts given their superiority to alternatives. These results also suggest analyst do more than rely on extrapolative models to forecast dividends considering that the incremental accuracy of analyst dividend forecasts over time-series estimates is significant.

In untabulated analyses, we performed two tests. First, we examine whether analysts are able to predict dividend initiations and omissions, which is not possible with time-series models. We find that analysts do not report dividend forecasts in the year of omission for 45.0% of firms that will

[16] Table 5 may capture instances where firms omit or initiate dividend payments, which can negatively affect the observed accuracy of dividend forecasts from time-series models. To address this concern, in unreported results, we find that analysts consistently and significantly outperform time-series dividend estimates for firms with continuous dividend payments over the past ten years. Moreover, analyst dividend forecasts issued in the first quarter of the fiscal year are more accurate than any of the time-series estimates, suggesting that conclusions in Table 5 are not driven by more accurate forecasts issued close to fiscal year-end. These conclusions are unchanged when we substitute the earliest dividend forecast per firm-analyst-year.

omit, and forecast a zero dividend for 24.3% of the remaining firms. For initiations, 42.0% of firms have a dividend forecast in the year the firm ultimately initiates a dividend. Of firms that omit dividends, only 3.3% issue public dividend guidance in the omission year, and of dividend initiating firms, only 0.7% provide dividend guidance in the year of dividend initiation. Thus, it is unlikely that public dividend guidance explains analysts' ability to predict dividend initiations and omissions. For dividend omissions, managers forecast, on average, positive dividends during the year the dividend is ultimately omitted, suggesting these dividend omissions are even a surprise to them.[17]

Second, we compare the accuracy of analyst dividend forecasts to management dividend guidance. At the country-level, there is on average no significant difference between the accuracy of analyst and management dividend forecasts, similar to the findings for EPS forecasts in Ruland (1978). The main caveat to this test is small sample size, as 11 of 16 countries in the sample have less than 100 management dividend forecasts.

IV. INFORMATION CONTENT OF DIVIDEND FORECAST REVISIONS

The results presented in the previous section demonstrate that (i) many firms initiated dividend payments during the 2000s (Table 1), (ii) the availability of dividend forecasts has increased (Figure 1; Table 2), (iii) dividends are not sticky but volatile (Figure 2), (iv) dividend forecasts are more likely for firms with higher dividend volatility (Table 3), and (v) dividend forecast errors seem relatively small, and analysts significantly outperform extrapolative alternatives (Tables 4-5). Together, the evidence is consistent with analysts responding to investor demand for dividend forecasts. However, even the most accurate dividend forecasts may be of little usefulness if

[17] In our sample, the unconditional probability a firm will initiate or omit dividend is 12.0% and 12.4%, respectively. Analysts correctly identify over 42% of firms that eventually initiate or omit dividends, which strikes us as significant. This ability fares well compared to prior research, including Cotter et al. (2019), who model the likelihood of dividend initiations and omissions and report an average propensity score of 9.13% (8.86%) for dividend initiating (omitting) firms. Similarly, Allen and Michaely (1995) report an average of 17% of U.S. dividend payers omit a dividend, Dewenter and Warther (1998) report dividend omissions of 10.9% in Japan, and Benito and Young (2003) document an average of 11% of U.K. payers omitting a dividend.

they do not convey timely or new information useful to investors. For example, the usefulness of analyst dividend forecasts may ultimately be small if other information crowds out the information contained in them. Analogously, Bilinski (2014) finds no evidence that analysts' cash flow forecast revisions convey incremental information after controlling for revisions in earnings forecasts, target prices and stock recommendations. This section presents short-window price reaction tests to examine the incremental information content of dividend forecast announcements.

We highlight three reasons for why dividend forecast revisions may be incrementally associated with market reactions compared to other analyst forecasts. First, investor demand for dividend-paying stocks exerts price pressure in response to dividend news. For example, institutional investors exhibit a well-documented preference for dividend-paying stocks (Dimson et al. 2008; Del Guercio 1996; Schanzenbach and Sitkoff 2007; Gompers and Metrick 2001; Bennett et al. 2003; Grinstein and Michaely 2005; and Harris et al. 2015). Second, dividend forecast revisions could interact with concurrent revisions in forecasted earnings as an indicator of earnings quality (Bhattacharya 1979; John and Williams 1985; Ofer and Thakor 1987; Skinner and Soltes 2011). Third, dividend forecasts can reveal the relative quality of target prices as they do for earnings quality. Large positive target price revisions accompanied by large positive dividend forecast revisions should be associated with attenuated price reactions (i.e., overly optimistic target prices).[18]

[18] A significant positive revision in both a target price and a dividend forecast could imply a material increase in the expected total return, but this scenario should be, on average, less likely given that equity premia have been declining over time (Blanchard 1993; Jagannathan, McGrattan, and Scherbina 2000; Fama and French 2002). To formalize our prediction, consider the expected equity return $E(r_t) = \frac{TP+E(D_t)}{P_t}$, where $E(r_t)$ is the expected total return, $\frac{TP}{P_t}$ is the expected capital gain and $\frac{E(D_t)}{P_t}$ is the forward dividend yield. For sake of exposition, consider the combination of $\Delta E(r_t) \leq 0$ and $\frac{\Delta TP}{P_t} \geq 0$, which would imply $\frac{\Delta E(D_t)}{P_t} \leq 0$. Thus, a zero change or declining expected return associated with a positive dividend forecast revision and a positive target price revision signals that either $\frac{\Delta TP}{P_t}$, $\frac{\Delta E(D_t)}{P_t}$, or both are optimistic. As dividend forecast accuracy is easier to measure and certainly higher than accuracy of target prices, it is difficult for analysts to use dividend forecasts to channel well-documented optimistic bias compared to target prices (Bradshaw, Brown and Huang 2013; and Bilinski et al. 2013). Thus, when the expected return is either constant or declining, investors are more likely to infer that a positive target price revision issued jointly with a positive dividend forecast revision is excessively optimistic.

We operationalize these possibilities by regressing three-day cumulative abnormal returns (*CAR*), centered on the dividend forecast announcement date, on dividend forecast ($\Delta FDPS$) and other revisions:

$$CAR = \alpha_0 + \alpha_1 \Delta FEPS + \alpha_2 \Delta FDPS + \alpha_3 \Delta FEPS \times \Delta FDPS + \alpha_4 \Delta FCFPS + \alpha_5 Upgrade + \alpha_6 Downgrade + \alpha_7 \Delta TP + \alpha_8 \Delta TP \times \Delta FDPS + Controls + Industry\ fixed\ effects + Year\ fixed\ effects + \xi. \quad (2)$$

For U.S. stocks, we use the CRSP value-weighted index as the benchmark to measure abnormal returns when calculating CAR. For non-U.S. stocks, we use the main index of the exchange where the firm's stock lists. The regression controls for earnings forecast revisions ($\Delta FEPS$), and we interact dividend and earnings forecasts revisions, $\Delta FEPS \times \Delta FDPS$, to capture the possibility that positive dividend forecast revisions are incrementally informative about current earnings quality (which is a prelude to our analysis of dividend signaling in the next section). To control for simultaneous revisions in analyst's stock recommendations, we include two indicator variables for directional recommendation revisions, *Upgrade,* and *Downgrade.* The model includes target price revisions (ΔTP) and an interaction term, $\Delta TP \times \Delta FDPS$, to test whether dividend revisions reinforce the information in target price forecasts. We also include controls from Eq. (1) and year and industry fixed effects, and alternatively, firm fixed effects. We expect the coefficients α_2 and α_3 to be positive and α_8 to be negative if dividend forecast revisions have incremental information content and help validate other revisions.[19]

Panel A of Table 6 reports average *CAR* for dividend forecast announcements across sample countries split by positive and negative dividend forecast revisions. The mean positive dividend revision is 0.41% (of share price) and is associated with a positive market reaction of 0.62%. The

[19] We use the U.S. and international versions of the broker translation file to match broker names between target price and EPS files. The broker translation file is from 2005, which eliminates broker houses covered by I/B/E/S after that date (9.6% of target price attrition). Similar to Keung (2010), we consider reiterations of EPS, cash flow, target prices and stock recommendations if dividend forecasts are issued without those revisions.

mean negative dividend revision is −0.52% and is associated with a price reaction of −0.60%.

[Insert Table 6 around here]

To test for an *incremental* price effect of dividend forecast revisions, Model 1 in Panel B of Table 6 reports regression results for Eq. (2) without interaction terms, but controls for other factors. Results indicate that a one standard deviation revision in dividend forecasts is associated with a 5.2% stronger price reaction. For comparison, a one standard deviation increase in earnings (cash flow) forecast revisions is associated with an 8.1% (2.7%) stronger price reaction (similar to Call et al. 2013 and Givoly et al. 2009). Significant associations between stock prices and dividend forecast revisions suggest analyst dividend forecasts are not simple transformations of other information.

Models 2 and 3 document significant positive coefficients on the interaction term *ΔFEPS x ΔFDPS*, suggesting an interactive effect between dividend and earnings forecast revisions and returns. Such an effect is consistent with higher earnings quality (Ertimur, Livnat, and Martikainen 2003), which we examine further in the next section. Further, the coefficient on the interaction *ΔTP×ΔFDPS* is negative in Models 2 and 3, consistent with dividend forecasts helping unravel excessively optimistic target prices.[20]

In untabulated results, we perform four additional tests. First, we estimate Eq. (2) excluding a ten-day window centered on annual and quarterly earnings announcements to reduce the impact of confounding events, with conclusions identical to those in Table 6. Second, we estimate Eq. (2) using only observations where the analyst concurrently revises all forecasts, with similar results. Third, we re-estimate Eq. (2) for U.S. and non-U.S. firms separately and find significant coefficients on dividend revisions and their interaction terms in both samples. Finally, we augment Eq. (2) with

[20] A caveat is that a small revision in a target price along with an increase in a dividend forecast can signal a firm with better prospects. In untabulated results, we find that small TP revisions accompanied by positive dividend forecast revisions are indeed associated with higher returns. In contrast, high TP revisions accompanied by positive dividend forecast revisions are associated with lower returns, consistent with Table 6.

interaction terms between dividend forecast revisions and the four country-level variables from Eq. (1). We find incremental price reactions to dividend forecast revisions in countries where equity markets are more important, dividend taxes are higher, and earnings smoothing is lower.

V. THE USEFULNESS OF ANALYST DIVIDEND FORECASTS: DIVIDEND SIGNALING AND INSTITUTIONAL INVESTOR HOLDINGS

Our final analyses examine two specific uses of analyst dividend forecasts. First, we extend the results in Table 6 suggesting dividend forecasts can be helpful in assessing the quality of current period reported earnings by focusing on joint dividend and earnings announcements (i.e., surprises) and whether dividend surprises are associated with future earnings growth. Second, we relate analyst dividend forecast revisions to changes in institutional investors' holdings.

Dividend signaling and future earnings growth

Dividend signaling models suggest firms increase dividends when they expect higher future earnings (Bhattacharya 1979; John and Williams 1985; Ofer and Thakor 1987; Skinner and Soltes 2011). Thus, consistent with the results in Table 6 regarding the reinforcing information in dividend and earnings *forecast revisions*, positive earnings *surprises* accompanied by positive dividend *surprises* should indicate more sustainable earnings than positive earnings news absent positive dividend news, and vice versa. However, previous studies, using actual dividend *changes* (which implicitly assumes a random walk expectation model), often find weak or no support for the dividend signaling hypothesis (see Grullon et al. (2005) for the U.S.; Conroy et al. (2000) and Fukuda (2000) for Japan; Chen, Firth and Gao (2002) for China; Abeyratna and Power (2002) for the U.K.; and Andres et al. (2013) for Germany). Valuation theory and researchers frequently advocate cash flows as a basis for assessing earnings quality (e.g., Ali 1994; Dechow 1994; Penman

2009), but whether investors use dividends to assess quality of earnings is an open question.[21] In this section, we first examine the association between joint dividend and earnings information and announcement returns, followed by an analysis of future earnings growth (consistent with a similar analysis of cash flows in Brown, Huang and Pinello 2013).

Similar to prior research (e.g., Ertimur et al. 2003), earnings surprise (*UE*) is the price-scaled difference between the actual EPS and the mean of analysts' last EPS forecasts available at the end of a fiscal year. Similarly, the dividend surprise (*UD*) is the difference between the actual dividend and the mean of analyst's last dividend forecasts at the end of a fiscal year. *UE* and *UD* capture unexpected earnings and dividend news revealed at the joint preliminary earnings and dividend announcements. An interaction term, $UE \times UD$, tests whether investors interpret reported earnings relative to reported dividends. We then use a regression model to relate dividend and earnings surprises to three-day cumulative abnormal returns centered on the joint earnings and dividend announcements, *CAR_Earn*,

$$CAR\_Earn = \psi_0 + \psi_1 UE + \psi_2 UD + \psi_3 UE \times UD + \psi_4 UCF + \psi_5 UE \times UCF + Controls + Industry\ effects + Year\ effects + \varsigma. \quad (3)$$

Consistent with prior research (Ball and Brown 1968; Chari, Jagannathan and Ofer 1988; Easton and Zmijewski 1989; Gennotte and Truemann 1996), we expect a positive earnings response coefficient, ψ_1. Higher than anticipated dividend payouts will affect portfolio decisions of dividend-oriented investors, thus we expect ψ_2 to be positive. The coefficient ψ_3 should be positive if investors use dividend forecasts to assess the quality of reported earnings. Eq. (3) also includes the cash flow surprise, *UCF*, and its interaction with the earnings surprise, $UCF \times UE$, as investors may also use

[21] We find this especially interesting because 98.9% of dividend announcements in our sample are made jointly with earnings announcements, and less than 0.2% of cases include managers announcing dividends before earnings. Chen et al. (2002) also report that firms in commonwealth countries announce dividends at the same time as earnings. Dividends and earnings are announced jointly in Japan (Conroy et al. 2000), Hong Kong (Cheng, Fung and Leung 2007), Australia (Easton 1991), Austria (Schleicher, Gurgul and Mestel 2003) and Germany (Andres et al. 2013). Aharony and Swary (1980, p. 3) report that for U.S. firms, "[A] major difficulty [in assessing dividend information content] lies in the fact that quarterly earnings and dividend figures often are released to the public at approximately the same time."

cash flow forecasts to gauge current earnings quality. Controls are from Eq. (1), and we also include industry and year fixed effects or firm fixed effects.

If dividend surprises are on average zero, Eq. (3) will have low power to detect whether investors use analyst-based dividend surprises to interpret earnings news. However, Figure 3 shows that, on average, actual dividends exceed analyst dividend forecasts 42% of the time. Only 18% of firms across sample countries exactly meet analysts' dividend forecasts, and the remainder fall short of expectations.

[Insert Figure 3 around here]

Model 1 in Panel A of Table 7 reports results for Eq. (3) without interaction terms. The coefficient on the dividend surprise is positive and economically significant. A one standard deviation increase in *UD* leads to a 7.3% higher price reaction around earnings announcements. For comparison, a one standard deviation increase in *UE* (*UCF*) is associated with a 6.1% (3.2%) higher price reaction. In Model 2, the coefficient on the interaction term *UE*×*UD* is positive, consistent with investors using analyst-based dividend surprises to interpret the information in current earning surprises. In contrast, the interaction term *UE*×*UCF* is zero.[22]

[Insert Table 7 around here]

Eq. (3) examines dividend *surprises* (based on analyst forecasts), in contrast to the use of dividend *changes* in prior research (Lang and Litzenberger 1989; Michaely et al. 1995; Koch and Sun 2004). To examine which construct is more associated with pricing, Model 3 presents results from regressing abnormal announcement returns on *UE*, *UCF* and change in dividends, *ΔDiv*, which is the price-scaled difference between the current and previous dividend per share (effectively a random walk forecast error). Consistent with prior research (Kane et al. 1984), we find a positive

[22] In unreported results, we find that our conclusions from Eq. (3) remain qualitatively the same if we scale earnings and dividend surprises by the standard deviation of analyst earnings and dividend forecasts, respectively.

coefficient on ΔDiv. However, Model 4 indicates that controlling for dividend forecast surprises, ΔDiv is *not* associated with announcement returns.

As a direct test of whether investors react more strongly to reinforcing dividend news, we create four indicator variables to capture combinations of dividend and earnings surprises:

1. $UE^{+}UD^{+}$ = 1 if the firm beats both dividend and earnings expectations, zero otherwise;
2. $UE^{+}UD^{-}$ = 1 if the firm beats earnings expectations only, zero otherwise;
3. $UE^{-}UD^{+}$ = 1 if the firm beats dividend expectations only, zero otherwise;
4. $UE^{-}UD^{-}$ = 1 if the firm beats neither dividend nor earnings expectations, zero otherwise.

We then include the four indicator variables in Eq. (3) instead of *UD* and $UE \times UD$. If investors price the information in analysts' dividend forecasts, we expect a higher positive coefficient on $UE^{+}UD^{+}$ than on $UE^{+}UD^{-}$, because the former signals more persistent earnings news. We also expect investors to react less negatively to firms that report negative earnings news but a positive dividend surprise ($UE^{-}UD^{+}$), compared to cases where both earnings and dividends disappoint ($UE^{-}UD^{-}$). Although it is not surprising that two positive (or two negative) surprises are associated with stronger market reactions than one alone, these tests help understand how investors price surprises based on dividend forecasts.

The last columns of Table 7, Panel A report regression results with the four indicator variables, and Panel B tests equality of coefficients on the indicator variables. Investors react more strongly for a firm reporting both positive earnings and positive dividend news relative to a firm reporting positive earnings news accompanied by negative dividend news. Further, negative price reactions to negative earnings news are moderated when accompanied by positive dividend news. Together, these results are consistent with analyst forecast-based dividend surprises (i) helping investors interpret current earnings news and (ii) signaling incremental information to earnings and cash flow news that is potentially informative about future earnings.

To corroborate the conclusion that investors use dividend surprises based on analyst forecasts to interpret earnings news, we formally examine whether dividends provide a signal about future earnings by examining the likelihood of future growth in earnings, conditional on the sign of dividend and earnings surprises in the current period. This evidence is important considering that previous studies find little support for the association between current dividend changes and future earnings (DeAngelo et al. 1996; Benartzi et al. 1997; Allen and Michaely 2003). The model specification for positive future earnings growth is:

$$\begin{aligned} P(Future\ EPS\ growth) &= \chi_0 + \chi_1 UE^+UD_t^+ + \chi_2 UE^+UD_t^- + \chi_3 UE^-UD_t^+ + \chi_4 UE^-UD_t^- \\ &+ \chi_5 UE^+Na\ddot{\imath}ve\ UD_t^+ + \chi_6 UE^+Na\ddot{\imath}ve\ UD_t^- + \chi_7 UE^-Na\ddot{\imath}ve\ UD_t^+ \\ &+ \chi_8 UE^-Na\ddot{\imath}ve\ UD_t^- + \chi_9 UCF + Controls + Industry\ effects + Year\ effects \\ &+ e_{t+1}. \end{aligned} \quad (4)$$

The dependent variable equals 1 if next fiscal year EPS is higher than current period EPS and 0 otherwise.[23] Eq. (4) includes four indicator variables to capture combinations of earnings surprises and dividend surprises formed from analyst forecasts, and four indicator variables to capture combinations of earnings surprises and dividend changes. We control for cash flow news and include controls from Eq. (1) and industry and year fixed effects or firm fixed effects.

In Panel A of Table 8, the coefficient on UE^+UD^+ is positive and larger than that for UE^+UD^- (see Panel B for the relevant chi-square test), which supports the prediction that firms that beat both dividend and earnings expectations signal more persistent future earnings than those that beat earnings but miss dividend expectations. Further, we find more negative coefficients on UE^-UD^- relative to UE^-UD^+, consistent with negative dividend and earnings surprises sending strong negative signals about future earnings growth.[24] The interesting result is that conditional on the sign of *UE*, the association with future earnings growth tracks the sign of *UD*. For example, the

[23] We also examine associations with next period earnings surprises (DeAngelo et al. 1996), and the results are qualitatively similar but less strong, which is not surprising given that analysts can change earnings expectations based on the information content of dividend news.

[24] Our conclusions from Table 8 are unchanged if we include future earnings surprises as an explanatory variable in Eq. (4) to capture the extent to which future earnings surprises are anticipated by the market at the time current earnings and dividends are announced (Koch and Sun 2004).

coefficient on $UE^{-}UD^{+}$ is positive, whereas the coefficient on $UE^{+}UD^{-}$ is negative. Actual dividend changes are not associated with future earnings growth, consistent with Lang and Litzenberger (1989), DeAngelo et al. (1996) and Benartzi et al. (1997).[25]

[Insert Table 8 around here]

The coefficients on $UE^{-}UD^{-}$ and $UE^{+}UD^{-}$ are not significantly different. The coefficient on $UE^{+}UD^{-}$ is higher than on $UE^{-}UD^{+}$, consistent with investors attaching more weight to the more persistent dividend signal for future earnings (Ertimur et al. 2003). Together, Tables 7 and 8 corroborate the importance to investors of dividend expectations in understanding implications of current earnings for future earnings and growth.

Institutional holdings and analyst dividend forecasts

Our last analysis examines whether changes in institutional investor holdings are associated with analyst dividend forecast revisions. Specifically, we examine the association between changes in the next quarter institutional holdings for a firm, ΔIO_{Q+1}, and mean quarterly changes in analysts' annual dividend forecasts, $\Delta FDPS_{Q}$, measured in the current quarter. For each analyst following a firm in a fiscal year, we calculate the dividend revision as the price-scaled difference between the last forecast issued in each of the current and previous quarters. We then average revisions made in each firm-quarter to calculate $\Delta FDPS_{Q}$. We control for quarterly changes in annual earnings forecasts ($\Delta FEPS_{Q}$), target prices (ΔTP_{Q}), and stock recommendations ($Upgrade_{Q}$ and $Downgrade_{Q}$) as these can affect portfolio allocation decisions.

We control for actual dividend announcements in quarter +1 in the absence of analyst dividend forecast revisions in the previous quarter (ΔDiv_{Q+1}), as investors may revise their holdings in response to changes in actual dividends. This result helps us establish whether, unconditionally

[25] In untabulated results, we estimated Eq. (4) with only dividend changes and control variables and continue to find that actual dividend changes are *not* associated with future earnings growth.

on the availability of analyst dividend forecasts, dividend information affects investors' portfolio allocation decisions. We also control for actual dividend announcements in quarter +1 conditional on analyst dividend forecast revisions in the previous quarter ($\Delta Div_{Q+1} \mid \Delta FDPS_Q$) to capture whether investors rely less on actual dividend changes if these have been preceded by analyst dividend forecasts (as in Table 8). The model includes firm controls from Eq. (1) and industry and year fixed effects:

$$\Delta IO_{Q+1} = \kappa_0 + \kappa_1 \Delta FDPS_Q + \kappa_2 \Delta FEPS_Q + \kappa_3 \Delta TP_Q + \kappa_4 Upgrade_Q + \kappa_5 Downgrade_Q + \Delta Div_{Q+1} + \Delta Div_{Q+1} \mid \Delta FDPS_Q + Controls + Industry\ fixed\ effects + Year\ fixed\ effects + \iota \quad (5)$$

In Table 9, we confirm a positive association between analyst dividend forecast revisions and changes in institutional ownership. A one standard deviation increase in $\Delta FDPS_Q$ is associated with a 2.3% increase in institutional holdings next quarter. For comparison, a one standard deviation increase in $\Delta FEPS_Q$ is associated with a 2.1% increase in institutional holdings. Cash flow forecast revisions are not associated with changes in institutional holdings. Finally, the last column of Table 9 shows that changes in pension fund and endowment ownership are only associated with dividend forecast revisions. Our conclusions are unchanged when we re-do the analysis with firm fixed effects (result untabulated).

[Insert Table 9 around here]

Actual dividend announcements that are *not* preceded by analyst dividend forecast revisions are statistically and economically associated with changes in institutional holdings. This result is consistent with investors factoring dividend information into portfolio allocation decisions. However, this effect is eliminated if analysts revise their dividend forecasts before dividend announcements. Jointly, the results suggest that dividend announcements are not associated with changes in institutional investors' holdings when preceded by analyst dividend forecasts revisions, consistent with our earlier findings.

VI. CONCLUSIONS

This study documents that analysts routinely produce dividend forecasts, which we argue reflects analysts supplying dividend estimates in response to investor demand for dividend expectations, driven by variability in dividend payments across firms. Analysts' dividend forecasts are superior to alternative extrapolative forecasts, and exhibit incremental explanatory power for stock prices beyond that contained in earnings and cash flow forecasts, target prices and stock recommendations. Finally, an analysis of joint dividend and earnings announcement returns suggests investors use analyst dividend forecasts in assessing the quality of earnings news and expectations of future earnings, and dividend forecasts are associated with changes in institutional investor holdings. In contrast to views in accounting and finance research that dividends are being displaced by repurchases, our results suggest a growing importance of dividends and dividend expectations.

Our study is of interest to investors, managers and academics. First, the results are important to dividend-oriented investors, who stand to improve portfolio allocation decisions by relying on readily available analyst dividend forecasts, rather than relying on inferior extrapolative estimates. Such investors include individual and institutional investors seeking dividend income (Hartzmark and Solomon 2013; 2019), but also funds specialized in dividend capture strategies that rotate between stocks to capture up to six dividends a year (Dubofsky 1987). Further, our results are important for index futures arbitrage, equity option valuation, and index option portfolio management, as dividends ultimately affect settlement prices.

A question for future research is why investors demand forecasts of dividends but not of stock repurchases? Survey evidence suggests managers consider undervaluation a primary reason for share repurchase announcements (Brav et al. 2005). Repurchases might be a noisy signal of future earnings given that a firm has no binding obligation to repurchase stock, repurchase programs tend to have long horizons, and the exact timing of repurchase transactions are unknown ex ante (Dittmar and Field 2015). Currently, studies find little support for a repurchase signaling hypothesis (Bartov 1991; Grullon and Michaely 2004; Lie 2005). Moreover, repurchases are relatively uncommon outside the U.S. (von Eije and Megginson 2008; Lee and Suh 2011). Nevertheless, given the substitutability of dividends and repurchases, further research seems warranted.

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Appendix
Definitions of the variables used in the study

Variable	Definition
Main dependent variables	
Div forecast	An indicator variable equal to 1 if there is at least one dividend forecast for a firm in a fiscal year, and 0 otherwise.
CAR	Three-day cumulative abnormal return centered on the dividend forecast announcement day.
CAR_Earn	Three-day cumulative abnormal returns centered on the joint preliminary earnings and dividend announcements.
Future EPS growth	Growth in EPS indicator, which is equal to 1 if next fiscal year EPS is higher than current period EPS, and 0 otherwise.
ΔIO_{Q+1}	Changes in quarterly institutional holdings for a stock.
Δ#investors	Changes in the quarterly number of institutional investors.
Δ% pension funds	Changes in quarterly percentage institutional ownership by pension funds and endowments.
Firm characteristics	
Dividend STD	Standard deviation of asset-scaled dividend measured over the previous five years.
Earnings STD	Standard deviation of asset-scaled income before extraordinary items measured over the previous five years.
Cash Flow STD	Standard deviation of asset-scaled operating cash flows measured over the previous five years.
IO	Institutional ownership for a stock measured at the end of the most recent fiscal year (sourced from Ferreira and Matos 2008 and updated to 2013).
% pension funds	The proportion of institutional holdings held by pension funds and endowments measured at the end of the most recent fiscal year (sourced from Ferreira and Matos 2008 and updated to 2013).
MV (USD)	Firm market capitalization expressed in USD million using the exchange rate from 31 December 2005 and measured at the end of the most recent fiscal year.
B/M	The book-to-market ratio calculated as the ratio of book value of common equity to market capitalization measured at the end of the most recent fiscal year.
Loss	An indicator variable equal to 1 if a firm reports negative income before extraordinary items and 0 otherwise. *Loss* is measured at the end of the most recent fiscal year
ROA	Return on assets measured as a ratio of income before extraordinary items to total assets measured at the end of the most recent fiscal year.
Forecast characteristics	
FDPS error	Dividend forecast error, which is the absolute difference between the actual and the forecasted dividend per share scaled by the stock price at the end of the previous fiscal year.
FEPS error	Earnings forecast error, which is the absolute difference between the actual and the forecasted EPS scaled by the stock price at the end of the previous fiscal year.
FCFPS error	Cash flow forecast error, which is the absolute difference between the actual and the forecasted cash flow per-share scaled by the stock price at the end of the previous fiscal year.
Naïve DPS error	Naïve dividend forecast error, which is the absolute difference between the actual dividend and the time-series dividend forecast expressed on a per share basis and scaled by the stock price at the end of the previous fiscal year
Naïve DPS 1	Naïve dividend per share forecast, where the next year dividend equals the previous dividend.
Naïve DPS 2	Naïve dividend per share forecast equal to the product of the mean payout ratio calculated over the previous seven years and net income for the previous fiscal year.
Naïve DPS 3	Naïve dividend per share forecast equal to the product of the target payout ratio estimated from the Lintner model and net income for the previous fiscal year.
Naïve DPS 4	Naïve dividend per share forecast equal to the product of the target payout ratio estimated from the Lintner model and the analyst EPS forecast.
Naïve DPS 5	Naïve dividend per share forecast predicted from the Lintner model.
Naïve DPS 6	Naïve dividend per share forecast equal to the product of the previous year dividend per share times 1+ the growth in DPS calculated over the prior two years.

$\Delta FDPS$	Dividend forecast revision calculated as the difference between the analyst's current and previous dividend forecast for a firm and fiscal year. We scale this difference by the stock price at the end of the previous fiscal year.
$\Delta FEPS$	Earnings forecast revision calculated as the difference between the analyst's current and previous EPS forecast for a firm and fiscal year. We scale this difference by the stock price at the end of the previous fiscal year.
$\Delta CEPS$	Cash flow forecast revision calculated as the difference between the analyst's current and previous cash flow forecast for a firm and fiscal year. We scale this difference by the stock price at the end of the previous fiscal year.
ΔTP	Target price revision calculated as the difference between the analyst's current and previous target price for a firm. We scale this difference by the stock price at the end of the previous fiscal year.
Upgrade	Stock recommendation upgrade, which is an indicator variable equal to 1 if an analyst upgrades a recommendation for a stock, and 0 otherwise.
Downgrade	Stock recommendation downgrade, which is an indicator variable equal to 1 if an analyst downgrades a recommendation for a stock, and 0 otherwise.
$\Delta FDPS_Q$	Mean quarterly revision in analyst dividend forecasts for a firm. Dividend revisions are measured as the price-scaled difference between the analyst's last dividend forecast issued in the current quarter and the analyst's last dividend forecast issued at the end of the previous quarter.
$\Delta FEPS_Q$	Mean quarterly change in analyst EPS forecasts. EPS revisions are measured as the price-scaled difference between the analyst's last EPS forecast for the current and the previous quarter.
$\Delta FCFPS_Q$	Mean quarterly change in analyst cash flow forecasts. Cash flow revisions are measured as the price-scaled difference between the analyst's last cash flow forecast for the current and the previous quarter.
ΔTP_Q	Mean quarterly change in analyst target prices for a firm. Target price revisions are measured as the price-scaled difference between the analyst's last target price for the current and the previous quarter.
$Upgrade_Q$	Consensus stock recommendation upgrade for a quarter, which is an indicator variable equal to 1 if, on average, analysts upgrade recommendations for a stock in the current compared to the previous quarter, and 0 otherwise.
$Downgrade_Q$	Consensus stock recommendation downgrade for a quarter, which is an indicator variable equal to 1 if, on average, analysts downgrade recommendations for a stock in the current compared to the previous quarter, and 0 otherwise.
UD	Dividend surprise calculated as the price-scaled difference between the actual dividend and the mean of analysts' last dividend forecasts available before the annual earnings announcement.
UE	Earnings surprise calculated as the price-scaled difference between the actual EPS and the mean of analysts' last EPS forecasts available before the annual earnings announcement.
UCF	Cash flow surprise calculated as the price-scaled difference between the actual cash flow and the mean of analysts' last cash flow forecasts available before the annual earnings announcement.
ΔDiv	Price-scaled difference between the actual dividend-per-share for the current and previous fiscal year.
ΔDiv_{Q+1}	Price−scaled difference between quarter q+1 announced dividend-per-share and previous fiscal year dividend-per-share. ΔDivQ+1 is zero if a firm did not announce a dividend in quarter q+1.
ΔDiv_{Q+1} | $\Delta FDPS_Q$	An interaction variable between ΔDiv Q+1 and an indicator variable that takes a value of 1 if analysts revise dividend forecasts in the quarter, and 0 otherwise.
UE+UD+	A dummy variable equal to 1 if the firm beats both analyst earnings and dividend expectations, and 0 otherwise.
UE+UD−	A dummy variable equal to 1 if the firm beats earnings expectations, but does not beat analyst dividend expectations, and 0 otherwise.
UE−UD+	A dummy variable equal to 1 if the firm does not beat earnings expectations, but beats analyst dividend expectations, and 0 otherwise.
UE−UD−	A dummy variable equal to 1 if the firm fails to beat both analyst earnings and dividend expectations, and 0 otherwise.

Country and other characteristics	
Importance of equity markets	The mean rank across three variables used in La Porta et al. (2000): (1) the ratio of the aggregate stock market capitalization held by minorities to gross national product, (2) the number of listed domestic firms relative to the population, and (3) the number of IPOs relative to the population (sourced from Leuz et al. 2003).
Net dividend tax	The top marginal statutory personal income tax rate imposed on dividend income after taking account imputation systems, tax credits, and tax allowances (sourced from Ferreira, Massa and Matos 2010).
Legal enforcement	Legal enforcement measured as the mean score across (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. All three variables range from zero to ten (sourced from Leuz et al. 2003).
Financial transparency	The financial transparency index defined as a relative measure of the availability of financial information to those outside the firm due to disclosure, interpretation, and dissemination of financial information by firms, financial analysts, and media reporters (sourced from Bushman, Piotroski and Smith 2004).
Earnings smoothing	Earnings smoothing is the country's median ratio of the firm-level standard deviations of operating income and operating cash flow, both scaled by lagged total assets. The cash flow from operations is equal to operating income minus accruals, where accruals are calculated as: (Δtotal current assets – Δcash) – (Δtotal current liabilities – Δshort-term debt – Δtaxes payable) – depreciation expense (sourced from Leuz et al. 2003).
Year fixed effects	Year dummies for the fiscal years.
Industry fixed effects	Industry dummies based on Kenneth French ten industry definitions.

FIGURE 1a
The fraction of dividend payers with analyst dividend forecasts

The figure reports the fraction of dividend payers with available analyst dividend forecasts for (i) the U.S., (ii) Australia, Hong Kong, Japan and the United Kingdom, and (iii) Europe domiciled firms over fiscal years 2000–2013.

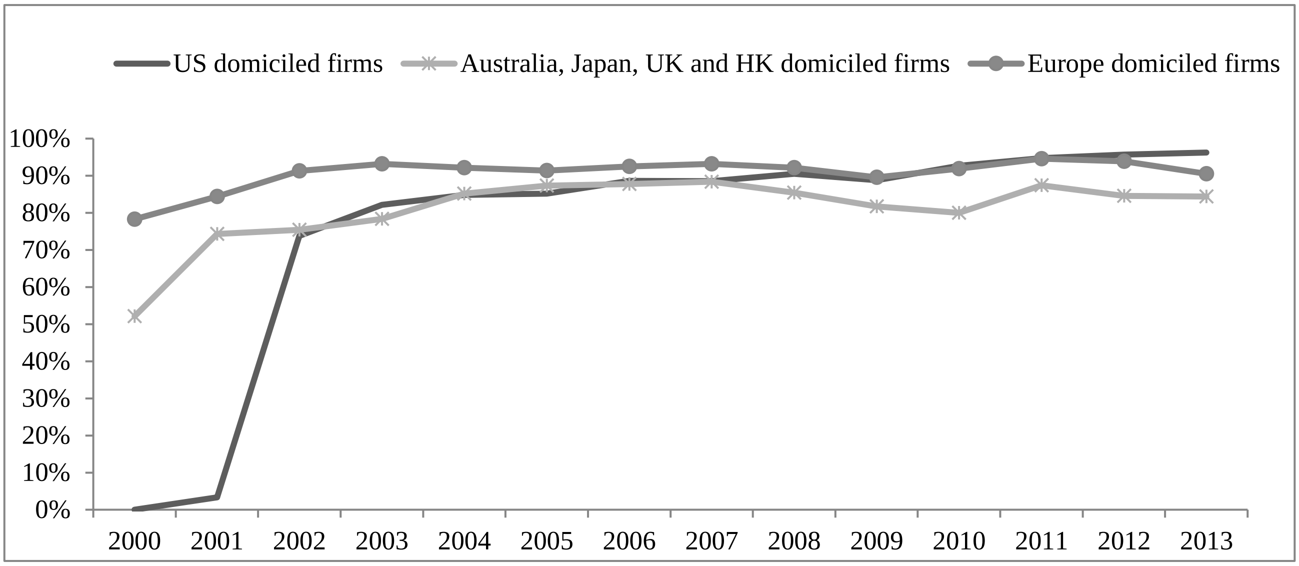
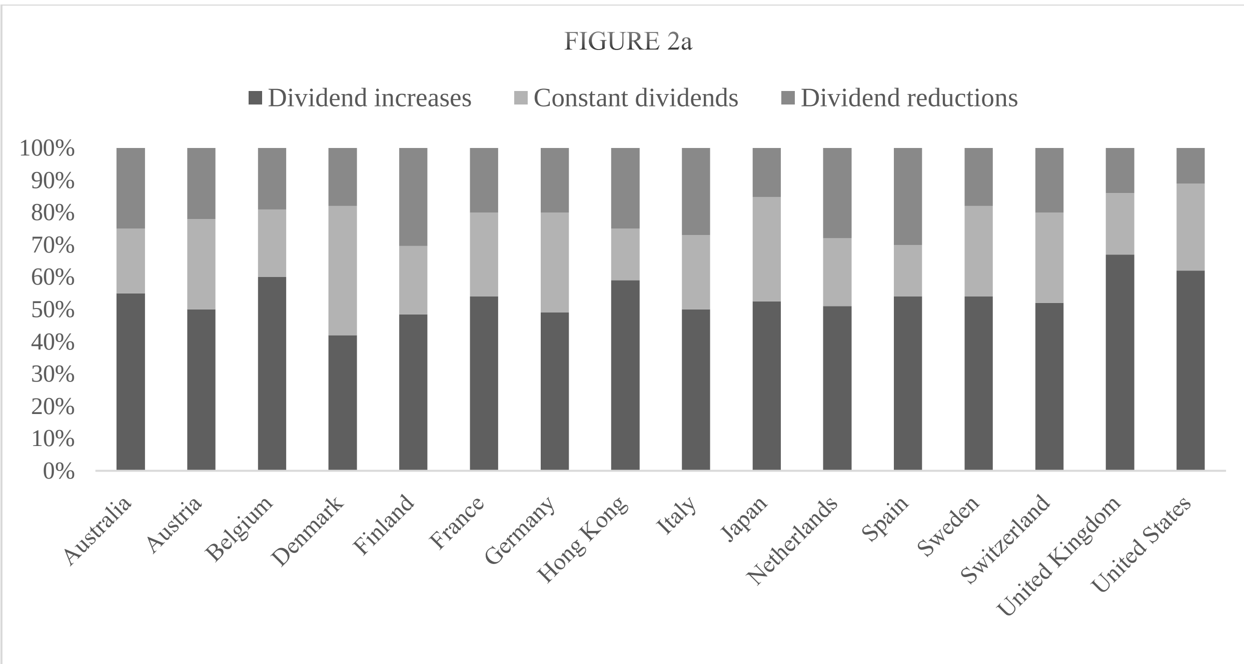


FIGURE 1b
The fraction of analysts covering dividend-paying firms with dividend forecasts

The figure reports the fraction of analysts covering dividend-paying firms with available dividend forecasts for (i) the U.S., (ii) Australia, Hong Kong, Japan and the United Kingdom, and (iii) Europe domiciled firms over fiscal years 2000–2013.

FIGURE 2
Variability in dividend payments

The figure reports the average fraction of dividend payers that increase, maintain and reduce their annual dividends and dividend payout ratios. Fig. 2a reports the average fraction of dividend payers across countries that increase, maintain and reduce their annual dividend-per-share (DPS) compared to the previous fiscal year. Reported actual DPS are from I/B/E/S and are adjusted for changes in the number of shares outstanding. If the I/B/E/S dividend is missing, we use Compustat and Compustat Global dividend information and I/B/E/S number of shares outstanding. Fig. 2b reports the fraction of dividend payers across countries that increase, maintain and reduce their annual dividend payout ratio compared to the previous fiscal year.



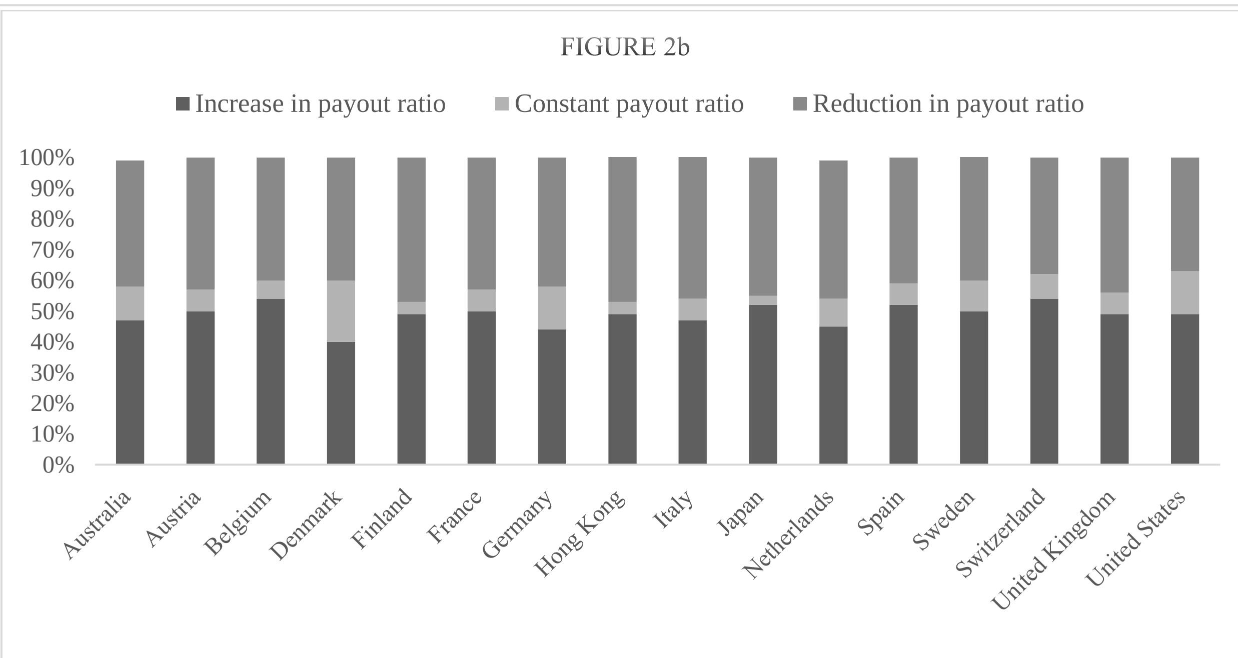


FIGURE 3
Distribution of dividend surprises

The figure reports the proportion of dividend payers with positive, zero and negative dividend surprises at joint earnings and dividend announcements. Dividend surprise is calculated as the price-scaled difference between the actual dividend and the mean of analyst dividend forecasts available at the end of a fiscal year.

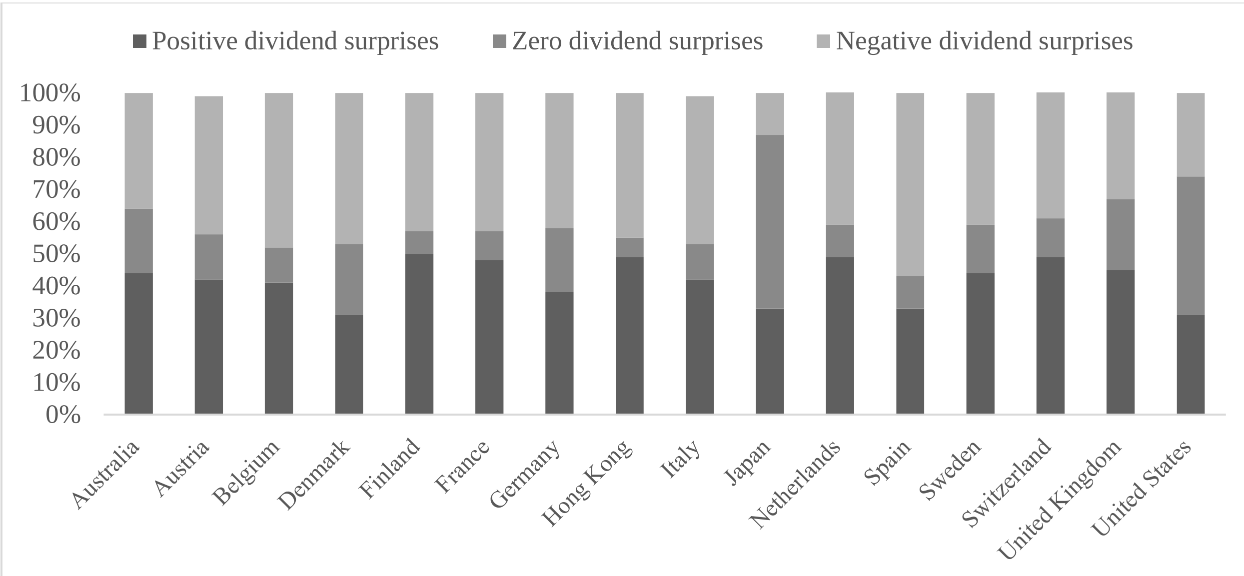


TABLE 1
Proportion of listed firms with analyst coverage paying dividends per country

	AU	AT	BE	DK	FI	FR	DE	HK	IT	JP	NL	ES	SE	CH	UK	US
2000	71.9%	80.5%	69.0%	73.0%	83.7%	57.8%	41.1%	77.3%	77.1%	82.7%	75.5%	81.6%	64.5%	82.4%	84.3%	21.5%
2001	77.4%	80.6%	73.0%	74.7%	84.2%	74.6%	58.1%	79.3%	78.3%	87.6%	79.6%	87.1%	77.1%	87.5%	82.8%	21.6%
2002	75.2%	93.5%	78.8%	78.8%	84.4%	77.2%	65.0%	73.2%	79.6%	87.3%	82.8%	80.0%	70.7%	83.6%	79.3%	35.7%
2003	81.1%	71.0%	82.1%	91.7%	91.1%	71.5%	61.5%	82.7%	76.8%	90.5%	88.2%	72.0%	82.5%	83.6%	83.6%	37.5%
2004	81.2%	60.0%	70.5%	79.1%	87.6%	74.7%	72.3%	84.4%	78.3%	90.0%	76.8%	85.9%	78.3%	78.3%	76.1%	36.2%
2005	81.9%	75.0%	74.4%	83.8%	91.5%	63.4%	67.0%	85.4%	78.2%	92.3%	85.9%	84.4%	79.2%	78.6%	70.6%	35.4%
2006	78.4%	72.3%	75.9%	84.0%	91.3%	69.2%	63.7%	82.5%	66.7%	92.7%	76.5%	70.0%	75.3%	79.1%	63.9%	43.6%
2007	82.6%	75.9%	66.7%	83.3%	90.7%	73.3%	65.4%	87.0%	63.5%	94.1%	67.8%	67.6%	80.1%	80.6%	62.9%	41.2%
2008	79.1%	90.9%	80.6%	78.0%	93.3%	73.5%	68.7%	87.2%	62.4%	95.7%	67.9%	80.0%	83.7%	82.9%	66.4%	47.5%
2009	82.4%	74.1%	78.7%	70.8%	92.1%	77.2%	64.5%	79.2%	72.5%	96.9%	79.4%	81.0%	76.9%	83.0%	67.2%	51.6%
2010	80.4%	73.9%	81.7%	69.0%	89.8%	72.3%	67.3%	78.0%	75.1%	96.3%	78.0%	77.2%	80.7%	82.2%	65.3%	57.1%
2011	73.5%	88.9%	81.9%	74.6%	89.7%	74.5%	75.3%	81.2%	73.4%	97.4%	82.0%	80.8%	78.4%	86.8%	70.2%	56.8%
2012	71.7%	88.6%	81.0%	77.8%	82.4%	71.1%	75.7%	85.8%	76.2%	96.3%	78.0%	81.8%	79.0%	83.9%	68.2%	59.2%
2013	71.8%	87.8%	82.4%	74.6%	83.3%	60.5%	67.4%	84.4%	54.3%	96.3%	76.1%	65.6%	69.9%	83.7%	67.4%	57.6%

The table reports the proportion of dividend payers across sixteen countries over the fiscal years 2000–2013. The sample includes firms at the cross-section between I/B/E/S (firms with either EPS or dividend forecasts in a fiscal year) and Compustat for U.S. firms and Compustat Global for non-U.S. firms. AU stands for Australia, **AT** for Austria, **BE** for Belgium, **DK** for Denmark, **FI** for Finland, **FR** for France, **DE** for Germany, **HK** for Hong Kong, **IT** for Italy, **JP** for Japan, **NL** for the Netherlands, **ES** for Spain, **SE** for Sweden, **CH** for Switzerland, **UK** for the United Kingdom and **US** for the United States.

TABLE 2
Descriptive statistics of forecast availability for firms with any analyst coverage

	#Firm-years	#Div payer firm-years	%Div payers	% of Div payers with Div forecasts	% of Div payers with Div and CFPS forecasts	#Div forecasts per year	#Analysts issuing Div forecasts	#EPS forecasts per year	#CFPS forecasts per year	#REV forecasts per year
Australia	6,927	5,214	75.3%	88.3%	85.4%	15.0	6.0	33.0	15.9	21.8
Austria	591	472	79.9%	94.1%	75.2%	13.4	6.9	25.9	12.0	15.0
Belgium	1,140	877	76.9%	90.5%	59.0%	12.7	6.5	29.9	11.2	16.2
Denmark	997	777	77.9%	84.8%	58.1%	12.6	5.2	33.9	12.5	20.8
Finland	1,358	1,200	88.4%	93.8%	69.2%	19.0	8.1	48.6	17.9	34.4
France	5,045	3,561	70.6%	93.5%	71.3%	17.7	7.9	39.9	17.9	22.7
Germany	5,292	3,439	65.0%	89.1%	70.2%	16.0	8.3	44.8	15.7	26.9
Hong Kong	4,000	3,290	82.3%	73.5%	63.2%	18.7	8.9	32.8	5.9	13.9
Italy	2,347	1,680	71.6%	90.4%	55.8%	14.6	7.4	29.7	8.2	16.8
Japan	23,049	21,124	91.6%	75.1%	54.2%	5.3	3.9	13.8	4.9	9.2
Netherlands	1,325	1,029	77.7%	90.6%	70.3%	18.1	8.2	40.0	16.3	19.9
Spain	1,277	997	78.1%	95.0%	54.0%	20.5	10.5	36.9	13.4	18.0
Sweden	2,394	1,841	76.9%	89.8%	67.0%	14.4	6.5	47.8	20.3	32.9
Switzerland	1,990	1,641	82.5%	87.9%	75.1%	16.1	6.7	32.0	12.8	18.4
United Kingdom	12,728	9,032	71.0%	87.9%	50.9%	10.0	5.4	23.8	6.2	11.8
United States	47,751	20,388	42.7%	82.6%	40.2%	6.7	4.3	35.7	11.2	27.5
Average			75.5%	87.9%	63.7%	14.4	6.9	34.3	12.6	20.4

The table reports distributional data of forecast availability for dividend-paying firms in the intersection of I/B/E/S (firms with either EPS or dividend forecasts in a fiscal year) and Compustat for U.S. firms and Compustat Global for non-U.S. firms. The **#Firm-Years** column reports the number of firm-years over fiscal years 2000–2013. The **#Div payer firm-years** column reports the number of firm-years for dividend-paying firms. The **%Div payers** column reports the percentage of dividend payers in all firms covered by analysts. The **% of Div payers with Div forecasts** column reports the percentage of dividend-paying firms with at least one dividend forecast for a firm in a year. The **% of Div payers with Div and CFPS forecasts** column reports the percentage of dividend-paying firms with at least one dividend forecast and one cash flow forecast for a firm in a year. The **#Div forecasts per year** column reports the average number of dividend forecasts for a firm-fiscal year. The **#Analysts issuing Div forecasts** column reports the average number of analysts issuing dividend forecasts for dividend-paying firms. The **#EPS forecasts per year**, **#CFPS forecasts per year** and **#REV forecasts per year** columns report the average number of EPS, cash

TABLE 3
The likelihood of analyst dividend forecasts

Panel A: Descriptive statistics

	With dividend forecast (N=34,675)			Without dividend forecast (N=7,220)				
	Mean	**Median**	**σ**	**Mean**	**Median**	**σ**	**Difference in means**	**p-value**
Dividend STD	0.008	0.003	0.037	0.006	0.002	0.020	0.002	0.000
Earnings STD	0.039	0.020	0.084	0.029	0.017	0.048	0.009	0.000
Cash Flow STD	0.037	0.023	0.055	0.030	0.020	0.041	0.007	0.000
IO	0.207	0.121	0.241	0.180	0.046	0.269	0.028	0.000
% pension funds	0.053	0.022	0.092	0.029	0.000	0.069	0.024	0.000
MV (USD)	2,119	398	5,532	1,304	182	6,617	814	0.000
B/M	1.772	0.654	47.609	2.236	0.913	7.799	−0.464	0.088
Loss dummy	0.119	0.000	0.324	0.122	0.000	0.327	−0.003	0.512
ROA	0.040	0.039	0.086	0.034	0.028	0.062	0.006	0.000
Importance of equity markets	19.287	16.800	4.763	18.569	16.800	5.689	0.718	0.000
Net dividend tax	0.185	0.155	0.085	0.157	0.155	0.071	0.028	0.000
Legal enforcement	9.282	9.200	0.477	9.303	9.200	0.359	−0.020	0.000
Financial transparency	0.892	0.684	0.408	0.996	0.684	0.442	−0.105	0.000
Earnings smoothing	0.592	0.560	0.083	0.623	0.560	0.097	−0.031	0.000

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TABLE 3 (continued)

		Div forecast	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.
I.	ln *Dividend STD*	0.110													
		0.000													
II.	ln *Earnings STD*	0.069	0.508												
		0.000	0.000												
III.	ln *Cash Flow STD*	0.066	0.521	0.746											
		0.000	0.000	0.000											
IV.	*IO*	0.023	−0.018	−0.072	−0.115										
		0.000	0.000	0.000	0.000										
V.	*% pension funds*	0.108	0.091	0.023	0.015	0.074									
		0.000	0.000	0.000	0.003	0.000									
VI.	ln *MV* (USD)	0.080	−0.168	−0.253	−0.221	0.192	0.238								
		0.000	0.000	0.000	0.000	0.000	0.000								
VII.	ln *B/M*	−0.159	−0.153	−0.075	−0.117	−0.205	−0.071	−0.147							
		0.000	0.000	0.000	0.000	0.000	0.000	0.000							
VIII.	*Loss dummy*	−0.019	0.014	0.268	0.140	−0.029	0.013	−0.115	0.140						
		0.000	0.006	0.000	0.000	0.000	0.008	0.000	0.000						
IX.	*ROA*	0.053	0.249	0.002	0.113	0.044	0.014	0.065	−0.226	−0.529					
		0.000	0.000	0.741	0.000	0.000	0.004	0.000	0.000	0.000					
X.	*Importance of equity markets*	−0.059	0.080	0.047	−0.006	0.320	−0.118	−0.319	−0.111	0.032	0.027				
		0.000	0.000	0.000	0.240	0.000	0.000	0.000	0.000	0.000	0.000				
XI.	*Net dividend tax*	0.125	0.392	0.212	0.170	0.094	0.040	−0.235	−0.028	−0.001	0.121	0.171			
		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.904	0.000	0.000			
XII.	*Legal enforcement*	−0.026	0.100	0.052	0.026	0.198	0.128	0.031	−0.099	0.018	0.042	0.481	0.211		
		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
XIII.	*Financial transparency*	−0.124	−0.141	−0.228	−0.243	0.579	−0.072	0.215	−0.038	−0.012	−0.040	−0.085	0.058	−0.054	
		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.000	0.000	0.000	0.000	
XIV.	*Earnings smoothing*	−0.174	−0.106	−0.209	−0.218	0.628	−0.011	0.149	−0.116	0.001	−0.014	0.521	−0.137	0.272	0.555
		0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.000	0.788	0.004	0.000	0.000	0.000	0.000

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TABLE 3 (continued)

	Predicted sign	Full model Estimate	Full model Std. Estimate	Full model p-value	Firm fixed effects Estimate	Firm fixed effects Std. Estimate	Firm fixed effects p-value
Panel B: Regression results							
ln *Dividend STD*	+	0.177	0.161	0.000	0.146	0.210	0.000
ln *Earnings STD*	+	−0.084	−0.051	0.001	0.088	0.100	0.003
ln *Cash Flow STD*	+	0.007	0.004	0.819	0.055	0.055	0.096
IO	+	1.762	0.223	0.000	0.679	0.169	0.000
% pension funds	+	1.772	0.088	0.000	2.829	0.257	0.000
ln *MV* (USD)	+	0.206	0.290	0.000	0.074	0.189	0.000
ln *B/M*	−	−0.780	−0.205	0.000	−0.756	−0.294	0.000
Loss dummy	+	0.236	0.041	0.000	0.033	0.011	0.636
ROA	+	−0.472	−0.019	0.144	1.174	0.097	0.000
Importance of equity markets	+	0.056	0.171	0.000			
Net dividend tax	+	7.700	0.360	0.000			
Legal enforcement	−	−0.505	−0.129	0.000			
Financial transparency	−	−0.956	−0.211	0.000			
Earnings smoothing	−	−9.058	−0.405	0.000			
Firm fixed effects	No				Yes		
Year fixed effects	Yes				Yes		
Industry fixed effects	Yes				No		
N	39,428				39,428		
$p(Chi^2)$	0.000				0.000		
Pseudo R^2	16.59%						

Panel A reports descriptive statistics for regressors in Eq. (1) split between firms with and without analyst dividend forecasts. The sample includes dividend payers on the cross-section between I/B/E/S (firms with either EPS or dividend forecasts in a fiscal year) and Compustat for U.S. firms and I/B/E/S and Compustat Global for non-U.S. firms. **Mean** is the average value, **Median**, the median, and **σ** is the standard deviation. **Difference in means** column reports the difference in means between the two groups, and **p-value** column shows the corresponding p-value. Variables definitions are in the Appendix. Panel B reports Pearson correlations between variables in Eq. (1). Panel C reports logistic regression results for Eq. (1). The **Std. Estimate** column reports standardized estimates for a one standard deviation increase in a regressor. The **Full model** column includes industry and year fixed effects and we omit reporting the intercept. The **Firm fixed effects** column reports results with firm fixed effects. Standard errors are firm-clustered and year dummies account for residual correlation across years (time-series dependence) and across firms in a given year (cross-section dependence). Industry dummies control for within-industry correlations. Firm effect captures firm fixed effects.

TABLE 4
Mean dividend forecast error and bias across countries

		FDPS (unsigned) error		FCFPS (unsigned) error		FEPS (unsigned) error	
	N	**Mean**	**σ**	**Mean**	**σ**	**Mean**	**σ**
Australia	68,836	1.21%	2.62%	6.73%	15.54%	2.49%	6.35%
Austria	5,945	0.61%	0.89%	5.03%	7.35%	2.07%	3.29%
Belgium	10,096	0.84%	1.71%	3.56%	5.39%	2.08%	3.98%
Denmark	8,351	0.75%	1.20%	4.97%	9.16%	1.69%	2.72%
Finland	21,470	1.25%	1.61%	6.01%	9.04%	2.58%	4.71%
France	59,300	0.52%	0.85%	3.67%	5.23%	1.51%	2.66%
Germany	49,358	0.60%	0.92%	6.16%	9.16%	2.34%	4.62%
Hong Kong	45,317	1.08%	2.06%	7.76%	13.46%	2.29%	4.14%
Italy	22,236	1.01%	1.95%	6.80%	12.36%	2.34%	4.70%
Japan	83,929	0.19%	0.36%	4.82%	8.41%	2.28%	4.84%
Netherlands	16,817	0.71%	1.15%	6.52%	11.41%	2.45%	4.66%
Spain	19,455	0.89%	1.35%	4.96%	6.75%	1.51%	2.55%
Sweden	23,988	1.05%	2.01%	5.02%	8.24%	2.11%	4.25%
Switzerland	23,436	0.56%	0.74%	3.10%	4.74%	1.74%	2.81%
United Kingdom	79,823	0.46%	0.97%	5.31%	7.15%	1.51%	2.90%
United States	113,402	0.45%	1.48%	4.12%	8.34%	1.95%	5.32%
Average		0.76%	1.37%	5.28%	8.86%	2.06%	4.03%

This table reports the forecast errors for dividends, cash flows and earnings forecasts across the sample countries. **FDPS error** is the unsigned dividend per share forecast error. **N** is the number of dividend forecasts, **Mean** is the average value, and **σ** is the standard deviation. **FCFPS error** is the unsigned cash flow per share forecast error, and **FEPS error** is the unsigned earnings per share forecast error. The *Average* row reports the averages for the 16 countries in the sample.

TABLE 5
The difference between the accuracy of analyst dividend forecasts and naïve dividend estimates

Panel A: Mean and standard deviation of time-series dividend forecasts error

	Naïve DPS 1		*Naïve DPS 2*		*Naïve DPS 3*		*Naïve DPS 4*		*Naïve DPS 5*		*Naïve DPS 6*	
	Mean	**σ**	**Mean**	**σ**	**Mean**	**σ**	**Mean**	**σ**	**Mean**	**σ**	**Mean**	**σ**
Australia	2.00%	2.97%	3.52%	5.89%	4.66%	6.66%	4.64%	7.11%	2.11%	3.66%	3.12%	5.40%
Austria	0.93%	1.91%	1.55%	2.95%	2.22%	4.52%	1.82%	3.54%	1.33%	3.24%	1.43%	2.47%
Belgium	1.56%	3.44%	2.67%	4.70%	5.68%	7.42%	5.35%	6.60%	3.19%	6.32%	1.30%	2.69%
Denmark	0.94%	1.95%	1.89%	4.03%	2.61%	4.79%	2.48%	4.80%	1.69%	4.30%	1.49%	3.35%
Finland	1.84%	2.73%	3.93%	5.88%	3.61%	4.80%	3.38%	5.07%	2.44%	3.72%	2.65%	3.88%
France	0.85%	1.78%	2.85%	6.12%	3.45%	5.31%	3.69%	6.47%	2.20%	5.95%	1.04%	2.04%
Germany	0.97%	1.53%	1.73%	2.90%	2.79%	4.39%	2.70%	4.75%	1.17%	1.67%	1.50%	2.61%
Hong Kong	1.54%	2.62%	2.10%	3.63%	3.42%	5.08%	3.33%	5.17%	1.56%	2.74%	2.40%	4.33%
Italy	2.54%	5.02%	3.85%	8.00%	4.61%	7.74%	3.18%	5.07%	6.76%	10.73%	2.07%	3.61%
Japan	0.52%	0.88%	1.25%	2.43%	1.68%	2.53%	1.85%	3.08%	0.60%	1.11%	0.64%	1.28%
Netherlands	1.15%	1.71%	2.38%	3.74%	2.97%	3.53%	2.66%	3.49%	1.37%	2.37%	1.55%	2.51%
Spain	2.21%	4.71%	3.30%	7.62%	5.13%	8.49%	3.65%	6.15%	4.37%	8.76%	1.85%	3.20%
Sweden	1.36%	2.62%	2.93%	5.07%	3.62%	5.44%	3.33%	5.19%	1.87%	3.67%	2.42%	4.75%
Switzerland	0.74%	1.20%	1.96%	4.65%	2.97%	4.70%	3.04%	5.66%	0.90%	2.22%	1.11%	2.23%
United Kingdom	3.36%	1.93%	3.42%	1.94%	3.46%	1.99%	4.38%	6.25%	3.40%	1.92%	0.97%	2.01%
United States	1.13%	2.70%	2.75%	6.20%	5.04%	7.44%	5.21%	7.99%	1.87%	5.20%	1.70%	4.39%
Average	1.48%		2.63%		3.62%		3.42%		2.30%		1.70%	

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TABLE 5 (continued)

Panel B: Differences in analyst vs. time-series dividend forecast precision

	Naïve DPS 1		***Naïve DPS 2***		***Naïve DPS 3***		***Naïve DPS 4***		***Naïve DPS 5***		***Naïve DPS 6***		**Analyst vs. *Naïve DPS 1***
	Diff.	**p-value**	**Diff.**	**p-value**	**Diff.**	**p-value**	**Diff.**	**p-value**	**Diff.**	**p-value**	**Diff.**	**p-value**	
Australia	−0.88%	0.000	−2.54%	0.000	−3.67%	0.000	−3.67%	0.000	−1.12%	0.000	−2.01%	0.000	−43.8%
Austria	−0.37%	0.003	−1.01%	0.000	−1.68%	0.000	−1.29%	0.000	−0.79%	0.000	−0.84%	0.000	−39.8%
Belgium	−0.73%	0.000	−2.00%	0.000	−5.00%	0.000	−4.64%	0.000	−2.51%	0.000	−0.58%	0.000	−46.7%
Denmark	−0.25%	0.000	−1.20%	0.000	−1.92%	0.000	−1.79%	0.000	−1.00%	0.000	−0.79%	0.000	−26.9%
Finland	−0.60%	0.000	−2.69%	0.000	−2.38%	0.000	−2.15%	0.000	−1.20%	0.000	−1.41%	0.000	−32.8%
France	−0.32%	0.000	−2.23%	0.000	−2.83%	0.000	−3.07%	0.000	−1.58%	0.000	−0.54%	0.000	−37.4%
Germany	−0.38%	0.000	−1.17%	0.000	−2.23%	0.000	−2.14%	0.000	−0.61%	0.000	−0.94%	0.000	−38.6%
Hong Kong	−0.51%	0.000	−1.17%	0.000	−2.49%	0.000	−2.40%	0.000	−0.64%	0.000	−1.37%	0.000	−33.0%
Italy	−1.54%	0.000	−2.94%	0.000	−3.70%	0.000	−2.31%	0.000	−5.85%	0.000	−1.11%	0.000	−60.6%
Japan	−0.34%	0.000	−1.07%	0.000	−1.50%	0.000	−1.67%	0.000	−0.41%	0.000	−0.46%	0.000	−64.8%
Netherlands	−0.48%	0.000	−1.76%	0.000	−2.36%	0.000	−2.06%	0.000	−0.76%	0.000	−0.91%	0.000	−42.0%
Spain	−1.36%	0.000	−2.43%	0.000	−4.26%	0.000	−2.77%	0.000	−3.49%	0.000	−0.99%	0.000	−61.7%
Sweden	−0.36%	0.000	−1.99%	0.000	−2.68%	0.000	−2.39%	0.000	−0.93%	0.000	−1.48%	0.000	−26.6%
Switzerland	−0.25%	0.000	−1.50%	0.000	−2.51%	0.000	−2.58%	0.000	−0.43%	0.000	−0.56%	0.000	−34.0%
United Kingdom	−2.93%	0.000	−3.02%	0.000	−3.07%	0.000	−4.00%	0.000	−3.01%	0.000	−0.56%	0.000	−87.3%
United States	−0.65%	0.000	−2.23%	0.000	−4.52%	0.000	−4.74%	0.000	−1.35%	0.000	−1.27%	0.000	−57.6%
Average	−0.75%	0.000	−1.93%	0.000	−2.92%	0.000	−2.73%	0.000	−1.61%	0.000	−0.99%	0.000	−45.9%

Panel A reports the mean and standard deviation of the unsigned forecast error for time-series dividend forecasts. ***Naïve DPS 1*** is the random walk dividend forecast. ***Naïve DPS 2*** is the dividend forecast calculated as the product of the mean payout ratio for a firm calculated over the previous seven years and the net income for the previous fiscal year. ***Naïve DPS 3*** is the product of the target payout ratio from the Lintner model and net income for the previous fiscal year. ***Naïve DPS 4*** is the product of the target payout ratio from the Lintner model and the analyst EPS forecast. ***Naïve DPS 5*** is the predicted dividend from the Lintner model. ***Naïve DPS 6*** is the product of previous year DPS and growth in DPS calculated over prior two years. All naïve dividend forecasts are expressed on a per-share basis using the number of shares outstanding reported on I/B/E/S summary files. The *Average* row reports the averages. Panel B reports the mean difference (**Diff.**) between the error in analyst dividend forecasts and the error of naïve dividend forecasts. **p-value** is the *p*-value for a two-tailed *t*-test of the hypothesis that the average difference in forecast errors is zero. **Analyst vs. *Naïve DPS 1*** is the percentage difference between the (country-level) mean analyst dividend forecast error and the mean error of random walk dividend forecasts.

TABLE 6
Price reactions to dividend forecast revisions

Panel A: Average price reactions to analyst dividend forecast revisions

		ΔFDPS		***CAR***	
	N	***ΔFDPS*≥0**	***ΔFDPS*<0**	***ΔFDPS*≥0**	***ΔFDPS*<0**
Australia	28,152	0.59%	−0.88%	0.84%	−1.10%
Austria	2,065	0.37%	−0.54%	0.60%	−0.55%
Belgium	3,650	0.34%	−0.47%	0.42%	−0.38%
Denmark	3,765	0.30%	−0.36%	0.77%	−0.98%
Finland	8,994	0.74%	−0.77%	0.91%	−1.08%
France	26,134	0.26%	−0.32%	0.64%	−0.49%
Germany	18,419	0.39%	−0.52%	0.54%	−0.75%
Hong Kong	15,135	0.58%	−0.51%	0.88%	−0.38%
Italy	8,163	0.57%	−0.68%	0.30%	−0.60%
Japan	14,099	0.22%	−0.38%	0.79%	−0.55%
Netherlands	6,759	0.37%	−0.49%	0.53%	−0.47%
Spain	7,023	0.45%	−0.52%	0.28%	−0.14%
Sweden	9,286	0.52%	−0.62%	0.77%	−0.80%
Switzerland	10,363	0.20%	−0.27%	0.60%	−0.48%
United Kingdom	27,887	0.23%	−0.40%	0.77%	−0.48%
United States	37,691	0.38%	−0.55%	0.27%	−0.36%
Average		0.41%	−0.52%	0.62%	−0.60%

Panel B: Price reaction regressions

		Model (1)			**Model (2)**		**Model (3)**	
	Pred. sign	**Estimate**	**Std. Estimate**	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
Δ*FEPS*	+	0.236	0.081	0.000	0.267	0.000	0.256	0.000
Δ*FDPS*	+	0.249	0.052	0.000	0.277	0.000	0.230	0.000
Δ*FEPS* × Δ*FDPS*	+				3.093	0.000	2.224	0.000
Δ*FCFPS*	+	0.080	0.027	0.000	0.080	0.000	0.060	0.000
Upgrade	+	0.011	0.044	0.000	0.011	0.000	0.010	0.000
Downgrade	−	−0.015	−0.065	0.000	−0.015	0.000	−0.015	0.000
Δ*TP*	+	0.058	0.137	0.000	0.057	0.000	0.048	0.000
Δ*TP*×Δ*FDPS*	−				−0.161	0.038	−0.244	0.000
Controls		Yes			Yes		Yes	
Firm effect		No			No		Yes	
Industry effect		Yes			Yes		No	
Year effect		Yes			Yes		Yes	
N		136,346			136,346		136,346	
p(F)		0.000			0.000		0.000	
R^2		5.55%			5.55%			

Panel A reports average 3−day cumulative abnormal returns (***CAR***) centered on dividend forecast revision dates for positive (***ΔFDPS*≥0**) and negative (***ΔFDPS<0***) revisions. The ***ΔFDPS*** column reports the magnitude of positive and negative dividend forecast revisions. Panel B reports estimates from Eq. (2), where we regress *CAR* on Δ*FDPS*, earnings forecast revisions, Δ*FEPS*, an interaction Δ*FEPS* × Δ*FDPS*, two dummy variables for directional recommendation revisions, *Upgrade*, and *Downgrade*, target price revisions, Δ*TP*, and an interaction Δ*TP*×Δ*FDPS*. Models (1) and (2) include industry and year fixed effects. Model (3) includes firm fixed effects. The **Std. Estimate** column reports standardized estimates for a one-standard deviation increase in each regressor. Standard errors are analyst- and industry-clustered.

TABLE 7
Price reactions to joint earnings and dividend announcements

	Model (1)			Model (2)		Model (3)		Model (4)		Model (5)		Model (6)	
	Estimate	**Std. Estimate**	**p-val.**	**Estimate**	**p-val.**	**Estimate**	**p-val.**	**Estimate**	**p-val.**	**Estimate**	**p-val.**	**Estimate**	**p-val.**
Panel A: Regression results													
UE	0.098	0.061	0.000	0.112	0.000	0.117	0.000	0.113	0.000	0.122	0.000	0.069	0.001
UD	0.465	0.073	0.000	0.489	0.000			0.508	0.000	0.545	0.000		
UE×UD				1.819	0.000			1.700	0.003	2.234	0.000		
UCF	0.028	0.032	0.000	0.026	0.000	0.033	0.000	0.030	0.000	0.023	0.009	0.023	0.014
UE×UCF				−0.082	0.362	−0.027	0.812	−0.028	0.800	0.011	0.922	−0.027	0.840
ΔDiv						0.024	0.075	0.015	0.352	0.031	0.284	0.036	0.129
$UE^{+}UD^{+}$												0.006	0.000
$UE^{+}UD^{-}$												0.000	0.916
$UE^{-}UD^{+}$												−0.004	0.015
$UE^{-}UD^{-}$												−0.013	0.000
Controls	Yes			Yes		Yes		Yes		Yes		Yes	
Firm fixed effects	No			No		No		No		Yes		Yes	
Industry fixed effects	Yes			Yes		Yes		Yes		No		No	
Year fixed effects	Yes			Yes		Yes		Yes		Yes		Yes	
N	20,004			20,004		17,352		17,352		17,352		17,352	
p(F)	0.000			0.000		0.000		0.000		0.000		0.000	
R^2	1.87%			1.94%		1.32%		1.92%					

(*continued on the next page*)

TABLE 7 (continued)

Panel B: Differences between coefficients	
Hypothesis: $UE^{+}UD^{+} > UE^{+}UD^{-}$	
F-test	15.820
p-value	0.000
Hypothesis: $UE^{-}UD^{-} < UE^{-}UD^{+}$	
F-test	33.740
p-value	0.000

Panel A reports results for Eq. (3) that relate three−day cumulative abnormal returns around joint preliminary earnings and dividend announcements to earnings and dividend surprises. *UE* is the earnings surprise, *UD* is the dividend surprise, and *UCF* is the cash flow surprise. *ΔDiv* is the price−scaled difference between the current and previous fiscal year dividend per share. $UE^{+}UD^{+}$ is a dummy variable that takes a value of one if the firm beats both analyst earnings and dividend expectations, and is zero otherwise. $UE^{+}UD^{-}$ is a dummy variable that takes a value of one if the firm beats earnings expectations, but does not beat analyst dividend expectations, and is zero otherwise. $UE^{-}UD^{+}$ is a dummy variable that takes a value of one if the firm does not beat earnings expectations, but beats analyst dividend expectations, and is zero otherwise. $UE^{-}UD^{-}$ is a dummy variable that takes a value of one if the firm fails to beat both analyst earnings and dividend expectations, and is zero otherwise. We include Controls from Eq. (1) and industry and year fixed effects. We multiply the coefficient on *ΔDiv* by 100 and omit reporting the intercept. **Std. Estimate** (for Model (1) only) reports standardized estimates for a one-standard deviation increase in a regressor. Standard errors are firm-clustered and year dummies account for residual correlation across years (time-series dependence) and across firms in a given year (cross-sectional dependence). Industry dummies control for within-industry correlations. Firm effect captures firm fixed effects. Panel B reports the F−tests for differences in coefficient estimates for hypotheses $UE^{+}UD^{+} > UE^{+}UD^{-}$ and $UE^{-}UD^{-} < UE^{-}UD^{+}$.

TABLE 8
Dividend surprises and future growth in earnings

Panel A: Regression estimates

	Model (1)			Model (2)		
	Estimate	**Std. Estimate**	**p-value**	**Estimate**	**Std. Estimate**	**p-value**
$UE^{+}UD^{+}$	0.145	0.035	0.032	0.162	0.068	0.014
$UE^{+}UD^{-}$	−0.195	−0.037	0.013	−0.183	−0.064	0.014
$UE^{-}UD^{+}$	0.092	0.019	0.208	0.114	0.041	0.112
$UE^{-}UD^{-}$	−0.177	−0.037	0.024	−0.151	−0.057	0.039
UE^{+} *Naïve* $UD1^{+}$	−0.029	−0.008	0.820	−0.005	−0.002	0.971
UE^{+} *Naïve* $UD1^{-}$	0.053	0.011	0.691	0.071	0.029	0.586
UE^{-}*Naïve* $UD1^{+}$	−0.183	−0.046	0.151	−0.168	−0.071	0.175
UE^{-}*Naïve* $UD1^{-}$	−0.138	−0.028	0.293	−0.133	−0.058	0.307
UCF	0.023	0.076	0.000	0.023	0.145	0.000
Controls	Yes				Yes	
Firm effect	No				Yes	
Industry effect	Yes				No	
Year effect	Yes				Yes	
N	10,331				10,331	
$p(Chi^2)$	0.000				0.000	
Pseudo R^2	8.31%					

Panel B: Differences between coefficients

		Model (1)	Model (2)
Hypothesis: $UE^{+}UD^{+} > UE^{+}UD^{-}$	Chi^2-test	23.270	25.200
	$p-value$	0.000	0.000
Hypothesis: $UE^{-}UD^{-} < UE^{-}UD^{+}$	Chi^2-test	12.740	13.630
	$p-value$	0.000	0.000
Hypothesis: UE^{+} *Naïve* $UD1^{+} > UE^{+}$ *Naïve* $UD1^{-}$	Chi^2-test	1.550	1.270
	$p-value$	0.214	0.260
Hypothesis: UE^{-} *Naïve* $UD1^{-} < UE^{-}$ *Naïve* $UD1^{+}$	Chi^2-test	0.420	0.260
	$p-value$	0.516	0.609

Panel A reports results for Eq. (4), which examines the likelihood of future earnings growth conditional on the sign of earnings and dividend surprises in the current period. $UE^{+}UD^{+}$, $UE^{+}UD^{-}$, $UE^{-}UD^{+}$, $UE^{-}UD^{-}$ are indicator variables for combinations of earnings surprises and dividend surprises. UE^{+} *Naïve* $UD1^{+}$, UE^{+} *Naïve* $UD1^{-}$, UE^{-} *Naïve* $UD1^{+}$, UE^{-} *Naïve* $UD1^{-}$ are indicator variables for combinations of earnings surprises and dividend changes. *UCF* is the cash flow surprise. We include controls from Eq. (1) and industry and year fixed effects. The **Std. Estimate** column reports standardized estimates for a one-standard deviation increase in a regressor. Standard errors are firm-clustered and year dummies account for residual correlation across years (time-series dependence) and across firms in a given year (cross-sectional dependence). Industry dummies control for within-industry correlations. Firm effect captures firm fixed effects. Panel B reports Chi^2−tests for the differences in coefficient estimates for the indicator variables from Panel A.

TABLE 9
Dividend forecast revisions and changes in institutional holdings

		ΔIO			Δ#investors			Δ% pension funds		
	Pred sign	Estimate	Std. Estimate	p-value	Estimate	Std. Estimate	p-value	Estimate	Std. Estimate	p-value
$\Delta FDPS_Q$	+	0.073	0.023	0.000	0.939	0.032	0.000	0.062	0.011	0.069
$\Delta FEPS_Q$	+	0.037	0.021	0.002	0.783	0.048	0.000	−0.010	−0.003	0.538
$\Delta FCFPS_Q$	+	0.005	0.002	0.631	0.215	0.011	0.031	−0.019	−0.005	0.302
ΔTP_Q	+	0.008	0.019	0.000	0.122	0.032	0.000	−0.001	−0.002	0.672
$Upgrade_Q$	+	−0.001	−0.003	0.566	−0.007	−0.002	0.593	0.003	0.004	0.538
$Downgrade_Q$	−	0.002	0.006	0.117	0.011	0.003	0.399	−0.007	−0.010	0.032
ΔDiv_{Q+1}	+	0.060	0.046	0.000	0.220	0.017	0.221	0.033	0.014	0.171
$\Delta Div_{Q+1} \mid \Delta FDPS_Q$	−	−0.059	−0.045	0.000	−0.219	−0.017	0.222	−0.031	−0.013	0.170
Controls		Yes			Yes			Yes		
Firm fixed effects		No			No			No		
Year fixed effects		Yes			Yes			Yes		
Industry fixed effects		Yes			Yes			Yes		
N		48,786			48,786			48,786		
p(F)		0.000			0.000			0.000		
R^2		4.00%			14.30%			2.77%		

This table reports estimates for Eq. (5), which relates changes in the next quarter institutional holdings, **ΔIO**, to mean quarterly changes in analyst dividend forecasts, $\Delta FDPS_Q$, measured in the current quarter. We also report estimates where the dependent variable in Eq. (5) are changes in the number of institutional investors, **Δ#investors**, and changes in percentage institutional ownership by pension funds and endowments, **Δ% pension funds**. $\Delta FEPS_Q$ are quarterly changes in analyst earnings forecasts, $\Delta FCFPS_Q$ the quarterly changes in analyst cash flow forecasts, ΔTP_Q changes in quarterly target prices, $Upgrade_Q$ and $Downgrade_Q$ are quarterly consensus stock recommendation upgrades and downgrades. ΔDiv_{Q+1} is the price−scaled difference between quarter q+1 announced dividend per share and previous fiscal year dividend per share; ΔDiv_{Q+1} is set to zero for non-announcement quarters. $\Delta Div_{Q+1} \mid \Delta FDPS_Q$ is the ΔDiv_{Q+1} conditional on analyst dividend forecast revisions in the previous quarter. The **Std. Estimate** column reports standardized estimates for a one-standard deviation increase in a regressor. We include firm controls and industry and year fixed effects from Eq. (1) and omit reporting the intercept. Standard errors are firm-clustered and year dummies account for residual correlation across years (time-series dependence) and across firms in a given year (cross-sectional dependence). Industry dummies control for within-industry correlations. Firm effect captures firm fixed effects.