Analyst Dividend Forecasts and Their Usefulness to Investors: International Evidence*

PAWEL BILINSKI and MARK BRADSHAW

ABSTRACT

We examine firms from 16 countries spanning 2000–2013 and find that only 25% of firms exhibit sticky dividends, while the majority either increase (54%) or decrease (21%) their annual dividends. This high variability in dividend payments increases investor demand for dividend information. Accordingly, analysts respond to this demand by producing informative dividend forecasts. Analysts' dividend estimates are useful to investors because they (i) are more accurate and better aligned with market dividend expectations than standard time-series modelling approaches, (ii) convey incremental information beyond that contained in other fundamentals, and (iii) help investors interpret the persistence of earnings news.

*Pawel Bilinski is from Cass Business School, City University London. Mark Bradshaw is from Boston College.
We appreciate helpful comments from Vishal Baloria, Daniel Bens, Lawrence Brown, Michael Clement, Gerard Hoberg, Rick Johnston, Kai Li, Siva Nathan, James Ohlson, Scott Richardson, Joshua Ronen, Tjomme Rusticus, and Benjamin Whipple, and seminar participants at the 25th Annual Conference on Financial Economics and Accounting at Georgia State University and the 2015 FARS midyear meeting.

Disclosure Statement

Pawel Bilinski has not received financial support for the research presented in this study. There are no conflicts of interest arising from this research.

Disclosure Statement

Mark Bradshaw has not received financial support for the research presented in this study. There are no conflicts of interest arising from this research.

Lintner's (1956) conclusion that firms infrequently change their dividends has framed academic thinking for over half a century (Fama and French (2001)). For example, Hoberg and Prabhala (2009, p. 79) argue that 'the disappearing dividends phenomenon is a striking empirical regularity that demands explanation.' Baker et al. (2012) survey Canadian firms on why they *do not* pay dividends, building on the evidence in Denis and Osobov (2008) that the proportion of Canadian dividend-paying firms declined from 74.3% in 1988 to 19.9% in 2001. Contrary to the prevailing assumption that dividends are declining in importance or are sufficiently sticky that extrapolative expectations are sufficient, the frequency and magnitude of dividends is increasing, especially non-US firms. For example, Floyd et al. (2014) report that 59.1% of US dividend payers increased their annual dividend over the period 2000–2012. Further, in 2012, a record 81% of S&P 500 firms paid dividends and 68% increased their dividends over the prior year (Factset Dividend Quarterly (2013)). Similarly, Vieira (2011) reports that 66% of French firms and 81% of UK firms increased dividends each year over the period 1994–2004. Dividend reductions are also evident, especially around the recent financial crisis.[1] In this study, we argue that the increasing importance of and variability in dividend payments reduces investor reliance on simple extrapolative dividend estimates and increases investor demand for explicit dividend forecasts. This prediction contrasts with the 'sticky' dividends view.

Investors demand dividend information because future dividends bear directly on expected portfolio returns. For some long-term investors, like public and corporate pension funds, dividend paying stocks are preferred because these investors are either fully or largely exempt from dividend income taxes (Allen et al. (2000), Del Guercio (1996), Gompers and Metrick (2001)).[2] For example, Dimson et al. (2008) find that the dividend yield accounted for 90% of the real return from global equities over the period 1900–2005. Further, standard option pricing reveals that dividend estimates are crucial for derivative traders because dividends affect settlement prices. Dividend estimates are essential for brokers' securities lending desks as the

[1] In addition to firms altering their dividend payouts, an increasing number of firms *initiate* dividend payments. For example, Floyd et al. (2014) report that the proportion of dividend payers among US industrial firms almost doubles between 2001 and 2011.

[2] Harris et al. (2015) highlight an increasing investor demand for dividend income. They report that some mutual funds are willing to pay a premium to purchase stocks before dividend payments to artificially increase their dividends and that investors reward these funds with higher net inflows. Consistent with the increasing importance of dividends in the US, *The Wall Street Journal* reports that net inflows into mutual funds and exchange-traded funds focused on dividend paying stocks amounted to $9 billion in 2012. Over the same period, there was a net outflow of $7.3 billion for all other US stock funds (*The Wall Street Journal*, April 7, 2012).

rebate rates for lending shares, which reflect the commission for lending shares, includes a fee for foregone dividend payments. This relation reflects the intensity of dividend arbitrage—a practice where investors subject to withholding taxes on dividends lend shares to tax-exempt investors to reduce their own tax burden. Around $100 billion in European shares, close to 75% of all European equity lending, are lent as part of dividend arbitrage (Mathiason (2011)).

Because of the importance of dividends, we expect significant investor demand for analyst dividend forecasts if these forecasts are more useful to investors than alternate sources of such expectations. Moreover, given the integral nature of dividends in the evaluation of earnings persistence and firm valuation, accurate dividend expectations should be informative to investors beyond their stand-alone expectations value. In this study, we examine (i) the frequency with which analysts forecast dividends for a large set of global firms, (ii) the accuracy of analyst dividend forecasts relative to standard time-series estimates, (iii) whether investors rely on analyst dividend forecasts (rather than alternative time-series estimates) when forming expectations of future dividends, (iv) whether dividend forecasts convey new information to the market, and (v) whether investors use dividend forecasts to interpret persistence of earnings news.

To examine how analysts respond to investor demand for dividend forecasts, we collect a sample of I/B/E/S dividend estimates over the fiscal years 2000–2013 for the US, twelve European countries, Australia, and two Asian countries. We document that, on average, analysts provide dividend forecasts for 87.9% of all dividend-issuing firms, with an average of 14 dividend forecasts per firm-year. Interestingly, for US firms, dividend forecasts on I/B/E/S are largely unavailable before 2001, but the proportion of dividend payers with at least one dividend forecast in a fiscal year increases from 3% in 2001 to 96% in 2013.[3] The proportion of dividend forecasts for European and Australasian dividend payers increases from, respectively, 81% and 44% in 2000 to 89% and 84% in 2013. The upward trend in availability of dividend estimates provides *de facto* evidence of a significant investor demand for analyst dividend estimates.

[3] The evidence for an increasing availability of dividend forecasts for US firms confirms the prediction that analysts produce dividend forecasts in response to investor demand for these forecasts, confirmed through our discussions with the I/B/E/S support team. Further, Julio and Ikenberry (2004), Floyd et al. (2014) and Factset Dividend Quarterly (2013) highlight that the increasing trend in the number of dividend payers in the US started in 2001. Finally, the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA 2003) reduced the tax rate on dividends to 15%, increasing the advantage of dividends over share repurchases as a way of distribution excess cash to shareholders (Chetty and Saez (2005), Brown et al. (2007), Brav et al. (2008)).

To examine our predictions for why investors demand analyst dividend estimates, the first part of the study documents the variability of dividend policies across our sample countries. We document that on, average, 54% of firms in our sample increase their annual dividend compared to the previous year, 21% reduce the dividend and only 25% maintain the dividend compared to the previous year. The dividend payout ratio increases for 49% of firms and remains constant in only 9% of cases. In the US, 62% of firms increased and 11% reduced their dividend compared to the previous year during our sample period. As analysts may be better at predicting *changes* in dividend payments, their forecasts *should* be more accurate, and as a result, more useful to investors than extrapolative dividend estimates.

Consistent with this prediction, we find that analyst dividend forecasts are statistically and economically more accurate compared to five time-series dividend forecasts based on time-series models, particularly in countries with more variable dividend policies. To illustrate, (i) analyst dividend forecasts are on average 45.8% more accurate than martingale estimates—the most commonly used time-series dividend forecast, and (ii) the average difference in accuracy of analyst vs. martingale estimates increases 4.6 times in magnitude as we move from the bottom to the top quartile of countries split by the frequency of changes in dividend payments. Further, we show that only analyst dividend forecasts, not time-series forecasts, capture market dividend expectations. In other words, investors use analyst dividend forecasts to build expectations of future dividends, which confirms that investors' dividend expectations align with those of analysts. These results are consistent with investors demanding analyst dividend forecasts because they are more accurate than estimates based on public data that are unable to capture variability of dividend policies.

Analysts could produce more accurate estimates compared to time-series models because they have other sources of dividend information, such as management dividend guidance, or dividend forecasting skill. If analysts follow public guidance, all dividend forecasts would exhibit similar accuracy. However, if some analysts have dividend forecasting skill, they will produce differentially more accurate dividend estimates, which is what we find. Overall, the first part of our analysis demonstrates that variability in dividend payments across stocks increases investor demand for dividend information, and analysts respond to this demand by routinely producing dividend forecasts that are more accurate and better capture market dividend expectations than extrapolative dividend estimates, which reflects analysts' dividend forecasting skill.

After highlighting the differential accuracy of analysts' dividend forecasts, the main part of the study examines whether dividend forecasts convey valuable new information. Accurate dividend forecasts are irrelevant unless they convey new information to investors. First, we show that dividend forecast announcements have a significant price impact, even after controlling for contemporaneous announcements of earnings forecasts, stock recommendations and target prices. A one standard deviation revision in a dividend forecast is associated with a 65.7% increase in the price response around the forecast announcement, which is both statistically and economically significant.

Additionally, a primary argument for the importance of dividends is their signaling value for management's confidence in future earnings and cash flows (Miller and Rock (1985)). Dividend signaling models suggest that firms increase dividends when they expect higher future earnings (Bhattacharya (1979), John and Williams (1985), Ofer and Thakor (1987)). Thus, positive earnings surprises that are also accompanied by positive dividend surprises should indicate more sustainable earnings than positive earnings *without* reinforcing dividend news.[4] Consistent with the prediction, we document that investors react more positively when firms report both positive earnings and dividend news compared to cases when firms beat earnings, but not dividend expectations. Further, for negative earnings surprises, a firm beating dividend expectations sends a more positive signal to the market than if the negative earnings surprise is reinforced by a negative dividend surprise. To corroborate the signaling value of dividend news, we also document that, conditional on the sign of earnings news, firms that beat dividend expectations in the current period are incrementally more likely to report earnings growth and positive earnings surprises next period. Together, these results suggest that another reason why dividend forecasts are important to investors is because they help investors interpret the persistence of earnings news.[5]

---

[4] Dividend surprises are useful in assessing sustainability of earnings surprises because dividend announcements almost always coincide with preliminary earnings announcements (99% of cases in our sample).

[5] Our results confirm anecdotal evidence that the media highlights dividend surprises when interpreting earnings news. To illustrate, London's *Evening Standard Friday Close Market Report* stated that '[S]tunning first-time results from Catlin propelled the insurer up 17p to 370p. Beating earnings and dividends expectations means the group, which floated last April, can expect a raft of analyst upgrades.' (http://www.standard.co.uk/news/market-report-friday-close-7172125.html). Similarly, the *Financial Times* article – "Hordes of Hoarders" - highlights that '[N]ow,

The results of our study should be of interest to investors, managers and academics. First, the results are important to dividend-oriented investors, who can improve their portfolio allocation decisions by relying on readily available analyst estimates, rather than constructing their own dividend estimates. Such investors include individual and institutional investors seeking dividend income, but also funds specialized in dividend capture strategies such as rotating 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 accuracy of dividend forecasts is important for settlement prices.[6] For example, Brown et al. (2008) highlight that the world's largest derivatives exchange, Eurex, integrated dividend forecasts from the research firm Markit Equities into the calculation of settlement prices to enhance determination of settlement prices.

Our study joins a growing stream of literature challenging the common perception in the accounting and finance literature that dividends are sticky and declining in importance. In contrast to this assumption, we document that only 25% of firms maintained their annual dividend in a sample of 16 countries over the period 2000–2013. High variability of dividend payments helps explain investor demand for analyst dividend forecasts. Our paper also fills an important gap in the literature on the accuracy and signaling value of individual analyst dividend forecasts. We are the first to show that (i) individual analyst dividend forecasts are more accurate and better approximate market dividend expectations than dividend estimates based on pay-out adjusted earnings or other extrapolative forecasts, (ii) analysts have a marked skill to produce accurate dividend forecasts, (iii) dividend forecasts convey incremental information beyond that of earnings estimates, target price and stock recommendations, and (iv) analyst dividend forecasts help investors interpret earnings news. Our evidence is particularly important considering the increasing investor demand for dividend income (Harris et al. (2015)) and variability in dividend payouts (Vieira (2011), Floyd et al. (2014)).

---

companies that disappoint dividend expectations are punished. […] Unlike earnings, which are subject to accounting tricks, a dividend cheque is solid. And investors no longer trust managements to invest surplus cash wisely, preferring 'dividend discipline.' (http://www.ft.com/cms/s/0/4cd6cb8c-48e0-11e1-974a-00144feabdc0.html). Further, early research on dividends also discusses the corroborative effect of dividend and earnings expectations (e.g., Aharony and Swary (1980), Kane et al. (1984), Easton (1991)).

[6] Black-Scholes options valuations can handle constant dividend yields, but more complex adjustments or the use of the binomial options pricing model are required for variable discrete dividend forecasts.

Our focus on individual analyst dividend forecasts provides direct insights on their information content and usefulness to investors, and comparative accuracy relative to common time-series dividend forecasts. The most related study to ours is Brown et al. (2002), who examine the accuracy of consensus dividend forecasts compared to consensus earnings estimates for 100 Australian firms over 1985–1998. They document that compared to contemporaneous consensus earnings forecasts, consensus dividend forecasts are more accurate and less biased and that accuracy of consensus dividend forecasts improves with the amount of information available to investors. Similarly, Brown et al. (2008) examine the link between the accuracy of analyst consensus dividend and consensus earnings forecasts in a sample of 39 countries over the period 1995–2004. They document that correlations between the accuracy of consensus earnings and dividend forecasts vary across countries depending on the level of dividend smoothing, origin of the legal system and capital market development. Compared to Brown et al. (2002, 2008), we do not focus on a comparison of earnings and dividend forecast accuracy, because forecasting dividends is demonstrably less difficult. Rather, our analysis examines an extensive sample to explain more recent trends in dividend payout policies. Our analysis highlights why analysts produce dividend forecasts and documents the superiority of analyst dividend forecasts relative to standard extrapolative dividend models. More importantly, we provide evidence consistent with analysts and investors using analyst dividends as dividend expectations and as basis for determining the persistence of earnings. As a result, dividend forecasts convey incremental information compared to other fundamentals, such as EPS forecasts, target prices and stock recommendations. Together, our evidence explains the usefulness of dividend forecasts to investors, which contrasts with the disappearing dividends view.

Finally, the study contributes to (i) research on the information content of earnings announcements and (ii) research that uses dividend forecasts in estimating the cost of equity capital (Botosan and Plumlee (2002, 2005), Botosan et al. (2011)).[7] For the former, we show that dividend forecasts aid investors in interpreting persistence in earnings news. For the latter, studies that use the dividend discount model to infer the equity cost-of-capital assume, but do not test, that analyst dividend forecasts reflect market expectations and that analyst dividends are superior

[7] Botosan and Plumlee (2005) conclude that cost of equity capital estimates based on dividend forecasts and based on the price-earnings-growth ratio dominate other cost of equity capital estimates.

to dividend estimates based on time-series models (e.g., Brav et al. (2005)). Our study provides evidence in support of both assumptions.

I. DATA

We collect analyst individual annualized dividend forecasts for fiscal years 2000–2013, together with the actual values from I/B/E/S. If actual dividends are missing, we use information from Compustat for US firms and Compustat Global for non-US firms. Actual and forecasted dividends are expressed in the company's default reporting currency assigned by I/B/E/S.[8] We start in 2000 because, as we show next, dividend forecasts for US stocks are not available before that date. Figure 1 plots time trends in the availability of dividend forecasts across firms broadly grouped into US, Australasia and Europe. There are no dividend forecasts reported on I/B/E/S for US dividend-paying stocks before fiscal year 2001, and the proportion of US firms with dividend forecasts increases from 3% in year 2001 to over 96% in 2013.[9] The proportion of firms with dividend forecasts for European (Australasian) dividend payers increases from 81% (44%) in 2000 to 89% (84%) in 2013. In unreported results, we find no evidence that dividend estimates cluster in any quarter of the fiscal year.

[Insert Figure 1 around here]

We collect share price information from CRSP for US firms and Compustat Global Security Daily file for international firms. We use share price information to scale forecast errors when comparing accuracy of analyst and time-series dividend forecasts. We exclude firms where the default reporting currency is different from the currency in which the stock trades to ensure our comparisons, e.g. of forecasts accuracy across countries, are on a consistent basis. Our final sample includes 651,796 dividend forecasts for 12,135 firms issued by 19,427 analysts employed by 890 brokers.

[8] The I/B/E/S detail history user guide specifies that all detailed estimates on I/B/E/S are provided in the default currency I/B/E/S allocates to each firm. This is usually the company's reporting currency. All estimates received in a currency other than the default currency are converted to the default company currency using the exchange rate of the estimate's activation date.

[9] Unavailability of analyst dividend forecasts in the US before 2001 can explain why these forecasts are absent in research studies. To illustrate, Liu et al. (2002) examine performance of multiples in equity valuation. They use the current dividend payout ratio to forecast future dividends and explain that 'analyst forecasts of future dividends are not available on I/B/E/S' (Liu et al. (2002, 147)).

Table 1 presents descriptive statistics for the sample. The average annual proportion of firms paying dividends is 75.5% across sample countries, with the US exhibiting the lowest percentage of dividend payers, 42.7%, and Japan the highest, 91.6%. On average, dividend forecasts are available for 87.9% of all dividend payers with the average number of forecasts per firm-year equal to 14.4. The average number of analysts issuing dividend forecasts is 7. Overall, descriptive statistics in Table 1 document that dividend forecasts are available for a substantial number of dividend issuing firms. As the availability of forecasts on I/B/E/S likely proxies for investor demand for such estimates (DeFond and Hung (2003), Givoly et al. (2009)), the increasing availability of dividend estimates suggests significant investor demand for these estimates.

[Insert Table 1 around here]

II. Empirical results on why analysts produce dividend forecasts

The common assumption in the accounting and finance literature is that dividends are sticky, which would be associated with low demand for analyst dividend forecasts, because investors could easily construct dividend expectations based on recent dividends. To provide evidence on *why* analysts provide dividend estimates, this section first documents the variability of dividend policies across our sample countries. High variability in dividend payments across stocks should increase investor demand for dividend forecasts. Further, if analyst dividend forecasts are more accurate than alternative estimates, investors can improve their portfolio allocation decisions by relying on analysts' forecasts. Thus, we compare the accuracy of analyst dividend forecasts to the accuracy of dividend estimates from common extrapolative time-series models. Finally, we also examine if analyst dividend forecasts better capture investor dividend expectations than time-series estimates by relating unexpected dividends proxied by dividend forecast errors to stock returns.

We first provide distributional evidence on annual changes in dividend-per-share and the payout ratio. Figure 2a reports the proportion of firms (i) increasing or reducing dividends compared to the prior year and (ii) maintaining the same dividend as in the previous year. Across sample countries, an average of 54% of firms increase dividends, 21% reduce dividends and 25%

maintain dividends compared to the prior year.[10] In the US, 62% of firms increase dividends compared to the prior year and 11% of firms reduce their dividends. Figure 2a is consistent with past studies, such as Vieira (2011), who reports that 66% of French firms and 81% of UK firms increased dividends each year over the period 1994–2004.

Figure 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, and the trends are similar to those in Figure 2a. The dividend payout ratio increases for 49% of firms and remains constant for only 9% of firm-years. Overall, Figure 2 suggests that dividends are not sticky, especially in recent years, which should increase investor demand for explicit dividend forecasts.

[Insert Figure 2 around here]

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

High variability in dividend payments across stocks increases investor demand for dividend information, and analysts respond to this demand by producing dividend forecasts. As analysts should be better at predicting changes in dividend payments, their forecasts should be more accurate compared to estimates from other sources, a proposition we test next. To compare the accuracy of analyst dividend forecasts to that of common time-series dividend estimates, we first calculate the dividend forecast error, *FDPS error*, which is the absolute difference between the actual dividend, *ActualDPS*, and the forecasted dividend, *FDPS*, which we scale by the stock price at the end of the previous fiscal year, *P*:

$$FDPS\,error = \frac{|ActualDPS - FDPS|}{P}. \tag{1}$$

This construct is analogous to standard measure of EPS forecast accuracy (Das et al. (1998), Hope (2003), Richardson et al. (2004)).

[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), which means that our results are not due to a denominator effect. If an I/B/E/S dividend is missing, we use Compustat and Compustat Global dividend information and scale dividends 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 Compustat item DVC, which is the total amount of dividends (other than stock dividends) declared on common/ordinary capital. Finally, we observe similar frequencies in dividend increases before and after the financial crisis, but the number of dividend reductions increases during the financial crisis.

Table 2 reports the average (unsigned) error of analyst dividend forecasts for the pooled sample and for individual countries. The mean dividend forecast error is 0.76% (of share price) and varies considerably across countries. Analysts in Japan and the US exhibit the lowest error (0.19% and 0.45%, respectively); analysts in Finland and Australia produce the least accurate dividend forecasts (forecast error of 1.25% and 1.21%, respectively). As a complementary test, the last columns of Table 2 report dividend forecast bias (i.e., signed error). Compared to the significant bias in analyst EPS forecasts (Francis and Philbrick (1993), Das et al. (1998), Bartov et al. (2002), Richardson et al. (2004)), we find little evidence of optimism in analyst dividend forecasts; the average bias is small and in five countries, including the US, average dividend forecasts are actually pessimistic. This suggests that analysts are unlikely strategically biasing dividend forecasts, e.g. to cater favors with the management, which would compromise accuracy of their forecasts.

In unreported results, we compare the average error and bias of analyst dividend forecasts to that of the contemporaneously issued EPS estimates.[11] The mean dividend forecast error is 63% lower compared to the mean EPS forecast error of 2.06%, and mean dividend forecast bias is 89% smaller compared to the mean EPS forecast bias of −0.60%. Further, the correlation coefficient between errors in analyst dividend and earnings forecasts is 0.35, which suggests that dividend forecasts are unlikely to merely reflect payout-ratio-adjusted EPS forecasts.

[Insert Table 2 around here]

Next, we compare the accuracy of analysts' dividend forecasts to the accuracy of mechanical dividend estimates based on common time-series approaches. If analyst dividend forecasts reflect simple transformations of historic data, we should find no significant differences between the accuracy of analyst forecasts and that of time-series estimates, but we expect to find that analysts respond to demand for dividends by providing more accurate forecasts.

We use five time-series dividend forecasts that are common in the literature (Shevlin (1982), Yoon and Starks (1995), Liu et al. (2002), Botosan and Plumlee (2005)). First, we consider a martingale dividend forecast where the next year dividend equals the past dividend (*Naïve DPS 1*). Second, we forecast the dividend as the product of the mean payout ratio

[11] Although it is reasonable to presume that dividend forecasts are, on average, more accurate than EPS estimates due to the higher variability of EPS, this test provides a useful benchmark of (i) the extent to which dividend forecasts are more accurate than EPS estimates and (ii) how the relative accuracy of dividend vs. EPS estimates varies across countries.

calculated over the previous seven years and net income for the previous fiscal year (*Naïve DPS 2*).[12] Third, as in Brown et al. (2008), we use the Lintner's partial-adjustment model to forecast future dividends. Lintner (1956) models next period dividend as a function of past dividend, d_{t-1}, and the rate of adjustment of dividends to the target dividend level, $c\left(d^T - d_{t-1}\right)$, where c is the rate of adjustment coefficient that meets the condition $0<c\leq 1$, and d^T is the target dividend. The dividend forecast model has the form,

$$d_t = d_{t-1} + c\left(d^T - d_{t-1}\right) + \nu_t \tag{2}$$

where ν_t is the error term. The target dividend $\left(d^T\right)$ depends on the target dividend payout ratio, k^T, and current earnings, e_t, i.e. $d^T = k^T * e_t$, where $0< k^T \leq 1$. Including the target dividend ratio in equation (2) and expressing it in terms of changes yields the estimable model[13]:

$$\Delta d_t = -cd_{t-1} + \gamma e_t + \varepsilon_t \tag{3}$$

where $\gamma = ck^T$, and ε_t is the new error term. We estimate model (3) for each firm using data from the preceding seven years. The third time-series dividend forecast is the product of the target payout ratio estimated from the coefficients in equation (3), $k^T = \hat{\gamma} / \hat{c}$, and net income for the previous fiscal year (*Naïve DPS 3*). The fourth dividend forecast is the product of the target payout ratio estimated from equation (3) and the analyst EPS forecast (*Naïve DPS 4*). The fifth time-series forecast is the predicted dividend from the Lintner model, which equals the past dividend plus the predicted dividend change from equation (3), $d_t = d_{t-1} - \hat{c}d_{t-1} + \hat{\gamma}e_t$ (*Naïve DPS 5*).

For each time-series dividend forecast, we calculate the respective forecast error, *Naïve DPS error*, which is the absolute difference between the actual dividend and the time-series dividend forecast scaled by the stock price at the end of the previous fiscal year,

$$Naïve\ DPS\ error = \frac{\left|ActualDPS - Naïve\ DPS\right|}{P}.$$

[12] The minimum number of years we use to calculate the mean payout ratio is four.
[13] Equation (2) is likely to contain a unit root, which would not allow estimation.

Table 3 reports the mean difference between the error in analyst dividend forecasts and the error of time-series dividend forecasts described above, i.e. *FDPS error − Naïve DPS error*. In all instances, analyst dividend forecasts are more accurate than any of the time-series dividend estimates. Martingale forecasts are closest in accuracy to that of analyst estimates with the mean difference in errors equal to −0.75% (of share price). The least accurate are forecasts based on the target payout ratio and net income for the previous fiscal year.[14] In unreported results, we also find that (i) using median differences in forecasts errors, analyst dividend forecasts are more accurate compared to time-series forecasts in each country, (ii) analyst dividend forecasts are more accurate compared to estimates from the five time-series models for subperiods (fiscal years 2000–2005 and 2006–2010) and (iii) analysts produce more accurate dividend estimates for both increases and reductions in dividends per share. Together, the evidence in Table 3 shows that analysts' dividend forecasts are clearly superior to those from time-series models, inconsistent with some evidence on analysts' earnings forecasts (e.g., Bradshaw et al. (2012)).

To provide economic interpretation of Table 3 results, the last column reports the *percentage* difference between mean analyst forecast error, $\overline{FDPS\ error}$, and mean martingale dividend forecast errors, $\overline{Na\ddot{\imath}ve\ DPS\ error\ 1}$, (the time-series forecast closest in accuracy to analyst dividend forecasts), i.e. $\frac{\overline{FDPS\ error}}{\overline{Na\ddot{\imath}ve\ DPS\ error\ 1}} - 1$. The mean percentage difference is 45.8%, consistent with analyst forecasts being significantly more accurate than time-series estimates. The corresponding values for European markets are 44.5%, for the US 57.6%, and for Australasia 46.9%.[15]

[14] Dividend estimates from the Lintner model, *Naïve DPS 5*, are second closest in accuracy to that of analyst estimates. The Lintner model requires an estimate of the firm's target payout ratio and the dividend adjustment rate, which are likely to be estimated with error. Parameter uncertainty can explain why dividend estimates from the Lintner model are not more accurate than martingale forecasts. Shevlin (1982) also finds that the martingale dividend forecasts exhibit lower error compared to the Lintner model in predicting dividends for Australian firms.

[15] Our results in Table 3 may capture instances where firms stop 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 the five time-series dividend estimates for firms with continuous dividend payments over the past ten years. Moreover, we find that analysts' dividend forecasts issued in the first quarter of the fiscal year are more accurate than any of the five time-series estimates. This result suggests that conclusions in Table 3 are not driven by more accurate forecasts issued close to the fiscal year-end. Finally, it is unlikely that Table 3 results are due to dividend guidance, because dividend guidance is extremely rare. For example, assuming dividend guidance is captured well on I/B/E/S, less than ten firms per year provided dividend guidance in the UK and Japan over the period 2006–2013 (the period during which dividend guidance is available on

[Insert Table 3 around here]

Figure 2 indicates that dividends are not sticky when examined over a recent sample period, and Table 3 shows that analyst dividend forecasts are more accurate than estimates from time-series models. Next, we link the two analyses and examine the difference in errors of analyst and martingale dividend estimates when sorting countries by the frequency of changes in dividend payments (i.e. the frequency of increases or reductions in annual dividends). Splitting the 16 countries into quartiles, the average difference in accuracy of analyst vs. martingale estimates increases 4.6 times in magnitude as we move from the bottom quartile (−0.3%) to the top quartile (−1.41%) of changes in dividend payments (results untabulated). Further, there is a significant negative correlation of −0.52 between the proportion of firms altering dividends in a country and the difference in errors of analyst vs. martingale dividend forecasts. Thus, variation in actual dividends across years seems to strongly explain why analyst dividend forecasts are more accurate compared to time-series estimates.

B. Analyst dividend forecasts as a surrogate for market dividend expectations

Previous studies document that analysts' *earnings* forecasts are a better surrogate for investors' unobservable expectation of earnings than are time-series earnings forecasts (Fried and Givoly (1982), Brown et al. (1987)). We examine a parallel analysis of whether analysts' *dividend* forecasts better approximate unobserved market dividend expectations than time-series dividend estimates. For this test, we relate unexpected dividends (measured as analysts' dividend forecast errors) to long window abnormal returns. The regression controls for unexpected earnings to gauge the incremental association between abnormal returns and unexpected dividends for fiscal year t:

$$CAR\_11 = \delta_0 + \delta_1 FDPS\,error_{Q1} + \delta_2 signed\ Naïve\,DPS\,error + \delta_3 FEPS\,error_{Q1} + \upsilon \quad (4)$$

where *CAR*_11 is the 11-month market-adjusted return calculated starting at the end of the first quarter of the fiscal year t.[16] $FDPS\,error_{Q1} = \frac{ActualDPS - \sum FDPS}{P}$ is the mean signed forecast

I/B/E/S). In continental Europe, Australia and Hong Kong less than four firms per year provide dividend guidance.

[16] By starting with the fourth month after the end of fiscal year t−1, we exclude the effect of the earnings announcement for the previous year. We use 11-month CARs because the average lag between the fiscal year-end

error of analyst dividend estimates available at the end of the first fiscal quarter. To test whether analyst dividend forecasts better capture unobserved market expectations, we also include the unexpected dividend from time-series dividend forecasts,

$signed\ Naïve\ DPS\ error = \frac{ActualDPS - Naïve\ DPS}{P}$. If analyst dividend forecasts are better surrogates for investor dividend expectations than time-series estimates, the coefficient δ_1 should be positive and significant and the coefficient δ_2 should be indistinguishable from zero.

$FEPS\ error_{Q1} = \frac{ActualEPS - \sum FEPS}{P}$ is unexpected earnings for fiscal year t calculated using analyst EPS forecasts available at the end of the first fiscal quarter.

Table 4 reports regression results for equation (4), which measure the incremental information content of analyst dividend forecasts made in the beginning of the year over time-series dividend estimates and earnings estimates. Because unexpected dividends from time-series models are highly correlated, we include them individually in equation (4). The coefficient on $FDPS\ error_{Q1}$ is positive and significant in all models, which indicates that analyst dividend forecasts have incremental information content relative to unexpected earnings. Further, none of the coefficients on unexpected dividends based on time-series dividend forecasts is distinguishable from zero. Results from Table 4 suggest that investors rely on analyst dividend forecasts, not time-series dividend estimates, to form dividend expectations.

[Insert Table 4 around here]

C. Analyst forecasting skill and accuracy of dividend forecasts

The evidence that dividend forecasts are on average more accurate than time-series estimates suggests that either (i) analysts have other sources of dividend information, such as management dividend guidance, and the marginal cost of producing a dividend forecast from the public signal is close to zero or (ii) analysts have expertise to produce dividend forecasts more accurate than time-series forecasts. To distinguish between the two explanations, this section examines within firm-year differences in accuracy of analyst dividend forecasts; more skillful

---

and the earnings announcement is between 37 and 42.5 days over the period 2001–2006 (Krishnan and Yang (2009)). However, the results are qualitatively the same when we use 12-month CARs.

analysts should produce relatively more accurate dividend estimates compared to other analysts following the same firm.

To examine forecasting skill, we relate dividend forecast errors to analyst and broker characteristics. Significant associations suggest that some analysts have skill to improve precision of their dividend estimates compared to the average analyst. To avoid confounding effects affecting our conclusions, we calculate the proportional mean absolute dividend forecast error, *PMDPS error*, which captures the deviations in accuracy of individual dividend forecasts relative to the mean error of all dividend estimates issued for a firm in a year, $\overline{FDPS\ error}$, i.e.:

$$PMDPS\ error = \frac{FDPS\ error - \overline{FDPS\ error}}{\overline{FDPS\ error}}. \tag{5}$$

PMDPS error adjusts for observed and unobserved firm and country characteristics that could affect correlations among dividend forecast errors and analyst and broker characteristics. Lower values of *PMDPS error* suggest that some analysts produce more accurate dividend forecasts compared to the average accuracy of dividend forecasts issued for a firm during a year.

D. Analyst and broker characteristics that predict variation in accuracy of dividend forecasts

To identify which analysts produce more accurate dividend forecasts, we regress *PMDPS error* on a set of analyst and broker characteristics that previous studies associate with analyst forecasting skill. These are defined as in Clement (1999), Clement et al. (2003), Jacob et al. (1999) and Sinha et al. (1997) and include

- Analyst general-, industry-, and firm-specific forecasting experience (*gen exp, ind exp* and *firm exp*, respectively);
- Number of firms an analyst follows, which captures the analyst's workload (*#firms followed*);
- Frequency of dividend and EPS forecasts revisions (*freq rev*);
- Number of analysts employed by a broker (*broker size*), which reflects the amount of resources available to analysts; and
- Forecast horizon (*horizon)*, which is the number of days between the dividend forecast announcement and the respective fiscal year-end.

To avoid the possibility our results capture analysts ability to produce accurate EPS forecasts, we control for EPS forecast error, *FEPS error*. Analysts are likely to factor their EPS forecasts into dividend estimates. Without controlling for *FEPS error*, our results could capture correlations among analyst and broker characteristics and EPS forecast error. All continuous dependent and explanatory variables are winsorized at the 1% level.[17] Additionally, we mean-adjust all independent variables by subtracting their corresponding firm-year means. The regression that examines if analysts have differential ability to issue accurate dividend forecasts is:

$$\begin{aligned} PMDPS\,error = {} & \beta_0 + \beta_1 Dgen\ exp + \beta_2 Dind\ \ exp + \beta_3 Dfirm\,exp + \beta_4 D\#\ firms\ followed \\ & + \beta_5 Dfreq\ rev + \beta_6 Dbroker\ size + \beta_7 Dhorizon + \beta_8 DFEPS\,error + u \end{aligned} \tag{6}$$

where the prefix '*D*' indicates a demeaned value. A positive beta coefficient indicates that a higher value of an analyst or broker characteristic reduces dividend forecast accuracy.

E. Empirical evidence on whether analysts have skill to produce accurate dividend estimates

Panel A of Table 5 reports mean values of analyst, broker, and country characteristics from equation (6) before subtracting corresponding firm-year means. The average analyst in the sample has seven years of general forecasting experience, six years of industry-specific experience, and three years of firm-specific experience. On average analysts follow approximately twelve firms, with analysts in Denmark following the fewest firms, likely a result of a relatively small domestic equity market in Denmark. Analysts in the US and Japan follow the largest number of firms. The average frequency of revisions in analyst EPS and dividend forecasts is 13 days, which is consistent with the weekly data collection process by I/B/E/S.[18] An average broker employs around 91 analysts, and an average dividend forecast is issued close to mid-fiscal year. The mean EPS forecast error is 2.06%, comparable with prior research (Hope

[17] Our conclusions remain qualitatively the same when we use unwinsorized variables. Analyst and broker characteristics are constructed using the I/B/E/S detail dividend and EPS files starting from January 1995, which avoids eliminating observations in the early sample period to construct explanatory variables and produces more reliable measures (Clement (1999)).

[18] I/B/E/S contacts analysts on a weekly basis for forecast updates. Analysts then choose when and what type of forecasts to provide to I/B/E/S. Ertimur et al. (2011) point out that access to I/B/E/S reduces information search and processing costs for investors by providing standardized estimates directly comparable across analysts. I/B/E/S also offers analysts exposure to investors, especially institutional investors. Ertimur et al. also highlight that analyst ranking services such as StarMine use I/B/E/S rate analysts, and analyst rankings matter for analyst career prospects and compensation (Hong et al. (2000). Hong and Kubik (2003), Leone and Wu (2007)).

(2003), Byard et al. (2011), Bilinski et al. (2013)).

[Insert Table 5 around here]

Panel B of Table 5 reports regressions results for equation (6). We find that analysts with higher firm-specific forecasting experience, who revise their forecasts less frequently and produce more accurate EPS forecasts, and who follow a larger number of stocks produce relatively more accurate dividend forecasts. The evidence in Table 5 confirms that (i) some analysts have skill to produce more accurate dividend estimates and (ii) analysts' skill to forecast dividends accurately is not a mechanical extension of earnings forecasts ability. Importantly, because we use a relative accuracy measure, the evidence that some analysts issue more accurate dividend estimates cannot be attributed to management dividend guidance. Simply following management guidance would yield equally accurate dividend forecasts across all analysts following a firm.[19]

III. The usefulness of dividend forecasts to investors

The results presented so far are consistent with investors demanding analyst dividend forecasts because these forecasts are more accurate than estimates based on public data, which perform poorly due to within-firm variability of dividends. However, even the most accurate dividend forecasts may be unimportant to investors if dividend forecasts do not convey valuable new information to the market. To address this concern, we conduct short-window tests to examine whether (i) dividend forecasts have incremental information content compared to other common analyst research outputs and (ii) investors use analyst dividend forecasts in assessing quality of earnings news.

[19] In unreported results, our conclusion that more skilled analysts issue more accurate dividend forecasts is unchanged when (i) we estimate equation (6) using annual Fama MacBeth regressions, (ii) we repeat the analysis from Table 5 after removing dividend forecasts for US stocks, or (iii) we repeat the analysis from Table 5 only for dividend forecasts for US stocks. Because equation (6) uses variables adjusted for firm-year means, standard errors do not need to control for firm or year effects. Consistent with this claim, in unreported results, we find that using standard errors clustered on both analyst and year has no effect on the magnitude of *p*-values. Further, to exclude the possibility that Table 5 results are due to private access to management by some analysts, we estimate equation (6) using a sample of dividend forecasts for US firms issued after the introduction of regulation Fair Disclosure, and for European firms after the implementation of Council Directive 2003/6/EC. The conclusions from this subsample are qualitatively similar to that from Table 5.

A. The information content of analyst dividend forecasts

To test if dividend forecasts have incremental information content, we regress dividend forecast revisions (Δ*FDPS*) on three-day cumulative abnormal return (*CAR*), centered on the dividend forecast announcement date. The regression also includes earnings forecast revisions (Δ*FEPS*) and target price revisions (Δ*TP*). To control for the effect of simultaneous revisions in analyst's stock recommendations, we include two dummy variables for directional recommendation revisions, *Upgrade,* and *Downgrade.*[20] Our model has the form:

$$CAR = \alpha_0 + \alpha_1 \Delta FDPS + \alpha_2 \Delta FEPS + \alpha_3 \Delta TP + \alpha_4 Upgrade + \alpha_5 Downgrade + \xi. \quad (7)$$

We expect the coefficient α_1 to be positive if dividend forecasts have incremental information content. All continuous variables are winsorized at the 1% level. We use the US and international versions of the broker translation file to match broker names between the target price and EPS files.[21]

Panel A of Table 6 reports average *CARs* for dividend forecast announcements across the sample countries split by positive and negative dividend forecast revisions. The mean positive dividend revision is 0.41% of the share price and associates with a positive market reaction of 0.62%. The mean negative dividend revision is −0.52% and associates with a negative price reaction of −0.60%. The results in Panel A provide preliminary evidence that dividend revisions are associated with significant market reactions, consistent with dividend forecasts conveying new information.

[Insert Table 6 around here]

A concern with the returns analysis in Panel A is that the price reaction patterns to positive and negative dividend revisions may simply reflect reactions to other concurrently issued forecasts. To test for an *incremental* price effect of dividend revisions, Panel B of Table 6 reports

---

[20] For US stocks, we use the CRSP value-weighted index as the benchmark to measure abnormal returns when calculating *CAR*. For non-US stocks, we use the main index of the exchange where the firm's stock lists. We scale revisions in analyst dividend, earnings and target prices by the stock price at the end of the previous fiscal year to ensure revisions are comparable across stocks. Similarly to Keung (2010), we assume that analysts reiterate their EPS, target prices and stock recommendations if dividend forecasts are issued without a revision to an EPS, a target price or a stock recommendation. We require that the consecutive forecasts we use to calculate revisions are no more than 300 days apart, which eliminates infrequently revised forecasts. Our final sample includes 227,336 dividend revisions.

[21] The broker translation file is from 2005, which eliminates broker houses covered by I/B/E/S after that date. We lose 9.6% of target price forecasts due to this limitation.

regression results for equation (7). Column 1 reports results for equation (7) when we include only revisions in analyst EPS and dividend forecasts. Controlling for concurrent EPS revisions, we document a significant price reaction to dividend forecast revisions. The significant association between dividend revisions and announcement date returns persists when we control for concurrent recommendation revisions in column 2, and when we use the full specification of equation (7) in column 3. Using the full specification of model (7), we find that a one standard deviation increase in $\Delta FDPS$ leads to a 65.7% higher price change around the forecast announcement (relative to the average price reaction level), a significant economic price impact of dividend forecasts revisions.[22] Together, the results in Table 6 confirm that dividend estimates convey valuable new information to the market.

B. The usefulness of analyst dividend forecasts in assessing earnings surprises

This section examines if investors use analyst dividend forecasts in assessing quality of firm reported earnings, and provides an additional illustration on the usefulness of analyst dividend forecasts to investors. Dividend signaling models (Bhattacharya (1979), John and Williams (1985), Ofer and Thakor (1987), Skinner and Soltes (2011)) suggest that firms increase dividends when they expect higher future earnings. Thus, positive earnings surprises that are accompanied by positive dividend surprises should indicate more sustainable earnings than positive earnings news absent positive dividend news, and vice versa.[23]

In the first step, to enable across-metric comparisons, we recalculate earnings and dividend surprises. Similar to prior research (e.g. Ertimur et al. (2003)), earnings surprise (*SUE*) is the price-scaled difference between the actual EPS and the mean analyst EPS forecast available at the end of the last quarter of a fiscal year. Similarly, a dividend surprise based on analyst forecasts (*SUD*) is calculated as the mean signed forecast error of all analyst dividend estimates

[22] The economic magnitude of the price impact for dividend revisions is calculated as the coefficient estimate*standard deviation of $\Delta FDPS$/mean *CAR*.

[23] The dividend surprise helps interpret the earnings surprise because dividend changes are more persistent than earnings changes (Lintner (1956), Marsh and Merton (1987), Allen et al. (2000), Skinner and Soltes (2011), Caskey and Hanlon (2013)). Ertimur et al. (2003) show that investors attach more weight to more persistent signals about firm earnings, thus positive earnings news accompanied by positive dividend news produces a stronger positive signal of firm value than if the sign of dividend news differs from that of unexpected earnings. Dividend forecasts can be useful in assessing quality of reported earnings because dividend announcements almost always coincide with preliminary earnings announcements (99% of cases in our sample). I/B/E/S actuals files provide dates for dividend and preliminary earnings announcements.

reported in the last quarter of a fiscal year. *SUE* and *SUD* capture the unexpected earnings and dividend news revealed at the joint preliminary earnings and dividend announcements. We then use a regression model to relate dividend and earnings surprises to three-day cumulative abnormal returns centered on the joint preliminary earnings and dividend announcements, *CAR_Earn*:

$$CAR\_Earn = \psi_0 + \psi_1 SUD + \psi_2 SUE + \psi_3 SUD * SUE + \varsigma. \tag{8}$$

Based on predictions of dividend signaling models, we expect a positive coefficient ψ_1 as higher dividend surprises anticipate higher future earnings; the coefficient ψ_3 should be positive if investors use dividends in interpreting earnings news. Consistent with prior research (Ball and Brown (1968), Chari et al. (1988), Easton and Zmijewski (1989), Gennotte and Truemann (1996)), we expect a positive earnings response coefficient ψ_2.

If dividend surprises are on average zero, equation (8) will have low power to detect whether investors use analyst-based dividend surprises to interpret earnings news. However, Figure 3 shows that this concern is not warranted. On average, firms beat analyst dividend forecasts in 42% of cases, which suggests that a significant proportion of firms surprise the market. Only 18% of firms across sample countries exactly meet analysts' dividend forecasts. Thus, dividend surprises can convey useful information in interpreting earnings news.

[Insert Figure 3 around here]

Panel A of Table 7 reports results for equation (8). The coefficient on dividend surprises is positive, and the R^2 doubles when dividend surprises are added to the univariate model that includes only earnings surprises. The economic impact of dividend news is considerable: a one standard deviation increase in *SUD* leads to a 92% higher price change around the preliminary earnings announcements (relative to the average price reaction level). For comparison, a one standard deviation increase in *SUE* leads to an 85% higher price change (relative to the average price reaction level). This result suggests that investors react more strongly to dividend than earnings news, which is consistent with higher persistence of the former. The coefficient on the interaction term is positive, consistent with investors benchmarking reported earnings against analyst-based dividends expectations.[24]

[24] In unreported results, we also include a measure of operating cash flow surprise defined in a similar way to *SUE* in equation (8). We include the cash flow surprise because dividend surprises can proxy for operating cash flow news. The coefficient on the cash flow surprise is not significant, consistent with results in Givoly et al. (2009), who report

[Insert Table 7 around here]

As a more direct test of the prediction that investors react more strongly to positive earnings surprises accompanied by positive dividend surprises than to positive earnings, but not dividend news, we create four indicator variables to capture all combinations of dividend and earnings surprises:

1. $SUE^{+}SUD^{+}$ = 1 if the firm meets or beats both analyst dividend and earnings expectations, and zero otherwise;
2. $SUE^{+}SUD^{-}$ = 1 for positive or zero earnings but not dividend news, and zero otherwise;
3. $SUE^{-}SUD^{-}$ =1 if the firm fails to meet both analyst dividend and earnings expectations, and zero otherwise;
4. $SUE^{-}SUD^{+}$ =1 for negative earnings news accompanied by positive or zero dividend surprises, and zero otherwise.

Dividend signaling is consistent with a higher positive coefficient on $SUE^{+}SUD^{+}$ than on $SUE^{+}SUD^{-}$ 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 or zero dividend surprise ($SUE^{-}SUD^{+}$), compared to cases where both earnings and dividends are disappointing ($SUE^{-}SUD^{-}$). The model specification including the four indicator variables is:

$$CAR\_Earn = \theta_1 SUE^{+}SUD^{+} + \theta_2 SUE^{+}SUD^{-} + \theta_3 SUE^{-}SUD^{+} + \theta_4 SUE^{-}SUD^{-} + \tau. \quad (9)$$

The last columns of Panel A report results for Eq. (9) and Panel B tests equality of coefficients. Consistent with the dividend signal hypothesis, investors react more strongly when the firm reports both positive or zero earnings and dividend news than when the firm meets or beats earnings expectations, but the dividend surprise is negative, i.e. $\theta_1 > \theta_2$. Further, negative price reaction to disappointing earnings news is moderated when accompanied by positive or zero dividend news, i.e. $\theta_3 > \theta_4$. Together, Table 7 results are consistent with investors using dividend surprises to condition their interpretation of earnings news.

---

that cash flow forecasts have no incremental information content beyond that provided by end-of-year earnings forecasts. We continue to find positive coefficients on *SUE* and *SUD* and the interaction term, and conclude that dividend surprises do not proxy for cash flow news. Further, we find that our conclusions from Eq. (8) remain qualitatively the same if we scale earnings and dividend surprises by the standard deviation of analyst earnings and dividend forecasts, respectively. We do not report these results as to calculate the two surprise measures requires at min. three forecasts and non-zero dispersion, which substantially reduces the number of observations.

C. Analyst dividend forecasts and future earnings growth and positive earnings surprises

To corroborate the conclusion that investors use dividend surprises to interpret earnings news, we also examine the likelihood of next period (i) positive earnings news and (ii) growth in earnings, conditional on the sign of dividend and earnings news in the current period. The model specification for positive future earnings surprises is:

$$\begin{aligned} P\left(SUE_{t+1} > 0\right) = \chi_1 SUE^{+}SUD_t^{+} + \chi_2 SUE^{+}SUD_t^{-} \\ + \chi_3 SUE^{-}SUD_t^{+} + \chi_4 SUE^{-}SUD_t^{-} + \zeta_{t+1}. \end{aligned} \tag{10}$$

The model predicting next period earnings growth is similar to equation (10), except the dependent variable is an indicator variable equal to 1 if next fiscal year EPS is higher than current period EPS and 0 otherwise.[25]

Panel A of Table 8 presents regression results for the two logit models predicting future earnings growth and earnings surprise, and Panel B tests equality of coefficients. For earnings growth, the coefficient on $SUE^{+}SUD^{+}$ is positive and higher in magnitude relative to that for $SUE^{+}SUD^{-}$, which supports the prediction that firms that meet or beat both dividend and earnings expectations this period signal more persistent future earnings news. Further, we find more negative coefficients on $SUE^{-}SUD^{-}$ than on $SUE^{-}SUD^{+}$ for both logit models, consistent with negative dividend and earnings surprises sending strong negative signals about future earnings growth and earnings surprises.[26]

[Insert Table 8 around here]

Together, Tables 7 and 8 corroborate the importance of dividend expectations to investors, primarily because these expectations help interpret earnings news.[27] Indeed, the results are consistent in spirit with Lawson and Wang (2015), who document that auditors charge lower

---

[25] We use I/B/E/S actual EPS which is adjusted for changes in the number of shares.

[26] The coefficient on $SUE^{+}SUD^{-}$ in the model predicting earnings growth is consistent with the Ohlson (1995) model, where next period EPS reduce with the current period dividend, which in return lowers the likelihood of growth in earnings.

[27] Our results in Sections 2 and 3 suggest that analysts respond to investor demand for dividend forecasts. Analysts have strong incentives to do so. First, the Institutional Investor All-American rankings depend on the price-impact magnitude of analyst research and depth of coverage (Stickel (1992), Leone and Wu (2007)). Thus, dividend forecasts and their revisions (which we show associate with significant price changes) are more likely to garner investor attention and lead to a better ranking. Second, Maber et al. (2014) examine how institutional investors reward sell-side analyst research through broker votes. They document that analysts can gain broker votes by providing timely and actionable investment information, which can include accurate dividend forecasts. Both All-American ranking and broker votes directly affect analysts compensation and career outcomes (Hong et al. (2000), Hong and Kubik (2003), Groysberg et al. (2011), Brown et al. (2015)).

fees to dividend-paying clients. They argue that this result is consistent with dividends reducing audit risk by enhancing clients' earnings quality information, which our results also demonstrate.

IV. Conclusion

This study documents that analysts routinely produce dividend forecasts. Analysts supply dividend estimates in response to investor demand, which is driven by high variability in dividend payments across stocks. Further, we document that (i) analyst dividend forecasts are more accurate and better approximate market dividend expectations than time-series dividend forecasts or payout-adjusted earnings, (ii) dividend forecasts have incremental information beyond that contained in earnings, target prices and stock recommendations and (iii) investors use analyst dividend forecasts in assessing quality of earnings news. In contrast to the disappearing dividends view in accounting and finance research, our results suggest an increasing emphasis on dividend forecasts, as suggested by increasing coverage, and that analysts' dividend forecast are an overlooked but important component of the overall pricing in capital markets.

REFERENCES

Aharony, J., Swary, I., 1980. Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis. *The Journal of Finance* 35, 1–12.

Allen, F., Bernardo, A.E., Welch, I., 2000. A theory of dividends based on tax clienteles. *The Journal of Finance* 55, 2499–2536.

Baker, H. K., Chang, B., Dutta, S., Saadi, S., 2012. Why firms do not pay dividends: the Canadian experience. *Journal of Business Finance and Accounting* 39, 1330–56.

Ball, R., Brown, P., 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research* 6, 159–78.

Bartov, E., Givoly, D., Hayn, C., 2002. The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33, 173-204.

Bhattacharya, S., 1979. Imperfect information, dividend policy, and 'the bird in the hand' fallacy. *Bell Journal of Economics* 10, 259–70

Bilinski, P., Lyssimachou, D., Walker, M., 2013. Target price accuracy: international evidence. *The Accounting Review* 88, 825–51.

Botosan, C., Plumlee, M., 2002. A re-examination of disclosure level and the expected cost of equity capital. *Journal of Accounting Research* 40, 21–40.

Botosan, C., Plumlee, M., 2005. Assessing alternative proxies for the expected risk premium. *The Accounting Review* 80, 21–53.

Botosan, C., Plumlee, M., Wen, A., 2011. The Relation between expected returns, realized returns, and firm risk characteristics. *Contemporary Accounting Research* 28, 1085–1122.

Bradshaw, M., Drake, M., Myers, J., Myers, L., 2012. A re-examination of analysts' superiority over time-series forecasts of annual earnings. *Review of Accounting Studies* 17, 944–68.

Brav, A., Graham, J., Harvey, C., Michaely, R., 2008. Managerial response to the May 2003 dividend tax cut. *Financial Management* 37, 611–624

Brav, A., Graham, J., Harvey, C., Michaely, R., 2005. Payout policy in the 21st century. *Journal of Financial Economics* 77, 483–702.

Brown, L., Call, A., Clement, M., Sharp, N., 2015. Inside the "Black Box" of sell-side financial analysts. *Journal of Accounting Research* 53, 1–47.

Brown, L., Hagerman, R., Zmijewski, M., 1987. Security analyst superiority relative to univariate time-series models in forecasting quarterly earnings. *Journal of Accounting and Economics* 9, 61-87

Brown, J., Liang, N., Weisbenner, S., 2007. Executive financial incentives and payout policy: Firm responses to the 2003 dividend tax cut. *The Journal of Finance* 62, 1935–65.

Brown, P., Clarke, A., How, J., Lim, K., 2002. Analysts' dividend forecasts. *Pacific-Basin Finance Journal* 10, 371–92.

Brown, P., How, J., Verhoeven, P., 2008. The accuracy of analysts' dividend forecasts around the world. *Pacific-Basin Finance Journal* 16, 411–35.

Byard, D., Li, Y., Yu, Y., 2011. The effect of mandatory IFRS adoption on financial analysts' information environment. *Journal of Accounting Research* 49, 69–96.

Caskey, J., Hanlon, M., 2013. Dividend policy at firms accused of accounting fraud. *Contemporary Accounting Research* 30, 818–50.

Chari, V., Jagannathan, R., Ofer, A., 1988. Seasonalities in security returns: The case of earnings announcements. *Journal of Financial Economics* 21, 101–21.

Chetty, R., Saez, E., 2005. Dividend taxes and corporate behavior: Evidence from the 2003 dividend tax cut. *Quarterly Journal of Economics* 120, 791–833.

Clement, M., 1999. Analyst forecast accuracy: do ability, resources, and portfolio complexity matter? *Journal of Accounting and Economics* 27, 285–303.

Clement, M., Rees, L., Swanson, E., 2003. The influence of culture and corporate governance on the characteristics that distinguish superior analysts. *Journal of Accounting, Auditing, and Finance* 18, 593–609.

Das, S., Levine, C., Sivaramakrishnan, K., 1998. Earnings predictability and bias in analysts' earnings forecasts. *The Accounting Review* 73, 277–294.

DeFond, M., Hung, M., 2003. An empirical analysis of analysts' cash flow forecasts. *Journal of Accounting and Economics* 35, 73–100.

Del Guercio, D., 1996. The distorting effect of the prudent-man laws on institutional equity investments. *Journal of Financial Economics* 40, 31–62.

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

Dimson, E., Marsh, P., Staunton, M., 2008. The Worldwide equity premium: a smaller puzzle. Elsevier, Amsterdam.

Dubofsky, D., 1987. Hedging dividend capture strategies with stock index futures. *Journal of Futures Markets* 7, 471–81.

Easton, P., Zmijewski, M., 1989. Cross-sectional variation in the stock market response to the announcement of accounting earnings. *Journal of Accounting and Economics* 11, 117–42.

Easton, S., 1991. Earnings and dividends: Is there an interaction effect? *Journal of Business Finance and Accounting* 18, 255–66.

Ertimur, Y., Mayew, W., Stubben, S., 2003. Differential market reactions to revenue and expense surprises. *Review of Accounting Studies* 8, 185–211.

Ertimur, Y., Mayew, W., Stubben, S., 2011. Analyst reputation and the issuance of disaggregated earnings forecasts to I/B/E/S. *Review of Accounting Studies* 16, 29–58.

Factset Dividend Quarterly, 28th March 2013. (http://www.factset.com/websitefiles/PDFs/dividend/dividend_3.28.13) (accessed 24.09.15).

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

Floyd, E., Li, N., Skinner, D., 2014. Payout policy through the financial crisis: the growth of repurchases and the resilience of dividends. Chicago Booth Research Paper No. 12–01. (http://ssrn.com/abstract=1979501)

Francis, J., Philbrick, D., 1993. Analysts' decisions as products of a multi-task environment. *Journal of Accounting Research* 31, 216–30.

Fried, D., Givoly, D., 1982. Financial analysts' forecasts of earnings: A better surrogate for market expectations. *Journal of Accounting and Economics* 4: 85–107.

Gennotte, G., Truemann, B., 1996. The strategic timing of corporate disclosures. Review of Financial Studies 9, 665–90.

Givoly, D., Hayn, C., Lehavy, R., 2009. The quality of analysts' cash flow forecasts. *The Accounting Review* 84, 1877–911.

Gompers, P., Metrick, A., 2001. Institutional investors and equity prices. *Quarterly Journal of Economics* 116, 229–59.

Groysberg, B., Healy, P., Maber, D., 2011. What drives sell-side analyst compensation at high status investment banks? *Journal of Accounting Research* 49, 969–1000.

Harris, L., Hartzmark, S., Solomon, D., 2015. Juicing the dividend yield: mutual funds and the demand for dividends. *Journal of Financial Economics* 116, 433–51.

Hoberg, G., Prabhala, N., 2009. Disappearing dividends, catering, and risk. *Review of Financial Studies* 22, 79–116.

Hong, H., Kubik, J., 2003. Analyzing the analysts: career concerns and biased earnings forecasts. *The Journal of Finance* 58, 313–51.

Hong, H., Kubik, J., Solomon, A., 2000. Security analysts' career concerns and herding of earnings forecasts. *RAND Journal of Economics* 31, 121–44.

Hope, O., 2003. Disclosure practices, enforcement of accounting standards and analysts' forecast accuracy: An international study. *Journal of Accounting Research* 41, 235–72.

Jacob, J., Lys, T., Neale, M., 1999. Expertise in forecasting performance of security analysts. *Journal of Accounting and Economics* 28, 51–82.

John, K., Williams, J., 1985. Dividends, dilution, and taxes—a signalling equilibrium. *The Journal of Finance* 40, 1053–70.

Julio, B., Ikenberry, D., 2004. Reappearing dividends. *Journal of Applied Corporate Finance* 16, 89–100.

Kane, A., Lee, Y., Marcus, A., 1984. Earnings and dividend announcements: Is there a corroboration effect? *The Journal of Finance* 39, 1091–99.

Keung, E., 2010. Do supplementary sales forecasts increase the credibility of financial analysts' earnings forecasts? *The Accounting Review* 85, 2047–74.

Krishnan, J., Yang, J., 2009. Recent trends in audit report and earnings announcement lags. *Accounting Horizons* 23, 265–88.

Lawson, B., Wang, D., 2015. The earnings quality information content of dividend policies and audit pricing. Working paper Oklahoma State University and Texas A&M University. (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2574293)

Leone, A.J., Wu, J., 2007. What does it take to become a superstar? Evidence from institutional investor rankings of financial analysts. Simon School of Business Working Paper No. FR 02–12. (http://ssrn.com/abstract=313594)

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

Liu, J., Nissim, D., Thomas, J., 2002. Equity valuation using multiples. *Journal of Accounting Research* 40, 135–72.

Maber, D., Groysberg, B., Healy, P., 2014. The use of broker votes to reward brokerage firms' and their analysts' research activities. Working paper 14-074, Harvard Business School. (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2311152)

Marsh, T., Merton, R., 1987. Dividend behavior for the aggregate stock market. *Journal of Business* 60, 1–40.

Mathiason, N., 2011. Tax avoidance trade puts Square Mile in spotlight again. The Guardian (18 December). (http://www.theguardian.com/business/2011/dec/18/tax-avoidance-trade-london-bankers) (accessed 24.09.15).

Miller, M., Rock, K., 1985. Dividend policy under asymmetric information, *The Journal of Finance* 40, 1031–52.

Ofer, A.R., Thakor, A.V., 1987. A theory of stock price responses to alternative corporate cash disbursement methods: stock repurchases and dividends. *The Journal of Finance* 42, 365–406.

Ohlson, J.A., 1995. Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research* 11, 661–687.

Richardson, S., Teoh, S., Wysocki, P., 2004. The walk-down to beatable analyst forecasts: the role of equity issuance and insider-trading incentives. *Contemporary Accounting Research* 21, 885–924.

Shevlin, T., 1982. Australian corporate dividend policy: empirical evidence. *Accounting and Finance* 22, 1–22.

Sinha, P., Brown, L., Das, S., 1997. A re-examination of financial analysts' differential earnings forecast accuracy. *Contemporary Accounting Research* 14, 1–42.

Skinner, D., Soltes, E., 2011. What do dividends tell us about earnings quality? *Review of Accounting Studies* 16, 1–28.

Stickel, S., 1992. Reputation and performance among security analysts. *The Journal of Finance* 47, 1811–36.

The Wall Street Journal, 7th April 2012. The dividend-fund dilemma. (http://online.wsj.com/news/articles/SB10001424052702304072004577326221868111132) (accessed 24.09.15).

Vieira, E., 2011. Investor sentiment and the market reaction to dividend news: European evidence. *Managerial Finance* 37, 1213–1245.

Yoon, P., Starks, L., 1995. Signaling, investment opportunities, and dividend announcements. *Review of Financial Studies* 8, 995–1018.

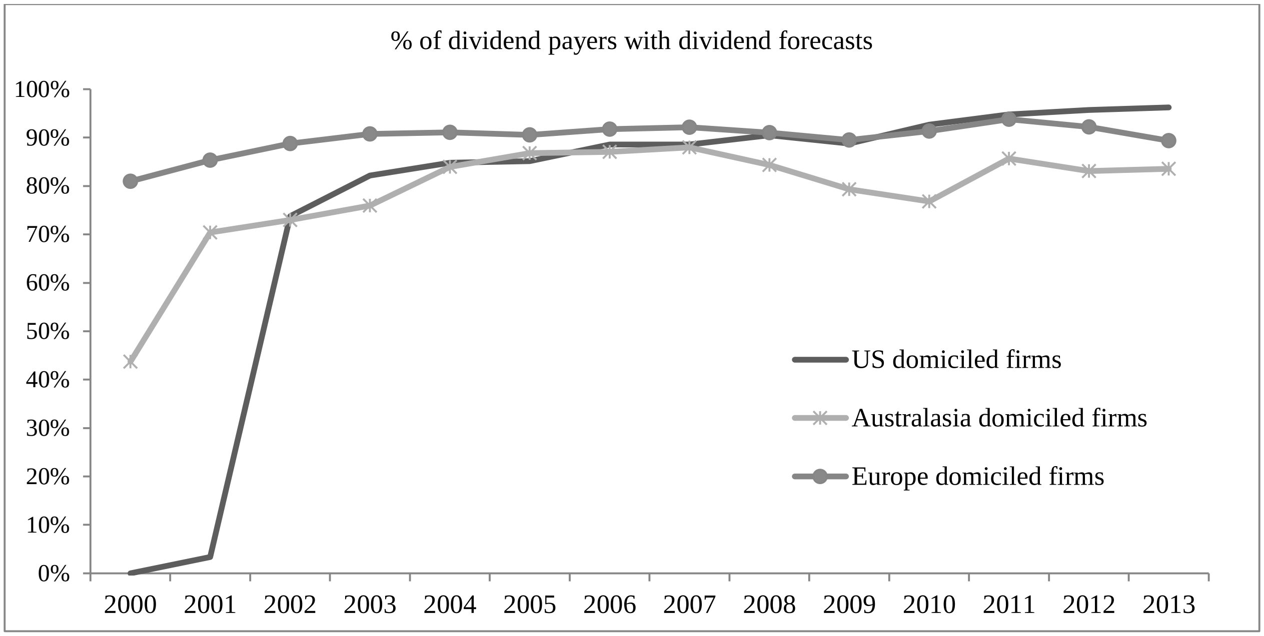
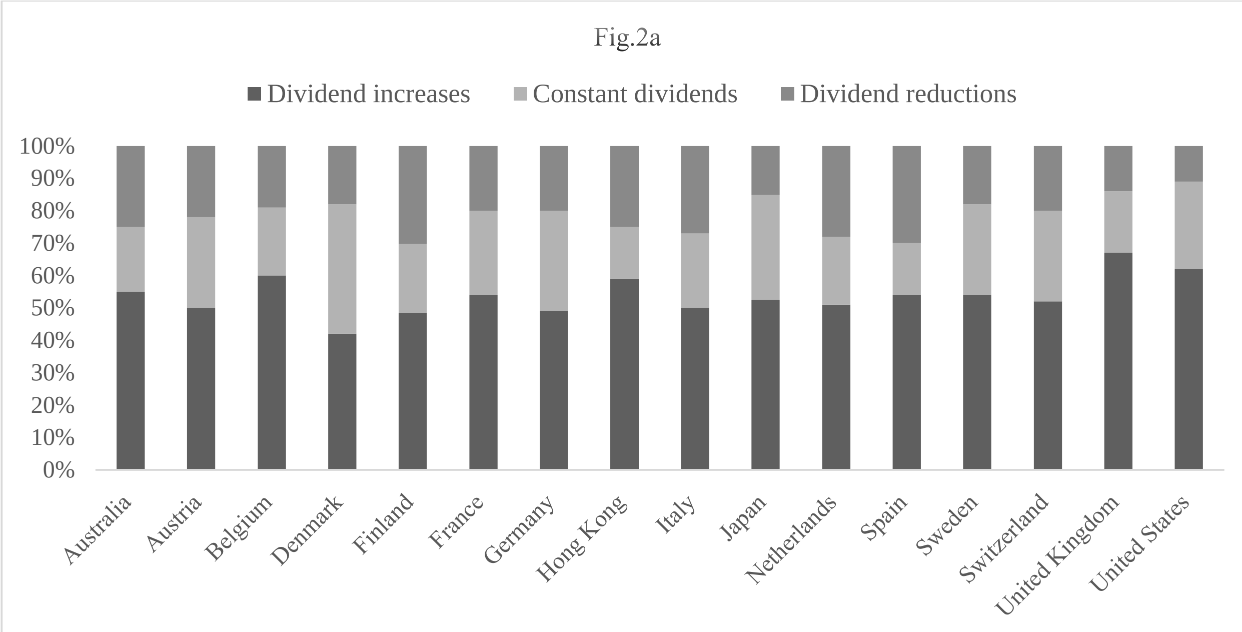


Figure 1. The fraction of dividend payers with analyst dividend forecasts. The figure reports the fraction of dividend payers with analyst dividend forecasts for US, Australasia and Europe domiciled firms over fiscal years 2000–2013.



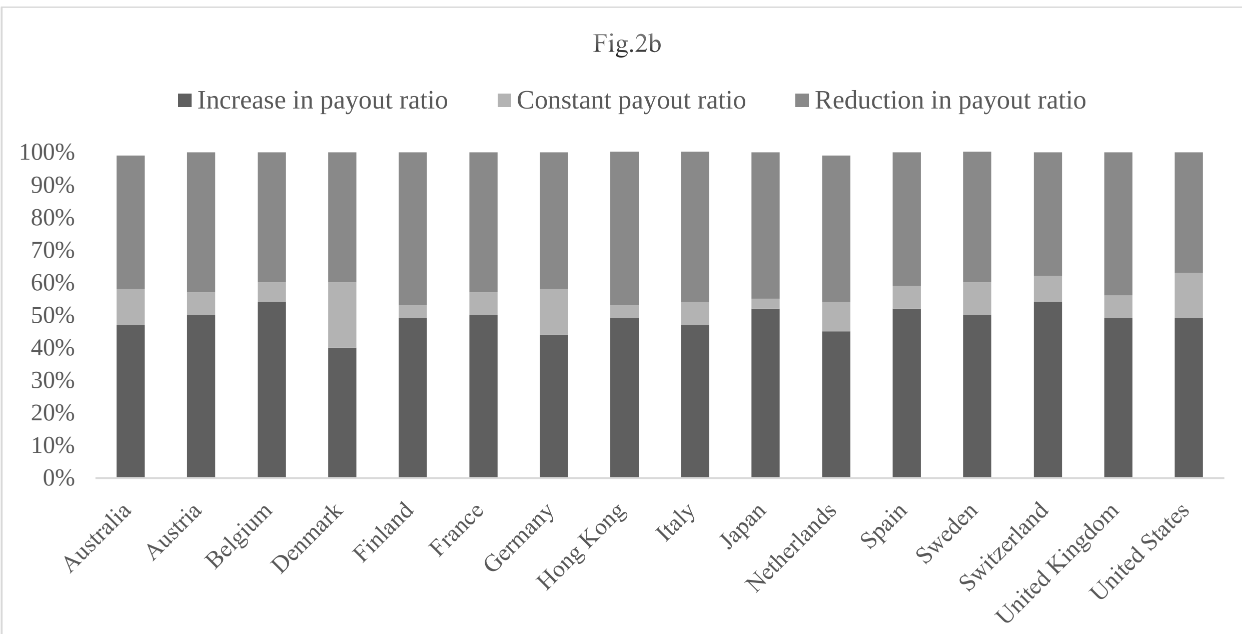


Figure 2. The fraction of dividend payers that increase, maintain and reduce their annual dividend and dividend payout ratios. Fig.2a reports the fraction of dividend payers across countries that increase, maintain and reduce their annual dividend-per-share (DPS) compared to the previous fiscal year. Reported actual DPS are from I/B/E/S and are adjusted for changes in the number of shares. If 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.

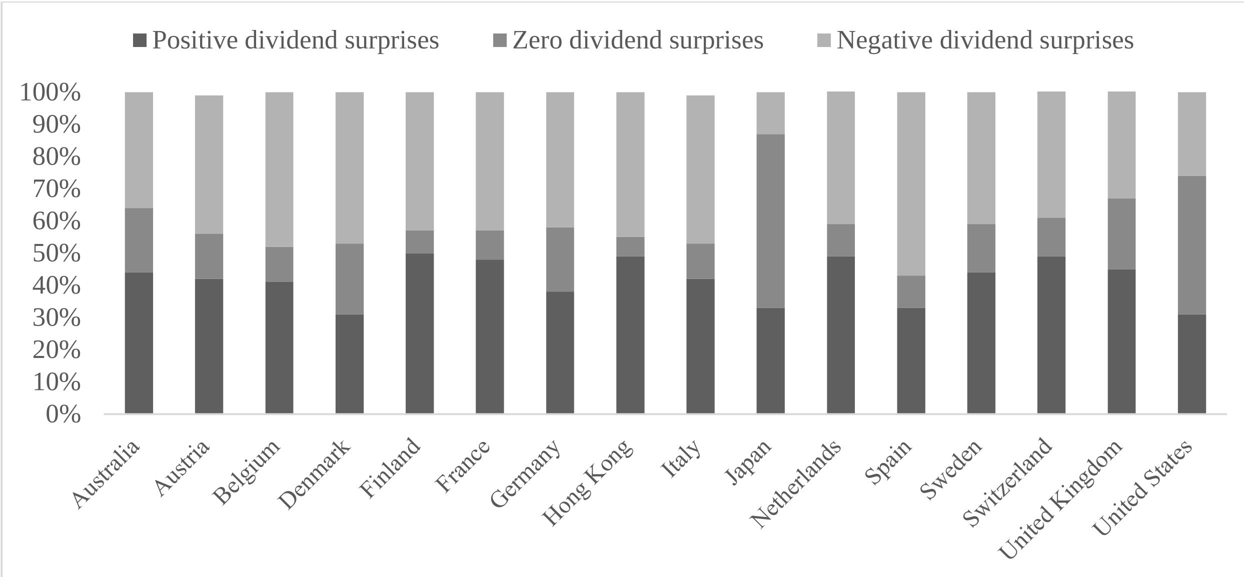


Figure 3. The proportion of dividend payers with positive, zero and negative dividend surprises at joint preliminary earnings and dividend announcements. The figure reports the fraction of dividend payers across countries that report positive, zero and negative dividend surprises. Dividend surprise is calculated as the difference between the actual and the mean of analyst dividend forecasts reported in the last quarter of a fiscal year.

Table I

Descriptive statistics

The table reports distributional data on dividend-paying stocks relative to the Compustat population. The #All firm-years column reports the number of firm-years available on the cross-section of I/B/E/S and Compustat for US stocks and Compustat Global for non-US firms over fiscal years 2000–2013. The #Div payers firm-years column reports the number of firm-years for dividend paying stocks. The % Div payers column reports the percentage of dividend payers in all firms. The % of Div payers with Div forecast column reports the percentage of dividend paying stocks with at least one dividend forecast for a firm in a year. The #Div forecasts per year column reports the average number of dividend forecasts for a fiscal year. The #Analysts issuing Div forecasts column reports the average number of analysts issuing dividend forecasts.

	#All firm-years	#Div payers firm-years	% Div payers	% of Div payers with Div forecast	#Div forecasts per firm-year	#Analysts issuing Div forecasts
Australia	6,927	5,214	75.3%	88.3%	15.0	6.0
Austria	591	472	79.9%	94.1%	13.4	6.9
Belgium	1,140	877	76.9%	90.5%	12.7	6.5
Denmark	997	777	77.9%	84.8%	12.6	5.2
Finland	1,358	1,200	88.4%	93.8%	19.0	8.1
France	5,045	3,561	70.6%	93.5%	17.7	7.9
Germany	5,292	3,439	65.0%	89.1%	16.0	8.3
Hong Kong	4,000	3,290	82.3%	73.5%	18.7	8.9
Italy	2,347	1,680	71.6%	90.4%	14.6	7.4
Japan	23,049	21,124	91.6%	75.1%	5.3	3.9
Netherlands	1,325	1,029	77.7%	90.6%	18.1	8.2
Spain	1,277	997	78.1%	95.0%	20.5	10.5
Sweden	2,394	1,841	76.9%	89.8%	14.4	6.5
Switzerland	1,990	1,641	82.5%	87.9%	16.1	6.7
United Kingdom	12,728	9,032	71.0%	87.9%	10.0	5.4
United States	47,751	20,388	42.7%	82.6%	6.7	4.3
Average			75.5%	87.9%	14.4	6.9

Table II

Mean dividend forecast error and bias across countries

The table reports the mean dividend forecast error and bias across the sample countries. FDPS error is the absolute difference between the actual and the forecasted dividend scaled by the stock price at the end of the previous fiscal year. FDPS bias is the signed FDPS error. N is the number of dividend forecasts, Mean is the average value, σ is the standard deviation. The *Average* row reports the averages for the 16 countries in the sample.

		FDPS error		FDPS bias	
	N	*Mean*	σ	*Mean*	σ
Australia	68,836	1.21%	2.62%	−0.28%	2.27%
Austria	5,945	0.61%	0.89%	−0.15%	1.04%
Belgium	10,094	0.84%	1.71%	−0.02%	1.59%
Denmark	8,351	0.75%	1.20%	−0.09%	1.25%
Finland	21,470	1.25%	1.61%	0.14%	1.94%
France	59,300	0.52%	0.85%	−0.07%	0.90%
Germany	49,353	0.60%	0.92%	−0.12%	1.02%
Hong Kong	45,317	1.08%	2.06%	0.21%	1.83%
Italy	22,248	1.01%	1.95%	−0.18%	1.64%
Japan	83,960	0.19%	0.36%	0.04%	0.36%
Netherlands	16,817	0.71%	1.15%	−0.20%	1.22%
Spain	19,455	0.89%	1.35%	−0.13%	1.46%
Sweden	23,988	1.05%	2.01%	−0.12%	1.93%
Switzerland	23,436	0.56%	0.74%	0.00%	0.84%
United Kingdom	79,824	0.46%	0.97%	−0.13%	0.96%
United States	113,402	0.45%	1.48%	0.04%	1.04%
Average		0.76%	1.37%	−0.07%	1.33%

Table III

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

The table reports the difference between the accuracy of analyst dividend forecasts and the accuracy of naïve dividend estimates. The diff column reports the mean difference between the error in analyst dividend forecasts and the error of naïve dividend forecasts, i.e. (*FDPS error* − *Naïve DPS error*), where *FDPS error* is the absolute difference between the actual and the forecasted dividend scaled by the stock price at the end of the previous fiscal year, and *Naïve DPS error* is the absolute difference between the actual dividend and the naïve dividend forecast scaled by the stock price at the end of the previous fiscal year. p is the *p*-value for a two-tailed *t*-test of the hypothesis that the average difference in forecast errors is zero. Naïve DPS 1 is the martingale dividend forecast where the next year dividend equals the previous year dividend. 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 Eq. (3) and net income for the previous fiscal year. Naïve DPS 4 is the product of the target payout ratio from Eq. (3) and the analyst EPS forecast. Naïve DPS 5 is the past dividend plus the predicted dividend change from Eq. (3). $\frac{\overline{FDPS\ error}}{\overline{Naïve\ DPS\ error\ 1}} - 1$ is the percentage difference between the (country-level) mean analyst dividend forecast error, $\overline{FDPS\ error}$, and the mean error of martingale dividend forecasts, $\overline{Naïve\ DPS\ error\ 1}$. The *Average* row reports the averages.

	Naïve DPS 1		Naïve DPS 2		Naïve DPS 3		Naïve DPS 4		Naïve DPS 5		$\frac{\overline{FDPS\ error}}{\overline{Naïve\ DPS\ error\ 1}} - 1$
	diff	p	diff	p	diff	p	diff	p	diff	p	
Australia	−0.85%	0.000	−2.54%	0.000	−3.69%	0.000	−3.69%	0.000	−1.11%	0.000	42.9%
Austria	−0.37%	0.003	−1.01%	0.000	−1.68%	0.000	−1.29%	0.000	−0.79%	0.000	39.8%
Belgium	−0.73%	0.000	−2.00%	0.000	−5.00%	0.000	−4.65%	0.000	−2.52%	0.000	46.6%
Denmark	−0.25%	0.000	−1.20%	0.000	−1.92%	0.000	−1.79%	0.000	−1.00%	0.000	26.9%
Finland	−0.60%	0.000	−2.69%	0.000	−2.38%	0.000	−2.15%	0.000	−1.21%	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	37.3%
Germany	−0.38%	0.000	−1.17%	0.000	−2.23%	0.000	−2.14%	0.000	−0.61%	0.000	38.7%
Hong Kong	−0.51%	0.000	−1.17%	0.000	−2.49%	0.000	−2.40%	0.000	−0.64%	0.000	33.0%
Italy	−1.54%	0.000	−2.95%	0.000	−3.70%	0.000	−2.30%	0.000	−5.88%	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	64.8%
Netherlands	−0.48%	0.000	−1.76%	0.000	−2.36%	0.000	−2.06%	0.000	−0.76%	0.000	42.0%
Spain	−1.36%	0.000	−2.43%	0.000	−4.26%	0.000	−2.77%	0.000	−3.51%	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	26.6%
Switzerland	−0.25%	0.000	−1.50%	0.000	−2.51%	0.000	−2.58%	0.000	−0.43%	0.000	34.0%
United Kingdom	−2.94%	0.000	−3.02%	0.000	−3.07%	0.000	−4.00%	0.000	−3.01%	0.000	87.3%
United States	−0.65%	0.000	−2.24%	0.000	−4.52%	0.000	−4.74%	0.000	−1.36%	0.000	57.6%
Average	−0.75%	0.000	−1.94%	0.000	−2.93%	0.000	−2.73%	0.000	−1.61%	0.000	45.8%

Table IV

Analyst dividend forecasts as a surrogate for market dividend expectations

The table reports results for Eq.(4) that examines whether analyst dividend forecasts are a better surrogate for investors' unobservable expectation of dividends compared to time-series dividend forecasts. Specifically, Eq. (4) regresses abnormal stock returns on proxies for unexpected dividends. *FDPS* $error_{Q1}$ is the unexpected dividend based on analyst forecasts and is calculated as the price-scaled difference between the actual dividend and the mean of analyst dividend forecasts available at the end of the first fiscal quarter, $FDPS\ error_{Q1} = \frac{ActualDPS - \sum FDPS}{P}$. Unexpected dividends based on time-series dividend forecasts are calculated as the price-scaled difference between the actual and the time-series dividend forecast $signed\ Naïve\ DPS\ error = \frac{ActualDPS - Naïve\ DPS}{P}$. We relate unexpected dividends to 11-month market-adjusted returns calculated starting at the end of the first quarter of the fiscal year. We control for unexpected earnings, *FEPS* $error_{Q1}$, which is the difference between the actual EPS and the mean of analyst EPS forecasts available at the end of the first fiscal quarter, $FEPS\ error_{Q1} = \frac{ActualEPS - \sum FEPS}{P}$. Regression standard errors are firm-clustered.

	(1)		(2)		(3)		(4)		(5)	
	Estimate	p	Estimate	p	Estimate	p	Estimate	p	Estimate	p
Intercept	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000	0.012	0.000
FDPS $error_{Q1}$	0.227	0.010	0.227	0.010	0.227	0.010	0.228	0.010	0.228	0.010
signed Naïve DPS error 1	0.000	0.572								
signed Naïve DPS error 2			0.001	0.300						
signed Naïve DPS error 3					0.000	0.171				
signed Naïve DPS error 4							0.000	0.943		
signed Naïve DPS error 5									0.000	0.956
FEPS $error_{Q1}$	0.180	0.000	0.180	0.000	0.180	0.000	0.180	0.000	0.180	0.000
N	12,400		12,400		12,400		12,400		12,400	
F-test	26.98		27.43		26.94		26.29		26.51	
p(F)	0.000		0.000		0.000		0.000		0.000	
R^2	1.52%		1.53%		1.53%		1.52%		1.52%	

Table V

Analyst differential ability to forecast accurate dividend estimates

The table reports results for Eq. (6) where we regress the proportional mean absolute dividend forecast error on analyst and broker characteristics. The proportional mean absolute dividend forecasts error is the percentage difference between the error in the analyst dividend forecast and the mean error of all dividend forecasts issued for a firm in a fiscal year. Panel A presents averages for the (undemeaned) explanatory variables from Eq. (6). Averages are calculated based on explanatory variables measured at each dividend forecast issues. *gen exp*, *ind exp* and *firm exp* measure analyst general-, industry- and firm-specific forecasting experience, respectively. *#firms followed* measures the number of firms an analyst follows. *freq rev* is the frequency of dividend and EPS forecasts revisions for a firm. *broker size* is the number of analysts employed by a broker. *horizon* is the number of days between the dividend forecast announcement and the respective fiscal year-end. *FEPS error* is the EPS forecast error. The *Average* row reports the averages. Panel B reports regression results for Eq. (6). Prefix *D* indicates that variables are mean-adjust by subtracting their corresponding firm-year means. All coefficients except *DFEPS error* are multiplied by 10,000. The regression standard errors are analyst-clustered.

Panel A: Descriptive statistics for analyst and broker characteristics and EPS forecast error

	gen exp	*ind exp*	*firm exp*	*#firms followed*	*freq rev*	*broker size*	*horizon*	*FEPS error*
Australia	6.79	5.50	3.01	13.07	14.90	164.19	106.96	2.49%
Austria	6.93	5.59	2.68	8.95	14.06	126.71	104.08	2.07%
Belgium	6.77	5.27	2.68	9.87	14.80	137.24	83.13	2.08%
Denmark	6.78	5.44	3.22	8.41	10.68	144.35	87.41	1.69%
Finland	6.23	4.78	2.91	10.34	8.91	161.34	66.58	2.58%
France	7.39	6.10	3.44	11.16	10.06	124.54	101.84	1.51%
Germany	7.40	5.94	3.20	10.83	10.05	130.62	85.93	2.35%
Hong Kong	6.28	5.04	2.81	9.67	12.47	144.71	105.46	2.30%
Italy	7.01	5.87	3.19	11.01	12.18	122.66	86.47	2.36%
Japan	7.93	6.61	3.17	19.48	33.20	188.65	76.92	2.28%
Netherlands	7.68	6.22	3.35	12.63	11.03	140.21	83.63	2.45%
Spain	7.07	5.44	3.07	11.13	9.09	141.41	91.02	1.51%
Sweden	6.78	5.48	3.11	9.41	10.56	159.56	88.90	2.11%
Switzerland	7.38	6.34	3.42	10.11	10.93	143.05	102.34	1.74%
United Kingdom	7.74	6.51	2.99	14.09	19.11	155.24	106.75	1.51%
United States	7.68	7.06	3.68	18.34	8.98	177.90	78.39	1.95%
Average	7.12	5.82	3.12	11.78	13.19	147.65	90.99	2.06%

Panel B: Regression of dividend forecast accuracy on analyst and broker characteristics

	Without FEPS error		With FEPS error	
	Estimate	p	Estimate	p
Dgen exp	−0.026	0.750	−0.017	0.836
Dind exp	−0.015	0.865	0.002	0.983
Dfirm exp	−0.504	0.000	−0.464	0.000
D#firms followed	−0.015	0.407	−0.038	0.115
Dfreq rev	0.134	0.000	0.104	0.000
Dbroker size	0.000	0.955	0.001	0.612
Dhorizon	0.121	0.000	0.088	0.000
DFEPS error			0.082	0.000
N	651,796		524,644	
F-test	441.47		439.01	
p(F)	0.000		0.000	
R^2	2.13%		5.86%	

Table VI

Price reactions to dividend forecast revisions

Panel A reports average three-day cumulative abnormal returns, CAR, centered on the dividend forecast revision date for positive (ΔFDPS≥0) and negative (ΔFDPS<0) dividend forecast revisions. The ΔFDPS column reports the magnitude of positive and negative dividend forecast revisions. The *Average* row reports the averages for the sample countries. Panel B shows estimates from Eq. (7) where we regress *CAR* on analyst dividend forecast revisions, Δ*FDPS*, earnings forecast revisions, Δ*FEPS*, target price revisions, Δ*TP* and two dummy variables for directional recommendation revisions, *Upgrade*, and *Downgrade*. Regression standard errors are analyst- and firm-clustered.

		ΔFDPS		CAR	
	N	ΔFDPS≥0	ΔFDPS<0	ΔFDPS≥0	ΔFDPS<0
Panel A: Average price reactions to analyst dividend forecast announcements					
Australia	27,877	0.60%	−0.89%	0.85%	−1.11%
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	26,150	0.26%	−0.32%	0.64%	−0.49%
Germany	18,424	0.39%	−0.52%	0.54%	−0.75%
Hong Kong	15,135	0.58%	−0.51%	0.88%	−0.38%
Italy	8,176	0.57%	−0.68%	0.30%	−0.60%
Japan	14,100	0.22%	−0.38%	0.79%	−0.55%
Netherlands	6,759	0.37%	−0.49%	0.52%	−0.47%
Spain	7,018	0.45%	−0.52%	0.27%	−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	27,883	0.23%	−0.40%	0.77%	−0.47%
United States	37,691	0.38%	−0.55%	0.27%	−0.36%
Average		0.41%	−0.52%	0.62%	−0.60%

	(1)		(2)		(3)		(4)	
	Estimate	p	Estimate	p	Estimate	p	Estimate	p
Panel B: Price reaction regressions								
Intercept	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000
ΔFEPS	0.381	0.000	0.312	0.000	0.296	0.000	0.234	0.000
ΔFDPS			0.297	0.000	0.287	0.000	0.226	0.000
Upgrade					0.014	0.000	0.011	0.000
Downgrade					−0.017	0.000	−0.015	0.000
ΔTP							0.047	0.000
N	227,336		227,336		227,336		227,336	
F-test	1667.56		987.29		863.82		864.00	
p(F)	0.000		0.000		0.000		0.000	
R^2	1.81%		2.19%		3.07%		4.36%	

Table VII

Price reactions to joint earnings and dividend announcements

Panel A reports results for Eq. (8) and (9) which relate three-day cumulative abnormal returns around joint preliminary earnings and dividend announcements to earnings and dividend surprises. *SUE* is the earnings surprise calculated as the price-scaled difference between the actual EPS and the mean of analyst EPS forecasts available at the end of the last quarter of a fiscal year. *SUD* is the dividend surprise calculated as the price-scaled difference between the actual dividend and the mean of analyst dividend forecasts available at the end of the last quarter of a fiscal year. $SUE^{+}SUD^{+}$ is a dummy variable that takes a value of one if the firm meets or beats both analyst earnings and dividend expectations, and is zero otherwise. $SUE^{+}SUD^{-}$ is a dummy variable that takes a value of one if the firm meets or beats earnings expectations, but does not meet analyst dividend expectations, and is zero otherwise. $SUE^{-}SUD^{+}$ is a dummy variable that takes a value of one if the firm does not meet earnings expectations, but meets or beats analyst dividend expectations, and is zero otherwise. $SUE^{-}SUD^{-}$ is a dummy variable that takes a value of one if the firm fails to meet both analyst earnings and dividend expectations, and is zero otherwise. Regression standard errors are firm-clustered. *N* is the number of observations, *F-test* is the *F*-test for model specification and *p(F)* is the corresponding *p*-value. R^2 is the *R*-squared. Panel B reports differences in coefficient estimates from Eq. (9) and corresponding F-tests. The first hypothesis is that investors react more positively if the firm meets or beats both analyst earnings and dividend expectation than when the firm only meets or beats earnings expectations. The second hypothesis is that investors react more negatively when the firm fails to meet both analyst earnings and dividend expectations than when the firm fails only to meet analyst earnings expectations.

	(1)		(2)		(3)		(4)	
	Estimate	p	Estimate	p	Estimate	p	Estimate	p
Panel A: Regression estimates								
Intercept	0.004	0.000	0.004	0.000	0.004	0.000		
SUE	0.088	0.000	0.078	0.000	0.083	0.000		
SUD			0.393	0.000	0.407	0.000		
*SUE*SUD*					1.230	0.001		
$SUE^{+}SUD^{+}$							0.012	0.000
$SUE^{+}SUD^{-}$							0.006	0.000
$SUE^{-}SUD^{+}$							−0.002	0.001
$SUE^{-}SUD^{-}$							−0.006	0.000
N	35,638		35,638		35,638		35,638	
F-test	99.54		108.24		75.19		190.24	
p(F)	0.000		0.000		0.000		0.000	
R^2	0.41%		0.81%		0.85%		0.0214	

Panel B: Differences between coefficients

Hypothesis: $SUE^{+}SUD^{+} > SUE^{+}SUD^{-}$	
difference between coefficients	0.005
% difference	45.9%
F-test	37.510
p-value	0.000
Hypothesis: $SUE^{-}SUD^{-} < SUE^{-}SUD^{+}$	
difference between coefficients	−0.004
% difference	−67.00%
F-test	16.250
p-value	0.000

Table VIII

The likelihood of future growth in earnings and of positive earnings surprises

Panel A reports results for Eq. (10), which examines the likelihood of future earnings growth and of positive future earnings surprises, conditional on the sign of earnings and dividend surprises in the current period. $SUE^{+}SUD^{+}$ is a dummy variable that takes a value of one if the firm meets or beats both analyst earnings and dividend expectations, and is zero otherwise. $SUE^{+}SUD^{-}$ is a dummy variable that takes a value of one if the firm meets or beats earnings expectations, but does not meet analyst dividend expectations, and is zero otherwise. $SUE^{-}SUD^{+}$ is a dummy variable that takes a value of one if the firm does not meet earnings expectations, but meets or beats analyst dividend expectations, and is zero otherwise. $SUE^{-}SUD^{-}$ is a dummy variable that takes a value of one if the firm fails to meet both analyst earnings and dividend expectations, and is zero otherwise. Regression standard errors are firm-clustered. *N* is the number of observations, *Wald* Chi^2 is the Wald Chi^2 test for model specification and $p(Chi^2)$ is the corresponding p-value. *Pseudo* R^2 is the pseudo R-squared. Panel B reports differences in coefficient estimates from Panel A and corresponding F-tests.

	P(Future EPS growth)		P(Future SUE^{+})	
	Estimate	p	Estimate	p
Panel A: Regression estimates				
$SUE^{+}SUD^{+}$	0.051	0.031	0.389	0.000
$SUE^{+}SUD^{-}$	−0.217	0.000	0.349	0.000
$SUE^{-}SUD^{+}$	−0.037	0.160	−0.114	0.000
$SUE^{-}SUD^{-}$	−0.234	0.000	−0.214	0.000
N	21,026			21,026
Wald Chi^2	94.05			408.76
$p(Chi^2)$	0.000			0.000
Pseudo R^2	0.25%			0.83%
Panel B: Differences between coefficients				
Hypothesis: $SUE^{+}SUD^{+} > SUE^{+}SUD^{-}$				
difference between coefficients	−0.268		−0.041	
% difference	−528.9%		−10.4%	
F-test	41.340		0.940	
p-value	0.000		0.333	
Hypothesis: $SUE^{-}SUD^{-} < SUE^{-}SUD^{+}$				
difference between coefficients	0.197		0.101	
% difference	84.14%		46.99%	
F-test	22.460		5.690	
p-value	0.000		0.017	