Can Dividend Schedules Predict Abnormal Returns? International Evidence

Abstract

This study presents international evidence on the dividend month premium. In the US, Hartzmark and Solomon (2013) find abnormally high returns during the months when stocks are predicted to pay a dividend. We test for this predicted dividend month premium in eleven developed markets, including the US. We find this anomalous result also exists in France, Germany, and Singapore with mixed results in other countries. Cross-country analysis reveals that tax differences do impact the performance of the anomaly, though the dividend month forecasting rule also plays a role in explaining abnormal returns.

1. Introduction

This study investigates the pervasiveness of an anomalous ‘dividend month premium’ in eleven developed countries. Hartzmark and Solomon (2013) find this anomaly in US markets from 1927 to 2009 by showing that companies experience positive abnormal returns during the months they are expected to pay a dividend. Since dividends are paid on a regular schedule (quarterly, semi-annually, or annually), the months in which stocks go ex-dividend can be predicted before dividends are announced. Hartzmark and Solomon (2013) find abnormal positive returns from holding a portfolio each month that is long all stocks that are predicted to pay a dividend in the current month and short all other dividend-paying stocks not predicted to pay a dividend in the current month.

It is valuable to understand to what extent this dividend month premium anomaly is pervasive outside the US. Schwert (2003) argues that focusing on US samples of ‘surprising’ results, which may result by chance from data mining, incurs a sample selection bias. Schwert (2003) maintains that an anomaly’s existence in an independent sample, such as data from other countries’ markets, verifies its validity. Researching how the dividend month premium differs between markets also provides an opportunity to identify the potential factors that create the anomalous returns.

The international pervasiveness of the dividend month premium anomaly is particularly pertinent to the literature because it can contribute to our understanding of price movements around ex-dividend days. What factors drive prices before and after a stock goes ex-dividend has been an unresolved question in the literature since the 1950s (for examples see Campbell and Beranek, 1955; Durand and May, 1960; and Elton and Gruber, 1970). An international test of the dividend month premium provides a framework to test whether returns in predicted dividend months are influenced by differential tax rules between countries, and over time within the same country.

This paper documents a dividend month premium anomaly in France, Germany, Singapore and the US. Positive abnormal returns are found in predicted dividend months that are robust to controlling for size, value and momentum risk factors. In the United Kingdom, New Zealand and, to a certain extent, Canada, raw returns are also found to be higher in predicted dividend months than in the months companies are not predicted to pay a dividend. However, in these three countries higher returns in predicted dividend months are either not robust to controlling for risk factors, or are sensitive to the short side of the anomaly – the non-dividend paying stocks in that month. Australia is the only month to show negative abnormal returns from the anomaly. This finding is surprising, given the tax benefits afforded to the recipient of dividend payment in Australia.

The finding of Hartzmark and Solomon (2013) that the timing of abnormal returns in predicted dividend months is consistent with dividend clienteles gives good reason to suspect that abnormal returns in predicted dividend months could be tax-induced. However, we find that the dividend month premium is not higher in countries operating a full imputation tax system. Despite the negative abnormal returns documented for Australia's full imputation tax system, we do find that abnormal returns are larger for partial imputation countries vis-à-vis countries operating under a classical taxation system. This finding, at the very least, suggests that taxes are relevant to returns in predicted dividend months. An alternative explanation of the poor performance of the anomaly could rest with the accuracy of the dividend month forecasting rule.

The remainder of this paper is organized as follows. Section 2 develops the hypotheses and section 3 details the cross-country tax rules. Section 4 discusses the data and section 5 presents the methodology. Section 6 analyses the results and section 7 provides concluding comments.

2. Hypotheses

Elton and Gruber (1970) argue that the ex-dividend day price drop reflects the difference between tax rates on capital gains and cash dividends for the marginal investor. In contrast, both Kalay (1982) and Miller and Scholes (1982) put forward arbitrage arguments that suggest that the ex-dividend day price drop cannot be used to infer the relative taxes on dividends versus capital gains for the marginal investor as it would create profit opportunity for arbitrageurs in the short term. However, Michaely and Vila (1995) conclude from their theoretical model that even if transaction costs are assumed to be zero, the ex-dividend day price drop should not necessarily be equal to the dividend paid because of idiosyncratic risk and aggregate risk aversion.

The interaction of tax, transaction costs and risk induces dividend clienteles. Dhaliwal and Li (2006) and Graham and Kumar (2006) find evidence of tax clienteles in the US. Graham and Kumar (2006) review trading data for over 60,000 US households and find trades around ex-dividend days and dividend announcements to be consistent with age and tax clienteles. Rantapuska (2008) finds evidence of tax clienteles in Finland, with investors who pay less tax on dividends tending to buy shares after the announcement date and selling after the ex-dividend day, while those who pay less tax on capital gains sell after the announcement date and buy ex-dividend. Using the same data, Felixson and Liljeblom (2008) also demonstrate that different tax status distinguishes two groups of investors: retail traders who trade in the short term to capture dividends, and institutions that take a short position before ex-dividend dates. Ainsworth and Lee (2014) provide evidence of dividend clienteles existing between institutional and retail investors in Australia.

Hartzmark and Solomon (2013) examine whether predictable trading behavior of dividend clienteles leads to abnormal returns in the US. They test for systematic differences using an asset pricing approach rather than an event study approach. After forecasting dividend payments ex-ante for the stocks in their sample, each month Hartzmark and Solomon (2013) sort stocks into portfolios based on whether or not they are predicted to pay a dividend in the current month. They find abnormal returns of 53 basis points per month from holding long all firms predicted to pay a dividend in the current month and short all other companies. In case dividend payers are systematically more risky than firms that do not pay dividends, Hartzmark and Solomon (2013) also show that holding long all predicted dividend firms and short all other dividend paying companies not predicted to pay a dividend in the current month earns monthly abnormal returns of 37 basis points. They argue that this result is anomalous because investors can very easily predict dividends as companies pay them on regular schedules, typically quarterly in the US, and are averse to changing this schedule.

The central research question that this paper seeks to answer is whether the anomalous result observed by Hartzmark and Solomon (2013) is exclusive to US markets or a characteristic of markets across the world. If this anomaly persists in markets outside the US, this will provide further evidence that dividend clienteles influence asset prices. The cross-sectional variation in taxes across countries should impact abnormal returns in predicted dividend months if dividend clienteles are the cause of the abnormal returns. Alternatively, the paper will identify whether the dividend month premium is US-specific. Thus, we will test two hypotheses 1) whether abnormal returns are observed in predicted dividend months in markets outside the US; and 2) whether the tax treatment of dividends is a determinant of returns in predicted dividend months.

3. Country-Specific Dividend Tax Rules

In this section we present a summary of the tax treatment of dividends and capital gains in each country. The intricacies of different tax regimes need to be outlined in detail in order to understand whether dividends or capital gains have a comparative tax advantage.

Throughout the sample Australia operated a system of full imputation, where dividend recipients are credited for all corporate tax paid (Twite, 2001). From 1999 investors had to hold a stock for a minimum of 45 days to be eligible for tax credits (Ainsworth, Fong, Gallagher and Partington, 2014). Before 1999, 20% of capital gains made by individuals were taxed as ordinary income (Brown, Ferguson and Sherry, 2010), while after 1999, 50% of long term and 100% of short term capital gains were taxed as income (Ainsworth, Fong, Gallagher and Partington, 2014).

Canada uses a system of partial dividend imputation, where tax credits are issued for a portion of the corporate tax paid (Booth, 1987). The imputation rate in Canada ranges from 13.7% at the beginning of the sample to 30.5% in 2009 (OECD Tax Database). For individuals, 75% of capital gains were taxed as income before 2000, and 50% after 2000[1] (Martineau, 2005).

Before 2005, France had a dividend imputation system in which imputation credits could be issued by companies at a 33.3% imputation rate (Harris, Hubbard and Kemsley, 2001). From 2005, France used a partial inclusion system, where a portion of the dividend received is taxed as income (OECD Tax Database). Under both these regimes capital gains were taxed at a flat rate rather than included as income, and this flat rate was significantly lower than the top income tax bracket throughout the sample (Harris, Hubbard and Kemsley, 2001, and OECD Tax Database).

Up until 2000, Germany operated a system of dividend imputation with a set imputation rate (Cannavan, Finn and Gray, 2004), before moving to a partial inclusion system where, for individuals, 50% of dividends were taxed as income (Keen, 2002). Under the former regime, short-term capital gains were taxed as income while long-term capital gains were not taxed. Under the latter regime Keen (2002) argues capital gains can be treated as tax free. From 2009, Germany introduced a 25% tax on dividend income at the shareholder level, which was withheld by the company (Radulescu and Stimmelmayr, 2010). Capital gains were also taxed at a flat rate of 25% under this regime (Radulescu and Stimmelmayr, 2010).

Neither dividends nor capital gains in Hong Kong are taxed at all during any point in the sample period (Kadapakkam (2000) and Kadapakkam, Meisami and Shi (2010)). Hong Kong thus represents an ideal control to compare to other markets in tests of the potential effects of tax induced dividend clienteles on prices.

Before 2004, Italy used a dividend imputation system with a set imputation rate (Bordignon, Giannini and Panteghini, 2001). Personal tax on dividends was withheld by the company and dividends received were included in the income tax base (Jappelli and Pistaferri, 2003). A withholding tax was

[1] During 2000 the rate was changed briefly to two-thirds of capital gains being included in the personal income tax base, see Appendix 1 for more detail.

charged on capital gains but they were not included in the income tax base (Bordignon, Giannini and Panteghini, 2001). However, after 1998 the remaining capital gains tax, after a withholding tax was charged, was included in the income tax base (Bordignon, Giannini and Panteghini, 2001). From 2004, Italy switched to a split rate system[2] without imputation and dividends were not included in the personal income tax base (Eggert and Genser, 2005).

Japan used a classical tax treatment of dividends throughout the sample except during 2000 to 2003, when very small imputation credits could be issued at an imputation rate of 6.4% (OECD Tax Database). Harris, Hubbard and Kemsley (2001) argue that before 2000 there was a tax disadvantage to receiving dividends. After 2003, both dividends and capital gains became taxed at a 10% flat rate (Harada and Nguyen, 2011).

New Zealand has a full imputation system (Cannavan, Finn and Gray, 2004) and capital gains are not taxed (Black, Legoria and Sellers, 2000). However, capital gains made from trading shares with the *intention* of making short-term profits are taxed as ordinary income (Bartholdy and Brown, 1999).

There is no capital gains tax in Singapore (Asher, 1999). Before 2003, Singapore operated a full imputation system, where dividends were paid with franking credits and were taxed as part of a shareholder's ordinary income (Singapore Ministry of Finance). From 2003 onwards, Singapore announced the introduction of a one-tier system where dividends were taxed only at the corporate level and made tax-exempt at the shareholder level (Rajan, 2003). From 2003 to 2008, a transitional period was instituted in Singapore until the one-tier system was fully implemented (Singapore Ministry of Finance).

The United Kingdom operates under a system of partial imputation (Harris, Hubbard and Kemsley, 2001) with an imputation rate ranging from 10% to 27% during the sample (Harris, Hubbard

[2] Following the OECD Tax Database, a split rate system is defined as a system where dividends are taxed at a higher rate than companies are taxed on retained earnings.

and Kemsley, 2001, and OECD Tax Database). Since 1988, capital gains have been taxed at the same rate as ordinary income (Seeley, 2010).

The United States has a classical tax treatment of dividends, where no tax credits can be issued for corporate tax paid (Harris, Hubbard and Kemsley, 2001). Before 2003, dividend income was taxed as ordinary income, while capital gains were taxed at a lower rate (20% in 2002) for the top four tax brackets (Gourio and Miao, 2011). This tax differential between dividends and capital gains was removed in 2003. After 2003, taxes on capital gains were reduced to 15% and federal taxes on dividend income were also set at 15% for the top four tax brackets (Gourio and Miao, 2011).

4. Data

For the period of January 1993 to December 2013, we study stocks from the major exchange(s) of the following developed countries: Australia, Canada, France, Germany, Hong Kong, Italy, Japan, New Zealand, Singapore, UK, and US. These countries are chosen because they encompass both classical and imputation tax systems and are geographically diverse. Monthly observations of stock returns, cash dividend amounts, market capitalizations, ex-dividend dates and dividend types are obtained from Datastream. Ince and Porter (2006) attest that there is no comparable data source to Datastream in terms of global security coverage. However, they find a number of problems with Datastream data that can affect economic inferences. We follow the data-cleaning filters suggested by Ince and Porter (2006) and those used by similar studies in the literature, as detailed below.

4.1 Data Filters

Following Hartzmark and Solomon (2013), Chui, Titman and Wei (2010), and Griffin, Kelly and Nardari (2010), only common equity is included in the sample. All stocks that are not categorized by Datastream as equity (code EQ) are discarded from the sample. The remaining stocks are then filtered by sector (as classified by Datastream) to eliminate any rights preferred stocks, trusts, and other types of non-common equity identified by Ince and Porter (2006). Stocks whose sector is classified as Equity Investment Instruments, Non-Equity Investment, Real Estate Investment Trusts, Real Estate Investment Services, Unclassified, Other Equities, Unquoted Equities, Equity Warrants, or Suspended Equities are removed from the sample. Following Chui, Titman and Wei (2010), we exclude any stocks that do not trade on the major exchange(s) in their country. The major exchange(s) for each country are Australia, Toronto, Paris, Frankfurt, Hong Kong, Milan, Osaka and Tokyo, Singapore, London, and NYSE, AMEX and NASDAQ.

To avoid the data errors identified by Ince and Porter (2006), observations are also filtered on returns and market capitalization. Return observations greater than 300% that then reverse within one month's time are set to missing. Ince and Porter (2006) find that this rule eliminates erroneous high values for return observations in US data. Following Chui, Titman and Wei (2010) and Hong, Lee and Swaminathan (2003), we also filter out the smallest stocks. Observations for stocks with market capitalizations in the bottom 5% of their country in a given month are set to missing. This filter accords with Ince and Porter's (2006) finding that the errors in TDS data are concentrated in stocks with small market capitalizations. If monthly returns are equal to zero and there was zero volume the return is set to missing. Furthermore, the returns of all stocks that had a price less than one in the previous month are set to missing. Any returns that were in the top or bottom 1% each month are also removed.

4.2 Fama and French and Momentum Risk Factors

We obtain data for market, size, book-to-market, and momentum risk factors from Ken French's online data library. The risk factors for the US and Japan are country specific. For the remaining countries we use risk factors that have been constructed using aggregated data for a number of markets. The combined Canadian and US factors (North American) are used for Canada. For France, Germany, Italy, and the United Kingdom we use the European factors. These factors are formed using data from Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Fratzscher (2002) finds that European markets have been integrated since the 1980s and highly integrated since 1996, and Hardouvelis, Malliaropulos and Priestley (2006) find further evidence of stock market integration in Europe after the adoption of the Euro in 1999. Asia-Pacific factor data from Ken French's data library are used for Australia, Hong Kong, Singapore, and New Zealand. These pan-Pacific factors are constructed using data from Australia, New Zealand, Hong Kong, and Singapore. While these markets are not as integrated as Europe, pan-Pacific factors still allow an informative analysis of risk-adjusted returns.

4.3 Dividend Data used to Forecast Dividends

Following Hartzmark and Solomon (2013) only cash dividends paid to all investors are used to forecast dividends. However, dividends that are paid every month or that are ostensibly one-off in nature are not considered by the rule used to forecast dividends. The 'dividend payment type' categorization in Datastream is used to identify one-off, monthly, and non-cash dividends. These dividend types, with their respective codes in parentheses include: payment for previous financial years (ARR), broken period payment (BRK), payback of capital investment (CAP), dividend on liquidation (LIQ), extraordinary payment (SPL), capital gains (CPG), long-term capital gains (CPL), short-term capital gains (CPS), undefined capital gains (CPU) and restricted to only some stockholders (RS).

Only cash dividends are considered in forecasting because the anomaly being tested may be driven by the existence of dividend clienteles who prefer dividend income to capital gains. Stock dividends that represent capital gains together account for only 0.07% of all dividend observations. Dividends that are ostensibly one-off in nature are also not used to forecast dividends because investors know ex-ante that these dividends are one-off and would not use them to predict future dividend schedules. This accords with Baker and Wurgler (2011), who use only dividends categorized by Datastream as quarterly (QTR), semi-annual (HYR), annual (YR), interim (INT), or final (FIN) as their investigation focuses on regular dividends payments.

Dividends that are classified by Datastream as monthly are also not considered in forecasting because, as Hartzmark and Solomon (2013) argue, a test of the dividend month premium is focused on the difference between returns in dividend versus non-dividend months. Monthly dividends are only present in Australian, US, and Canadian markets, where they constitute 0.29%, 35.38% and 55.78% of all dividend observations respectively. The latter two of these frequencies appear to be very large because a firm that pays a monthly dividend will have four times as many dividend observations than a firm that pays dividends quarterly and twelve times as many as a firm that pays dividends annually. Hartzmark and Solomon (2013) do not include monthly dividend observations in their study of US stock market data.

5. Methodology

5.1 Forecasting Dividends

To forecast predicted dividends we follow the rule used by Hartzmark and Solomon (2013). We also add to this rule to account for the differences in the categorization of dividends in Datastream compared to the CRSP data used by Hartzmark and Solomon (2013). For dividends that are classified by as quarterly (QTR), semi-annual (HYR), or annual (YR), we follow the rule used by Hartzmark and Solomon (2013): a stock is predicted to pay a dividend in the current month, *t*, if either a quarterly dividend was paid at *t*-3, *t*-6, *t*-9, or, *t*-12, a semi-annual dividend was paid at *t*-6 or *t*-12, or an annual dividend was paid *t*-12. This rule is advantageous because even if companies pay dividends in regular intervals, the month in which they pay their dividend can vary if the dividend is paid at the end of one month some times and at the start of the following month at other times.

However, there are a large number of dividend payments in the sample that are not categorized by Datastream as quarterly, semi-annual, or annual dividends despite them being paid on a regular quarterly, semi-annual, or annual schedule. For example, around 90% of the Australian dividend observations in the sample are classified as interim (INT) or final (FIN) despite being paid on a semi-annual or annual schedule. Thus, the rule used by Hartzmark and Solomon (2013) is not applicable in all countries. Across all countries dividends classified by Datastream as quarterly, semi-annual, or annual, together make up only 43.55% of dividend observations. For this reason we add to the rule used by Hartzmark and Solomon (2013). In addition to the rule stated above, a stock is also predicted to pay a dividend in month *t* if:

1. It paid a dividend at *t*-3 and at *t*-6, or
2. It paid a dividend at *t*-6 and at *t*-12, or
3. It paid a dividend at *t*-12 and at *t*-24.

Part (1) of the above rule identifies stocks that are paid on a quarterly schedule, while parts (2) and (3) identify semi-annual and annual dividend schedules. This second part of the forecasting rule fails to predict some dividends that are paid on a regular schedule if the month the stock pays their dividend changes. However, this strengthens any finding that stocks have higher returns in predicted dividend months because investors should be able to forecast dividends even more accurately than this rule.

5.2 Portfolio Formation Procedure

Following Hartzmark and Solomon (2013), we form three portfolios for each country over the sample period. In each month of the sample, portfolio *ED* contains all stocks that are predicted to pay a dividend in the current month by the forecasting rule. While, in each month of the sample, portfolio *ND* contains *all* companies not predicted to pay a dividend in the current month and portfolio *DND* represents all companies not predicted to pay a dividend in the current month that have paid a dividend in the past 12 months.

Hartzmark and Solomon (2013) term a portfolio that is long *ED* and short *ND* the 'between' companies portfolio, and a portfolio that is long *ED* and short *DND* the 'within' companies portfolio. This is because the 'within' companies portfolio goes both long and short the same companies from month to month, while the 'between' companies portfolio has stocks that do not pay dividends and so are never held long. We refer to these portfolios as *Long ED Short DND* and *Long ED Short ND.*

Hartzmark and Solomon (2013) argue that because a portfolio that is long *ED* and short *DND* is long and short the same group of companies in different months of the year it has no systematic risk. Thus, Hartzmark and Solomon (2013) maintain that the only possible risk explanation for positive returns from holding this portfolio is that dividend paying companies are systematically riskier in the months they pay dividends. The portfolio that is long *ED* and short *ND* provides an important comparison. However, returns from holding this portfolio could be explained by risk if stocks that pay dividends are systematically riskier than those that do not.

6. Results

6.1 Descriptive Statistics

The sample consists of 713 stocks from Australia, 3682 from Canada, 1780 from France, 1550 from Germany, 1279 from Hong Kong, 650 from Italy, 2699 from Japan, 222 from New Zealand, 384 from Singapore, 2255 from the UK, and 4599 from the US. Table 1 presents summary statistics for the returns of dividend paying stocks 12 months after a dividend payment for each country in the sample. Table 1 also reports the number of months since the last dividend payment. Of all the firms that paid a dividend *N* months ago, this probability is defined as the proportion of these firms that pay a dividend in the current month. Stocks that have quarterly schedules will tend to pay dividends three months after a dividend was paid, while semi-annual stocks will tend to pay a dividend six months after a dividend. From the probability a dividend is paid we can identify markets in which firms tend to have particular dividend schedules. It can be seen from Table 1, that Canadian and US companies tend to have quarterly dividend schedules, as the proportion of dividends that were paid three months before the current dividend is the highest. Similarly, firms in Australia, Japan, New Zealand and the United Kingdom tend to pay dividends semi-annually, as the probability a dividend is paid six months before the current month is highest six months before the dividend payment. France, Germany and Italy tend to comprise annual dividend payers, as the probability of dividend payment 12 months after a dividend is considerably larger than in any other month. The remaining countries in the sample have a more diverse range of dividend schedules.

[Insert Table 1 here]

These summary statistics illustrate that dividend payments can be predicted accurately and with only a small margin of error across a large number of firms. They also affirm the accuracy of the TDS classification of dividends, which we use as one way of forecasting dividends. TDS classifies 59% of both US and Canadian dividends as quarterly, 91% and 85% of Australian and Japanese dividends as semi-annual, and 87%, 88%, and 93% of French, German, and Italian dividends as annual, respectively.

In Table 1, higher returns can be seen in months that are 3, 6, 9, and 12 months after a dividend in Canada and the US. Similar patterns exist that is consistent with the dividend schedule in other countries. This suggests that these higher mean returns are potentially predictable. However, in some countries the results are more ambiguous and it is unclear whether larger returns exist in months where dividends can be predicted.

6.2 Raw Returns

Table 2 displays the mean raw returns from holding portfolios *ED*, *ND*, *DND*, *Long ED Short DND*, and *Long ED Short ND*. In all countries except Australia, Italy, and Japan, mean raw returns are higher in predicted dividend months than in months in which dividends are not predicted to be paid. For these countries the mean return from holding portfolios *Long ED Short DND*, and *Long ED Short ND*, is positive for the sample period. We find similar results to Hartzmark and Solomon (2013) for the US, who from 1927 to 2009 find a 37 basis point monthly difference between predicted dividend months and other months for both all companies and for only dividend payers. From 1993 to 2013, we find an 88 basis point difference in returns between predicted months and other months for dividend payers, and a 48 basis point difference between predicted dividend months and other months for all companies. The significant negative returns documented for Australia are in stark contrast to the majority of other countries.

[Insert Table 2 here]

Table 2 also reports the standard deviation of mean returns for each portfolio. In the US, Canada, Hong Kong and the UK, the standard deviation of the portfolio of predicted dividend payers is no greater than that of the portfolios of all other months for both all companies and for dividend payers. Hartzmark and Solomon (2013) find similar results in the US and point to these standard deviations as evidence that predicted dividend months are no riskier than other months. However, in other countries in which predicted dividend months outperform other months, the standard deviation of the portfolio of predicted dividends months is significantly higher than that of the other portfolios. The largest difference is in France Kong where the standard deviation of portfolio *ED* is 7.5% compared to 4.9% for portfolios *ND* and *DND*. This suggests that in these countries, the apparent premium in raw returns for holding stocks in their predicted dividend months may reflect compensation for risk. This highlights the need to test whether higher returns in predicted dividend months are robust to controlling for known risk factors.

6.3 Risk-Adjusted Returns

Following Hartzmark and Solomon (2013), we regress the excess mean monthly returns of both value-weighted and equal-weighted portfolios *ED*, *ND*, *DND*, *Long ED Short DND*, and *Long ED Short ND*, on a four-factor model, as shown for portfolio *ED* in equation 1*:*

$$R_{\mathrm{PredDiv}_{j,t}} - R_{f_{j,t}} = \alpha_{j,t} + \beta_{Mkt_{j,t}-R_{f_{j,t}}}(Mkt_{j,t} - R_{f_{j,t}}) + \beta_{SMB_{j,t}} SMB_{j,t} + \beta_{HML_{j,t}} HML_{j,t} + \beta_{UMD_{j,t}} UMD_{j,t} + \varepsilon_{j,t} \quad (1)$$

For each country *j* and each month *t*, where $Mkt_{j,t} - R_{f_{j,t}}$ is the excess return of the market, *SMB* and *HML* are the size and value factors as defined in Fama and French (1993), and *UMD* is a momentum factor representing the difference in returns between the best performing and worst performing stocks over the past 6 months. These factors are for the relevant country or region as defined above. In portfolios *Long ED Short DND*, and *Long ED Short ND*, a positive alpha shows that higher returns in predicted dividend months are not reflective of known risks. Examining the size of the anomaly in terms of alpha allows the anomaly to be compared across different countries.

Table 3 displays the four-factor model alphas from an OLS regression with the *t*-statistics calculated using Newey-West standard errors. The US results support the conclusions of Hartzmark and Solomon (2013). We find higher abnormal returns of 75 basis points per month for companies predicted to pay a dividend in the current month compared to all other dividend paying companies compared to 37 basis points as found by Hartzmark and Solomon (2013). This result is robust to using equal-weighted portfolios. We also find that the difference between abnormal returns for predicted dividend payers in the current month and abnormal returns for all other companies is around 1%.

[Insert Table 3 here]

In addition to the US, we find evidence of the existence of a 'dividend month premium' anomaly in the France, Germany and Singapore. Abnormal returns in France were around 91 basis points higher per month during predicted dividend months compared to both other months for dividend paying companies, and for all other companies. Similarly, German returns are 86 basis points higher in predicted dividends months and the returns in Singaporean firms are around 90 basis points higher in dividend paying months.

There are mixed results for Canada and the United Kingdom. Canadian firms have a 42 basis point higher alpha in dividend paying months relative to other dividend paying firms who are not expected to pay a dividend that month. However, the positive differential of 29 basis points relative to non-dividend paying firms is not significant. A similar story emerge in the United Kingdom, with a significant 54 basis point alpha becoming insignificant at 45 basis points when the short portfolio shifts from dividend paying firms that are expected to pay in that month to non-dividend paying firms.

The one outlier in the sample appears to be Australia. The alphas are highly significant at -1% against both alternative short portfolios. This finding is surprising given the imputation credits that are generally attached to dividend payments in Australia. The alphas for Hong Kong, Italy, Japan and New Zealand are not significantly different from zero. The alpha in Japan is negative, while the other countries alpha is greater than zero.

Hartzmark and Solomon (2013) argue that portfolio *Long ED Short DND* should have no systematic risk and hence the returns of this portfolio should have factor loadings insignificant from zero. The results of Hartzmark and Solomon (2013) support this as they find only a liquidity factor to be significant in a five-factor model but with the wrong sign (negative) to explain abnormal returns in predicted dividends months. The US results, also support these findings, as all the factor loadings are negative. Furthermore, the R^2 are also very low, and in some cases are negative. The argument that holding *Long ED Short DND* should incur no systematic risk is also supported in the other countries in which the divided month premium is found to exist. In the Germany and France, all factor loadings are either insignificantly different from zero or negative. The *Long ED Short DND* has a value tilt in Singapore. It appears that systematic risk, at least the four factors utilized here, are not responsible for the dividend month premium.

The findings in this section provide clear evidence that the dividend month premium is prevalent in the US, Germany, France, and Singapore, and to a lesser extent, the United Kingdom and Canada. This result indicates that the dividend month premium anomaly has economic significance outside the US. We now turn our attention to potential explanations for the dividend month premium.

6.4 Dividend Clustering

Portfolio *Long ED Short DND* should have zero systematic risk unless firms are more risky in the months they go ex-dividend. One potential explanation for the dividend month premium is dividend clustering. Dividend clustering means certain months of the year repeatedly have very few stocks going ex-dividend and, because companies tend to pay dividends on regular schedules, the same small group of companies will tend to pay dividends in these months each year. This means portfolio *Long ED Short DND* will have a much greater risk exposure to these firms than those that pay dividends in months where many other firms also pay dividends. This is because each year this portfolio will be long the same small group of companies in certain months. In other words, dividend payments could be concentrated in particular months of the year, leaving the dividend paying portfolio containing considerably more idiosyncratic risk at certain times of the year. For example, more than 80% of all Japanese dividends in the sample were paid in March or September. This dividend clustering could cause companies to appear more risky during predicted dividend months.

Table 4 reports the proportion of dividends paid in each month of the year in each country, as well as the number of dividend payers each month. Table 4 shows that clustering is most prevalent in Australia (March and September), France (May, June and July), Germany (May, June and July), Hong Kong (May and September), Italy (May), Japan (March and September), New Zealand (March and September and Singapore (May). Clustering does not present a problem in Canada, the United Kingdom or the US, as there are a reasonable number of dividend payers each month.

[Insert Table 4]

One implication of dividend clustering is that there are some months in which the ED portfolio cannot be formed, or contains very few stocks.[3] As a result the raw portfolio returns reported in Table 2

[3] Out of the 252 months in the sample, the ED portfolio can only be formed in 153 months for Italy, 230 for Germany, 242 for New Zealand and 247 for Singapore.

may overweight the returns of firms that pay dividends in the months of the year when very few other companies pay dividends. For example, in Italy, firms that are predicted to pay a dividend each year in January or August will have a far larger influence over the mean return of the dividend paying portfolio than companies who are predicted to pay a dividend in May. To account for this bias we calculate portfolio means by weighting monthly portfolio returns on the number of firms predicted to pay dividends each month.

Table 5 reports the results and shows that the higher mean returns in predicted dividend months compared to other months (both for all companies and dividend payers only) is similar to the unweighted results in Table 2, except for four countries. The returns for dividend month premium improve considerably for New Zealand with the *Long ED Short DND* return increasing 0.67% to 1.13%. However, the return from the long-short portfolios becomes negative and significant in Japan and Italy. Comparing the returns from Table 2 to Table 5, the mean return from holding portfolio *Long ED Short DND* decreases from an insignificant -0.12% to a significant -0.95% for Italy and from -0.31% to -0.4% for Japan when monthly portfolio returns are weighted on the number of firms predicted to pay a dividend each month. The net return in France falls from over 1% to 0.61%, but remains significant. The results indicate that the exact portfolio weighting procedure used to implement the strategy has a bearing on the performance of the strategy in certain countries.

[Insert Table 5]

6.5 Accuracy of the Dividend Month Prediction Rule

Another potential factor that could affect the implementation of the trading strategy is the accuracy of the rule used to predict the months in which dividends will be paid. To assess these rules we compare the predicted dividend payments to the actual dividend payments. We report two error rates. First, an error can be made if the rule predicts a dividend to be paid in a certain month and it is not. We refer to this error as ‘predicted but not paid’. The second error that can be made by the rule is that it may not predict all the dividends that are paid. We term this 'paid but not predicted'. This could be due to dividend initiations or irregular dividend payment schedules. These error rates are reported in Table 6 for each month and each country.

[Insert Table 6]

The results show that the dividend prediction rules are not actually that accurate. This inaccuracy could impact the inferences from the results. Panel A shows the dividends that were predicted but not paid. With the exception of Japan, the overall error rate for each country exceeds 20%, peaking at 41% for Singapore. The error rate from paid but not predicted dividends in Panel B shows that the forecasting rule works best in the Japan, Canada and the US The rule misses a considerable portion of dividend payments, with the errors getting as high as 60% in certain countries. In the multivariate analysis that follows we control for these error rates to determine what impact they have on the results.

6.6 Panel Data Results and Tax-Induced Dividend Clienteles

As evidence by the unexpected result in Australia, the cross-country differences raise important questions about what could be driving this predicted dividend month effect. The international test of the dividend month premium reported above not only establishes that this anomaly is not specific to US markets, but also provides a framework to test the anomaly's potential causes. Hartzmark and Solomon (2013) find evidence that dividend clienteles drive the dividend month premium in the US. As discussed in the literature review, tax effects have been proposed as causes for these clienteles. As tax differences across countries are easily observed, we investigate the extent to which different tax regimes can explain the findings on the dividend month premium in different markets. Data on country taxes are source from the OECD. We employ two tax variables in the regression. The first is an interaction between the size of the imputation tax credit and a dummy variable equal to one if the country operated a partial imputation tax system (*Partial Imputation*). The second is an interaction between the size of the imputation tax credit and a dummy variable equal to one if the country operated a full imputation tax system (*Full Imputation*).

These imputation tax systems allow for a certain amount of corporate tax to be treated as a pre-collection of personal tax. The benchmark group contains countries that operate a classical tax system where dividends are taxed at the corporate level and at the personal level. We also control for the market risk premium, size, value, momentum and the error rates noted in the previous section. We do not include fixed effects as we are trying to identify what factors are driving the differences across countries and hence, do not want to treat those differences as unobservable. The standard errors are clustered by country and month.

Table 7 reports the results from these estimations. For the *Long ED Short ND* portfolio in columns 1 and 2 we can see that the dividend month premium loads negatively on most factors except the value factor. Tax does seem to play a role in explaining the anomaly, with the partial imputation variable exerting a positive and significant effect on the returns. The difference between the partial imputation countries and the full imputation countries is also significant in columns 1 and 2. The paid but not predicted error variable shows up as significant in column 1, indicating that country-months with higher forecasting errors actually performed better. This suggests that firms initiating dividends or paying on an irregular schedule actually perform poorly. The results in column 3 and 4 show that the *Long ED Short DND* portfolio return difference cannot be explained by the tax or forecast error variables and indicate that other explanations for the return patterns need to be investigated.

[Insert Table 7]

7. Conclusion

Hartzmark and Solomon (2013) show that a dividend month premium exists in the US. We extend their analysis to an additional ten countries and show that the dividend month premium exists in France, Germany, and Singapore, and to a lesser extent, Canada, New Zealand and the United Kingdom. The evidence presented here indicates that the trading strategy results in negative alpha in Australia, despite the full imputation tax system in operation. We attempt to explain the anomaly by examining dividend clustering, cross-country tax differences and errors in the forecasting of dividend payments. Dividend clustering does affect the results, but the direction varies across countries. In multivariate analysis we show that the performance of the portfolio that goes long firms expected to pay a dividend in the current month and short firms that do not pay dividends is positively related to certain tax benefits and to certain forecast errors. However, we are unable to identify any factors that explain the performance of the portfolio that takes a long position in firm expected to a pay a dividend in the current months and a short position in dividend paying firms that are not expected to pay a dividend in the current month.

References

Ainsworth, Andrew B., Kingsley Y.L. Fong, David R. Gallagher, and Graham Partington, 2014, Institutional trading around the ex-dividend day, *Working Paper, The University of Sydney*.

Ainsworth, Andrew and Adrian Lee, 2014, The influence of individual investors on ex-dividend day returns, *Working Paper, The University of Sydney*.

Asher, Mukul, 1999, Tax reform in Singapore, *Asia Research Centre: Working Paper*.

Baker, Malcolm, and Jeffrey Wurgler, 2011, Dividends as reference points: A behavioral signaling model, *Working Paper, Harvard Business School*.

Bartholdy, Jan, and Kate Brown, 1999, Ex-dividend day pricing in New Zealand, *Accounting & Finance* 39, 111-129.

Black, Ervin L., Joseph Legoria, and Keith F. Sellers, 2000, Capital investment effects of dividend imputation, *The Journal of the American Taxation Association* 22, 40-59.

Booth, Laurence, 1987, The dividend tax credit and Canadian ownership objectives, *The Canadian Journal of Economics / Revue canadienne d'Economique* 20, 321-339.

Bordignon, Massimo, Silvia Giannini, and Paolo Panteghini, 2001, Reforming business taxation: Lessons from Italy?, *International Tax and Public Finance* 8, 191-210.

Brown, Philip, Andrew Ferguson, and Sam Sherry, 2010, Investor behaviour in response to Australia's capital gains tax, *Accounting & Finance* 50, 783-808.

Campbell, James A., and William Beranek, 1955, Stock price behavior on ex-dividend dates, *The Journal of Finance* 10, 425-429.

Cannavan, Damien, Frank Finn, and Stephen Gray, 2004, The value of dividend imputation tax credits in Australia, *Journal of Financial Economics* 73, 167-197.

Chui, Andy C. W., Sheridan Titman, and K. C. John Wei, 2010, Individualism and momentum around the world, *The Journal of Finance* 65, 361-392.

Dhaliwal, D. A. N., and Oliver Zhen Li, 2006, Investor tax heterogeneity and ex-dividend day trading volume, *The Journal of Finance* 61, 463-490.

Durand, David, and Alan M. May, 1960, The ex-dividend behavior of American telephone and telegraph stock, *The Journal of Finance* 15, 19-31.

Eggert, Wolfgang, and Bernd Genser, 2005, Dual income taxation in EU member countries, *CESifo Report 1/2005*.

Elton, Edwin J., and Martin J. Gruber, 1970, Marginal stockholder tax rates and the clientele effect, *The Review of Economics and Statistics* 52, 68-74.

Fama, Eugene F., and Kenneth R. French, 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56.

Felixson, Karl, and Eva Liljeblom, 2008, Evidence of ex-dividend trading by investor tax category, *The European Journal of Finance* 14, 1-21.

Fratzscher, Marcel, 2002, Financial market integration in Europe: On the effects of EMU on stock markets, *International Journal of Finance & Economics* 7, 165-193.

Gourio, François, and Jianjun Miao, 2011, Transitional dynamics of dividend and capital gains tax cuts, *Review of Economic Dynamics* 14, 368-383.

Graham, John R., and Alok Kumar, 2006, Do dividend clienteles exist? Evidence on dividend preferences of retail investors, *The Journal of Finance* 61, 1305-1336.

Griffin, John M., Patrick J. Kelly, and Federico Nardari, 2010, Do market efficiency measures yield correct inferences? A comparison of developed and emerging markets, *Review of Financial Studies* 23, 3225-3277.

Harada, Kimie, and Pascal Nguyen, 2011, Ownership concentration and dividend policy in Japan, *Managerial Finance* 37, 362 - 379.

Hardouvelis, Gikas A., Dimitrios Malliaropulos, and Richard Priestley, 2006, EMU and European stock market integration, *The Journal of Business* 79, 365-392.

Harris, Trevor S., R. Glenn Hubbard, and Deen Kemsley, 2001, The share price effects of dividend taxes and tax imputation credits, *Journal of Public Economics* 79, 569-596.

Hartzmark, Samuel M. , and David H. Solomon, 2013, The dividend month premium, *Journal of Financial Economics 109*, 640-660.

Hong, Dong, Charles M.C. Lee, and Bhaskaran. Swaminathan, 2003, Earnings momentum in international markets, *Working Paper, Cornell University*.

Ince, Ozgur S., and R. Burt Porter, 2006, Individual equity return data from Thomson Datastream: Handle with care!, *Journal of Financial Research* 29, 463-479.

Jappelli, Tullio, and Luigi Pistaferri, 2003, Tax incentives and the demand for life insurance: Evidence from Italy, *Journal of Public Economics* 87, 1779-1799.

Kadapakkam, Palani-Rajan, 2000, Reduction of constraints on arbitrage trading and market efficiency: An examination of ex-day returns in Hong Kong after introduction of electronic settlement, *The Journal of Finance* 55, 2841-2861.

Kadapakkam, Palani-Rajan, Alex Meisami, and Yilun Shi, 2010, Lost in translation: Delayed ex-dividend price adjustments of Hong Kong ADRs, *Journal of Banking & Finance* 34, 647-655.

Kalay, Avner, 1982, The ex-dividend day behavior of stock prices: A re-examination of the clientele effect, *The Journal of Finance* 37, 1059-1070.

Keen, Michael, 2002, The German tax reform of 2000, *International Tax and Public Finance* 9, 603-621.

Martineau, Patrice, 2005, Analysis in brief: Federal personal income tax: Slicing the pie, *Statistics Canada: Analytical Paper*.

Michaely, Roni, and Jean-Luc Vila, 1995, Investors' heterogeneity, prices, and volume around the ex-dividend day, *Journal of Financial and Quantitative Analysis* 30, 171-198.

Miller, Merton H., and Myron S. Scholes, 1982, Dividends and taxes: Some empirical evidence, *Journal of Political Economy* 90, 1118-1141.

OECD Tax Database, The Organisation of Economic Co-Operation and Development. Accessed 10th of December 2014, < http://www.oecd.org/tax/tax-policy/tax-database.htm >

Radulescu, Doina, and Michael Stimmelmayr, 2010, The impact of the 2008 German corporate tax reform: A dynamic CGE analysis, *Economic Modelling* 27, 454-467.

Rajan, Ramkishen S., 2003. *Sustaining competitiveness in the new global economy: The experience of Singapore* (Edward Elgar Publishing, Cheltenham, UK).

Rantapuska, Elias, 2008, Ex-dividend day trading: Who, how, and why?: Evidence from the Finnish market, *Journal of Financial Economics* 88, 355-374.

Schwert, G. William, 2003, Anomales and market efficiency, in G.M. Constantinides, M. Harris, and R.M. Stulz, eds.: Handbook of the Economics of Finance (Elsevier, North Holland).

Seeley, Anthony, 2010, Capital gains tax: Background history, (House of Commons Library, London).

Singapore Ministry of Finance (MOF) website. *One-Tier System.* Accessed 20th of August 2012, <www.mof.gov.sg>

Twite, Garry, 2001, Capital structure choices and taxes: Evidence from the Australian dividend imputation tax system, International Review of Finance 2, 217-234.

Table 1
Expected Dividend Payments and Returns

This table reports the mean in percent per month *N* months after a dividend, where *N* ranges from 1 to 12. The probability of a dividend (Prob) is the probability that a firm pays a dividend in the current month given its most recent dividend was *N* months ago. This is calculated as the number of firm-months for which a dividend was paid *N* months ago and a dividend was paid in the current month divided by the total number of firm-months with a dividend paid *N* months ago.

Country	Variable	Months Since Dividend Payment											
		1	2	3	4	5	6	7	8	9	10	11	12
Australia	Mean Return	1.115	0.390	0.825	1.623	1.975	1.012	0.116	-0.944	-0.173	0.751	1.455	1.824
	Prob.	0.00	0.17	4.19	2.03	15.29	59.67	13.81	1.67	0.57	0.08	0.44	2.08
Canada	Mean Return	0.868	1.117	1.425	1.452	0.866	1.746	0.960	0.733	1.227	1.260	1.612	1.995
	Prob.	0.00	4.94	79.74	5.28	0.63	5.83	0.61	0.48	0.16	0.05	0.25	2.04
France	Mean Return	0.327	0.029	-0.062	0.383	0.871	1.272	2.054	1.657	1.748	1.912	1.493	1.792
	Prob.	0.00	0.32	0.93	1.50	2.10	3.49	2.24	1.54	1.26	2.06	11.05	73.51
Germany	Mean Return	-0.741	-0.599	-0.724	-0.338	0.350	0.972	1.630	1.398	1.529	2.248	2.194	1.148
	Prob.	0.00	0.02	0.11	0.02	0.36	0.32	0.32	0.23	0.54	2.42	15.00	80.65
Hong Kong	Mean Return	0.279	0.680	0.445	0.890	1.050	1.268	2.016	0.898	0.541	1.383	2.475	1.229
	Prob.	0.00	0.96	6.80	22.60	15.07	4.74	15.06	21.49	4.78	0.30	1.11	7.10
Italy	Mean Return	-0.875	-0.403	0.087	-1.003	0.850	1.321	2.031	1.821	2.092	1.621	1.904	0.688
	Prob.	0.00	0.03	0.00	0.30	1.09	1.56	1.29	0.36	0.17	2.42	9.95	82.81
Japan	Mean Return	0.250	0.038	1.829	0.618	-0.115	0.449	-1.497	-1.750	-0.487	2.456	0.593	2.680
	Prob.	0.00	0.00	0.50	0.04	0.02	82.33	0.02	0.01	0.05	0.02	0.02	16.99
New Zealand	Mean Return	0.805	0.009	0.616	1.004	1.249	1.996	2.259	0.977	1.155	1.243	1.514	2.626
	Prob.	0.00	1.32	5.18	6.78	18.24	40.29	18.42	5.59	1.00	0.32	0.41	2.46
Singapore	Mean Return	0.363	0.260	0.527	0.777	1.203	0.193	1.693	1.606	0.693	0.760	1.788	0.380
	Prob.	0.00	1.86	13.75	13.51	6.58	5.73	6.72	13.23	11.96	1.90	3.62	21.14
United Kingdom	Mean Return	0.733	0.437	0.764	1.311	1.665	2.081	2.039	1.298	1.149	2.261	1.835	2.452
	Prob.	0.00	0.37	3.39	7.73	20.50	34.87	20.05	7.61	1.85	0.37	0.47	2.78
United States	Mean Return	0.975	0.919	1.419	1.127	1.303	1.668	0.824	0.438	1.012	2.025	1.513	2.001
	Prob.	0.00	5.46	84.43	5.39	0.45	2.62	0.37	0.07	0.09	0.03	0.07	1.02

Table 2
Portfolio Returns

This table reports the mean return and standard deviation of returns in percent per month from holding the dividend-related portfolios over the period of the sample. Portfolio *ED* each month holds stocks that are predicted to pay a dividend in the current month according to the forecasting rule. Portfolio *ND* holds all stocks not predicted to pay a dividend in the current month, while portfolio *DND* holds all stocks not predicted to pay a dividend in the current month that paid a dividend in the last 12 months. * and ** denote statistical significance at 5%, and 1%, respectively.

Country	Variable	ED	ND	DND	ED – ND	ED – DND
Australia	Mean Return	0.120	1.165**	1.177**	-1.045**	-1.057**
	t-stat	(0.34)	(4.60)	(4.68)	(-3.68)	(-3.72)
	Std. Dev.	5.563	4.023	3.995	4.507	4.509
Canada	Mean Return	1.270**	0.832**	0.936**	0.437*	0.334
	t-stat	(4.53)	(3.00)	(3.72)	(2.10)	(1.61)
	Std. Dev.	4.444	4.403	3.991	3.306	3.286
France	Mean Return	1.786**	0.776*	0.774*	1.010**	1.012**
	t-stat	(3.77)	(2.49)	(2.49)	(2.77)	(2.76)
	Std. Dev.	7.525	4.945	4.941	5.777	5.817
Germany	Mean Return	1.413**	0.788*	0.792*	0.743	0.727
	t-stat	(2.99)	(2.27)	(2.32)	(1.85)	(1.82)
	Std. Dev.	7.156	5.518	5.418	6.101	6.064
Hong Kong	Mean Return	1.257*	1.046*	1.163**	0.211	0.094
	t-stat	(2.56)	(2.36)	(2.78)	(0.64)	(0.30)
	Std. Dev.	7.781	7.024	6.650	5.204	4.946
Italy	Mean Return	0.943	1.111**	1.100*	-0.130	-0.108
	t-stat	(1.43)	(2.60)	(2.55)	(-0.22)	(-0.17)
	Std. Dev.	8.138	6.771	6.858	7.488	7.759
Japan	Mean Return	0.030	0.341	0.342	-0.311	-0.312
	t-stat	(0.08)	(1.01)	(1.04)	(-1.25)	(-1.26)
	Std. Dev.	5.930	5.359	5.208	3.934	3.921
New Zealand	Mean Return	1.455**	0.771**	0.748**	0.647	0.675*
	t-stat	(3.96)	(2.96)	(2.82)	(1.94)	(1.99)
	Std. Dev.	5.722	4.132	4.204	5.191	5.279
Singapore	Mean Return	1.563**	0.671	0.770*	0.907*	0.804*
	t-stat	(3.03)	(1.89)	(2.04)	(2.35)	(2.22)
	Std. Dev.	8.105	5.643	5.982	6.061	5.691
United Kingdom	Mean Return	1.259**	0.702**	0.798**	0.557*	0.462*
	t-stat	(4.39)	(2.72)	(3.20)	(2.52)	(2.27)
	Std. Dev.	4.559	4.091	3.955	3.512	3.232
United States	Mean Return	1.645**	1.164**	0.759*	0.481	0.885**
	t-stat	(4.24)	(2.76)	(2.20)	(1.61)	(2.99)
	Std. Dev.	6.153	6.705	5.468	4.725	4.696

Table 3
Four-Factor Portfolio Alphas

This table reports the alpha from a four-factor model regression. Results are reported for the value-weighted ED-ND portfolio and the ED-DND portfolio. * and ** denote statistical significance at 5%, and 1%, respectively, based on Newey-West standard errors.

Country	ED – ND Portfolio						ED – DND Portfolio					
	Alpha	RMRF	SMB	HML	UMD	Adj. R^2	Alpha	RMRF	SMB	HML	UMD	Adj. R^2
Australia	-1.011**	0.011	0.057	0.021	-0.073	-0.007	-1.004**	-0.004	0.024	0.048	-0.081	-0.005
	(-3.57)	(0.16)	(0.62)	(0.20)	(-1.13)		(-3.60)	(-0.05)	(0.26)	(0.46)	(-1.32)	
Canada	0.292	-0.029	-0.127	0.090	-0.026	0.013	0.424*	-0.099**	-0.205**	0.122	-0.041	0.076
	(1.55)	(-0.79)	(-1.93)	(1.05)	(-0.52)		(2.29)	(-2.79)	(-2.87)	(1.56)	(-0.92)	
France	0.911*	0.032	0.138	0.145	0.017	-0.004	0.906*	0.031	0.105	0.138	0.019	-0.006
	(2.54)	(0.50)	(1.28)	(1.10)	(0.20)		(2.53)	(0.49)	(0.99)	(1.05)	(0.22)	
Germany	0.865*	-0.146*	0.052	-0.021	0.004	0.006	0.862*	-0.166**	0.007	0.010	0.010	0.011
	(2.04)	(-2.47)	(0.46)	(-0.23)	(0.05)		(2.02)	(-2.87)	(0.06)	(0.12)	(0.12)	
Hong Kong	0.091	-0.044	0.025	0.137	-0.057	-0.001	0.179	-0.089	-0.109	0.187	-0.052	0.016
	(0.27)	(-0.88)	(0.23)	(1.09)	(-0.45)		(0.52)	(-1.66)	(-0.84)	(1.52)	(-0.40)	
Italy	0.221	-0.272**	0.049	0.344*	-0.458	0.086	0.216	-0.268**	0.037	0.332*	-0.469	0.095
	(0.37)	(-2.85)	(0.28)	(2.59)	(-1.59)		(0.38)	(-2.86)	(0.22)	(2.53)	(-1.70)	
Japan	-0.372	-0.076	-0.018	0.210*	-0.022	0.028	-0.373	-0.085	-0.031	0.215*	-0.017	0.032
	(-1.25)	(-1.57)	(-0.25)	(2.01)	(-0.33)		(-1.27)	(-1.83)	(-0.41)	(2.08)	(-0.26)	
New Zealand	0.502	0.014	-0.015	0.253*	0.022	0.006	0.466	0.012	-0.048	0.255*	0.023	0.008
	(1.31)	(0.24)	(-0.11)	(2.31)	(0.21)		(1.22)	(0.21)	(-0.33)	(2.43)	(0.22)	
Singapore	0.905**	-0.023	0.084	0.292	-0.316**	0.113	0.891*	0.021	0.038	0.454**	-0.351**	0.175
	(2.78)	(-0.29)	(0.58)	(1.85)	(-2.78)		(2.54)	(0.27)	(0.25)	(2.83)	(-2.90)	
United Kingdom	0.455	-0.053	0.072	0.101	0.000	0.006	0.537*	-0.065	0.049	0.130	-0.000	0.010
	(1.80)	(-1.22)	(1.04)	(1.34)	(0.00)		(2.02)	(-1.30)	(0.68)	(1.42)	(-0.00)	
United States	0.999**	-0.058	-0.044	-0.190*	0.057	0.021	0.748*	-0.244**	-0.128	-0.054	-0.084	0.096
	(3.32)	(-1.08)	(-0.48)	(-2.02)	(0.80)		(2.50)	(-3.31)	(-1.32)	(-0.54)	(-1.04)	

Table 4
The Monthly Distribution of Predicted Dividend Payments

This table reports the percentage of all expected dividend payments that are predicted to be paid in each month of the year (%) and the total number of predicted dividends each month (Obs.). The mean is calculated excluding months where the number of predicted dividend payers is zero.

Country	Variable	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Australia	%	0.93	8.77	24.39	6.26	2.78	5.23	0.92	8.65	24.48	8.80	5.18	3.60
	Obs.	62	584	1624	417	185	348	61	576	1630	586	345	240
Canada	%	4.25	5.76	13.47	4.47	8.02	13.30	4.70	7.56	12.21	4.37	8.17	13.72
	Obs.	742	1005	2350	780	1399	2320	820	1320	2131	763	1426	2394
France	%	2.96	1.90	2.76	5.75	15.60	33.52	22.75	1.92	5.20	2.68	1.89	3.08
	Obs.	282	181	263	548	1488	3197	2170	183	496	256	180	294
Germany	%	0.81	1.15	3.96	6.91	27.86	29.63	17.06	5.96	1.92	0.81	1.63	2.31
	Obs.	48	68	235	410	1654	1759	1013	354	114	48	97	137
Hong Kong	%	5.52	1.45	2.84	7.27	20.82	9.05	2.59	10.84	20.21	8.88	3.47	7.07
	Obs.	514	135	265	677	1940	843	241	1010	1883	827	323	659
Italy	%	0.27	0.78	0.62	9.66	60.60	12.69	10.68	0.30	0.46	0.43	2.95	0.56
	Obs.	10	29	23	360	2258	473	398	11	17	16	110	21
Japan	%	0.62	3.45	46.96	0.44	1.33	3.06	0.58	2.88	34.44	0.62	1.30	4.32
	Obs.	379	2091	28489	268	808	1854	350	1746	20896	378	790	2620
New Zealand	%	1.44	2.16	19.92	8.73	4.83	8.90	3.81	3.81	13.60	11.40	10.55	10.85
	Obs.	34	51	470	206	114	210	90	90	321	269	249	256
Singapore	%	1.98	3.13	4.22	10.64	21.53	11.15	5.97	16.80	8.05	4.31	7.12	5.11
	Obs.	62	98	132	333	674	349	187	526	252	135	223	160
United Kingdom	%	4.83	3.72	11.30	10.51	8.36	9.47	6.33	7.60	12.79	10.03	6.68	8.37
	Obs.	1104	850	2582	2401	1911	2165	1447	1737	2923	2293	1526	1912
United States	%	5.49	8.04	10.49	5.83	9.13	10.24	5.99	8.88	9.77	6.29	9.17	10.66
	Obs.	2561	3746	4890	2717	4257	4773	2794	4140	4556	2933	4274	4968

Table 5
Portfolio Returns Weighted by Stocks Predicted to Pay a Dividend

This table reports the mean return percent per month from holding the dividend premium portfolios over the period of the sample, where the monthly weights are based on the number of stocks that are expected to make a payment in that month. Portfolio *ED* each month holds stocks that are predicted to pay a dividend in the current month according to the forecasting rule. Portfolio *ND* holds all stocks not predicted to pay a dividend in the current month, while portfolio *DND* holds all stocks not predicted to pay a dividend in the current month that paid a dividend in the last 12 months. * and ** denote statistical significance at 5%, and 1%, respectively.

Country	Variable	ED	ND	DND	ED – ND	ED – DND
Australia	Mean Return	0.381	1.226**	1.278**	-0.845**	-0.897**
	t-stat	(1.21)	(4.49)	(4.75)	(-3.57)	(-3.71)
Canada	Mean Return	1.175**	0.657*	0.808**	0.519*	0.367
	t-stat	(4.18)	(2.40)	(3.35)	(2.48)	(1.73)
France	Mean Return	1.134**	0.433	0.521	0.701**	0.612*
	t-stat	(2.97)	(1.46)	(1.72)	(2.75)	(2.37)
Germany	Mean Return	1.403**	0.657*	0.638*	0.746**	0.765**
	t-stat	(3.98)	(2.06)	(2.00)	(2.92)	(3.01)
Hong Kong	Mean Return	0.813	0.736	0.892*	0.077	-0.078
	t-stat	(1.64)	(1.59)	(2.02)	(0.30)	(-0.31)
Italy	Mean Return	-0.140	0.816	0.814	-0.956*	-0.954*
	t-stat	(-0.32)	(1.80)	(1.78)	(-2.46)	(-2.19)
Japan	Mean Return	1.039**	1.436**	1.440**	-0.398*	-0.401*
	t-stat	(2.91)	(3.85)	(4.19)	(-2.30)	(-2.46)
New Zealand	Mean Return	2.074**	1.024**	0.946**	1.050**	1.128**
	t-stat	(5.79)	(3.94)	(3.61)	(3.53)	(3.69)
Singapore	Mean Return	1.296**	0.603	0.633	0.693*	0.663*
	t-stat	(2.88)	(1.74)	(1.76)	(2.09)	(2.14)
United Kingdom	Mean Return	1.283**	0.719**	0.809**	0.564**	0.475*
	t-stat	(4.43)	(2.72)	(3.19)	(2.71)	(2.48)
United States	Mean Return	1.567**	1.102*	0.609	0.465	0.958**
	t-stat	(4.20)	(2.58)	(1.74)	(1.57)	(3.28)

Table 6
Accuracy of the Predicted Dividend Month Rule

This table reports two error rates from the forecasting rule. The predicted but not paid errors occur if the rule predicts a dividend to be paid in a certain month and it is not. The percentage is relative to the total number of dividends predicted. The paid but not predicted error occurs if the rule does not predict a dividend that is paid. The percentage is relative to the total number of dividends paid. The column 'All' is the pooled average across all months for a given country.

Country	All	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Panel A: Predicted but not Paid													
Australia	23.59	20.58	19.76	19.48	27.06	33.26	17.11	23.67	23.82	20.04	29.48	27.03	21.62
Canada	26.75	31.64	39.12	19.25	32.04	23.77	23.13	27.01	25.87	23.12	31.08	22.67	22.32
France	30.88	27.34	35.06	32.58	27.08	27.74	25.20	31.99	35.07	32.38	30.85	28.99	36.23
Germany	31.48	20.83	28.43	31.47	36.71	24.65	33.38	32.87	40.85	29.19	24.17	39.32	33.05
Hong Kong	40.85	38.56	58.63	65.95	34.95	28.32	35.05	42.51	30.24	25.83	34.76	50.70	44.72
Italy	32.76	66.67	43.14	31.82	37.29	23.72	34.52	40.47	100.00	31.82	25.00	11.15	43.75
Japan	6.85	6.75	4.80	5.04	10.08	8.41	7.78	6.57	5.26	5.59	7.29	8.51	6.09
New Zealand	31.64	47.50	34.83	19.34	33.89	33.24	35.24	33.86	30.63	25.58	24.99	33.33	29.19
Singapore	41.08	49.19	55.35	38.82	38.01	30.61	37.13	34.77	22.42	38.20	42.04	59.14	47.88
United Kingdom	27.11	29.84	36.38	25.36	26.63	28.36	25.87	27.81	23.16	23.42	23.83	28.00	26.69
United States	27.03	35.00	30.56	21.59	31.91	23.97	23.09	30.08	24.97	25.50	27.87	25.29	24.47
Panel B: Paid but not Predicted													
Australia	45.14	45.85	50.84	35.40	44.65	53.55	33.50	46.73	52.76	38.23	50.77	51.32	38.10
Canada	11.76	13.35	10.10	11.82	17.76	11.77	9.13	12.75	11.71	7.50	15.13	10.67	9.47
France	56.05	49.60	60.41	56.93	58.91	58.08	46.86	50.66	63.56	57.76	60.67	57.97	51.22
Germany	60.52	54.44	74.45	58.92	66.81	54.49	60.43	58.87	72.37	62.77	52.50	66.88	44.55
Hong Kong	59.84	60.22	63.99	60.68	57.53	58.96	64.77	65.68	58.62	53.95	60.01	59.30	54.36
Italy	58.56	91.67	62.72	64.71	62.88	43.13	65.29	57.77	100.00	58.33	72.73	18.36	68.72
Japan	10.87	12.54	9.38	8.61	16.00	12.06	11.14	12.34	8.72	7.31	12.29	10.06	9.95
New Zealand	48.52	64.29	46.80	35.21	55.59	45.52	47.92	52.63	52.87	41.78	43.58	53.91	42.80
Singapore	60.60	63.42	66.71	63.04	59.46	56.71	65.20	62.30	48.29	61.60	64.98	56.68	58.82
United Kingdom	41.14	43.62	46.87	37.69	39.22	49.50	41.28	44.19	43.24	35.67	38.47	39.81	34.09
United States	8.22	10.51	7.92	7.67	9.92	7.96	5.38	9.13	8.41	5.85	9.99	8.04	7.89

Table 7
Cross-Country Explanations for the Dividend Month Premium

This table reports the results of a regression of the ED-ND portfolio and the ED-DND portfolio against the four risk factors (market risk premium, size, value and momentum), tax variables and error variables. Partial imputation is an interaction between the size of the imputation tax credit and a dummy variable equal to one if the country operated a partial imputation tax system. Full imputation is an interaction between the size of the imputation tax credit and a dummy variable equal to one if the country operated a full imputation tax system. % Paid not Predicted is a country-month variable that measures the proportion of dividend payments that were not predicted by the rule as a percent of the total number of dividends paid. % Predicted not paid is a country-month variable that measures the proportion of dividend payments the rule predicted but were not paid as a percent of the total number of dividends predicted. The standard errors are clustered by country and month. * and ** denote statistical significance at 5%, and 1%, respectively.

	ED – ND Portfolio		**ED – DND Portfolio**	
	(1)	**(2)**	**(3)**	**(4)**
Constant	-0.033	0.146	0.107	0.164
	(-0.13)	(0.72)	(0.30)	(0.69)
Partial Imputation	0.017***	0.011*	0.010	0.006
	(3.08)	(1.72)	(1.20)	(0.92)
Full Imputation	-0.008	-0.007	-0.009	-0.007
	(-0.74)	(-0.61)	(-0.74)	(-0.65)
% Paid not Predicted	1.119**		0.841	
	(2.47)		(1.41)	
% Predicted not Paid		0.905		0.947
		(1.21)		(1.22)
RMRF	-0.078***	-0.078***	-0.048***	-0.048***
	(-2.80)	(-2.85)	(-2.74)	(-2.84)
SMB	-0.026	-0.027	0.023	0.022
	(-0.90)	(-0.91)	(0.98)	(0.89)
HML	0.150***	0.150***	0.107**	0.106**
	(3.35)	(3.34)	(2.57)	(2.55)
UMD	-0.080**	-0.079**	-0.061*	-0.060*
	(-2.47)	(-2.50)	(-1.83)	(-1.85)
Adj. R^2	0.025	0.024	0.012	0.012
Obs.	2,636	2,636	2,636	2,636