Share Issuance Effects in the Cross-Section of Stock Returns

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Abstract

Previous research describes the net share issuance anomaly in U.S. stocks as pervasive, both in size-based sorts and in cross-section regressions. As a further test of its pervasiveness, this paper undertakes an in-depth study of share issuance effects in the Australian equity market. The anomaly is observed in all size stocks except micro stocks. For example, equal-weighted portfolios of non-issuing big stocks outperform portfolios of high-issuing big stocks by an average of 0.84% per month over 1990–2009. This outperformance survives risk adjustment and appears to subsume the asset growth effect in Australian stock returns.

JEL classification: G10, G11, G12, G14

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1. Introduction

Daniel and Titman (2006) and Pontiff and Woodgate (2008) document a significant net share issuance effect in U.S. stocks, where positive net share issuance is associated with negative subsequent performance and negative net share issuance (repurchase) is associated with positive subsequent performance. The authors find that the proportional net change in the number of shares on issue, from one year to the next, can capture seasoned equity offering (SEO) and repurchase effects, as well as the return effects of other events such as stock mergers and acquisitions and the exercise of executive stock options. In their comprehensive 2008 study of anomalies in the U.S. stock market, Fama and French (FF) identify the net share issuance effect as one of the most robust, being observable across the spectrum of U.S. stocks.

This study tests the pervasiveness of the net share issuance anomaly by undertaking an in-depth study of share issuance effects in the Australian equity market. Two factors motivate this study. First, the Australian market provides a unique insight into the share issuance effect due to the distinctive evolution of its repurchase legislation and because it has a long-standing taxation regime that does not favor stock repurchases over dividends. Thus Australian equities present an ideal opportunity to examine the pervasiveness of the net share issuance effect in a non-U.S. market. To date, no study has tested for the existence of a net share issuance effect in the Australian market. The closest related study is that of McLean, Pontiff, and Watanabe (2009). These authors include Australian stocks in their pooled international investigation of the net share issuance effect but do not undertake statistical testing for the effect within individual countries. Other related studies include some that suggest that an SEO effect may exist in Australia (e.g., Allen and Soucik, 1999a, 1999b; Brown, Gallery, and Goei, 2006).[1]

Second, there are differing views about the relative robustness of the net share issuance effect compared to the asset growth effect in the U.S. market. In their review of the anomalies literature, FF (2008) argue that while the net share issuance effect is one of three pervasive anomalies (the others being momentum and accruals), the asset growth effect is less robust. In contrast, Cooper, Gulen, and Schill (2008) report that the asset growth anomaly partially explains the equity issuance anomaly. An Australian study of net share issuance can provide out-of-sample evidence about the robustness of the latter claim by including an asset growth variable as one of the control variables in cross-sectional regressions.

The importance of using both sort and cross-sectional regression methodologies in tests of anomaly variables is stressed by FF (2008). Sort procedures allow us to examine return patterns across the spectrum of net share issuance and they avoid many of the assumptions implicit in regression methodologies. We split all stocks into portfolios on the basis of their net share issuance activity and examine the spreads between the portfolios of issuing firms, non-issuing firms, and repurchasing firms. Following FF (2008), we risk-adjust our returns by matching stocks to portfolios formed on size and book to market (BM). We conduct cross-sectional regressions in the spirit of Fama and MacBeth (1973) to provide alternate tests of the share issuance effect and to introduce additional variables already

[1] These studies were constrained by data limitations. The sample of McLean et al. (2009) covers an average of only 483 Australian stocks per year over the period 1981–2006, about half as many monthly observations as in our study. Brown et al. (2006) use a sample of 3650 SEOs over the period 1993–2001 and calculate abnormal returns in reference to an equal-weighted market index. Adjustments for size and BM cause the sample to shrink by around 44%. Allen and Soucik's (1999a, 1999b) sample covers only 102 SEOs over the period 1983–1994.

identified within the cross section of stock returns. Such regressions allow us to examine the marginal predictive ability of the net share issuance effect in Australia.

Since FF (2008) also warn against allowing analyses to be dominated by the influence of micro stocks, which in numbers make up a large proportion of the market but constitute only a small part of its capitalization, our analyses are conducted across micro, small, and big size sorts on equal-weighted (EW) and value-weighted (VW) bases. This allows us to examine the net share issuance effect across the spectrum of the Australian market.

The remainder of this study is organized as follows. Section 2 describes the sample and the methodologies employed to test for a net share issuance effect in Australia. It also presents the characteristics of portfolios formed on net share issuance. Section 3 presents raw and abnormal return results from sort tests, paying particular attention to spreads between issuing and non-issuing firms. Section 4 uses Fama–MacBeth regressions to examine the marginal benefit of net share issuance in explaining the cross section of stock returns. Section 5 briefly discusses the implications for market efficiency. Section 6 concludes the paper.

2. Data and methodology

In Australia, the literature on asset pricing has been limited by the lack of a comprehensive database containing both return and accounting records for Australian stocks. In particular, insufficient book value data have inhibited research using the FF (1993) three-factor model and, more broadly, research involving risk-adjustment processes. To overcome this impediment, this study utilizes a merged database constructed from the Centre for Research in Finance's Share Price and Price Relative (SPPR) database and the Aspect Huntley database. The SPPR database provides Australian Securities Exchange market data; Aspect Huntley provides financial statement data.

Following FF (1993), we exclude real estate investment trusts, listed investment funds, and other non-ordinary equity from the sample. Because such firms tend to repurchase their units or shares frequently, inferences made on their issuing activity would be very different from those for other firms. In addition, we exclude firms whose prices have not changed for three months, ending December t-1, since we assume such firms have been suspended from trading. We remove firms that were not listed 18 months prior to the formation date (i.e., June t-2) to ensure that data relating to BM and issuance measures are available. Remaining firms that have missing size, BM, or issuance data or negative size or BM data are excluded. Following Pontiff and Woodgate (2008), if a stock delists during the holding period, we substitute the missing returns with those of an EW market index.[2] The final sample includes 354,540 firm–month observations over the period 1990–2009, constituting a more comprehensive dataset than many of the major Australian asset pricing studies, including those of Halliwell, Heaney, and Sawicki, (1999), Gaunt (2004), Kassimatis (2008), and Gharghori, Lee, and Veeraraghavan (2009).

Sort methodologies, such as those in FF (2008), involve sorting stocks into portfolios based on some characteristic hypothesized to drive returns. Asset pricing models such as the FF (1993) three-factor model can then be employed to test whether the returns on these portfolios can be explained by current models of stock price behavior. The benefit of sort procedures is that they allow researchers to examine return effects across the spectrum of a characteristic. In addition, they are more robust than the commonly used regression methodologies of Fama and MacBeth (1973) because regression methodologies tend to harbor an influential observation bias. This point is particularly relevant in Australia, where micro-sized stocks are prevalent.

[2] The market index is the EW average of stock returns in the Centre for Research in Finance's SPPR database.

At the end of each December of year *t*-1, we form portfolios based on our variable of interest, net share issuance. Since Australian companies generally end their financial years in June, we avoid look-ahead bias by allowing six months for the release of financial reports.[3] We hold the portfolios for a 12-month period ending December of year *t* to remain consistent with the frequency of FF's (1993) size and BM measures. Since our data extend back to 1989, our first holding period year is 1990.

We adopt the definition of the net share issuance variable used by Pontiff and Woodgate (2008) and McLean et al. (2009). Specifically, we define our net issuance variable as the natural log of adjusted shares at the end of June of year *t*-1 minus the natural log of adjusted shares at the end of June of year *t*-2:

$$\text{ISSUANCE}_t = \text{Ln}(\text{AdjustedShares}_t) - \text{Ln}(\text{AdjustedShares}_{t\text{-}1}) \quad (1)$$

As well as capturing the effects of SEOs and repurchases, this net variable will capture other events, such as stock mergers and acquisitions and the exercise of executive stock options. Adjusted shares are calculated by dividing the number of shares on issue by a cumulative factor to adjust shares outstanding:

$$\text{AdjustedShares}_t = \text{Shares\_Outstanding}_t/\text{Cumulative\_Factor\_to\_Adjust\_Shares}_t \quad (2)$$

This factor adjusts the number of shares outstanding for past changes in a company's capital structure, for example, through bonus issues, stock splits, and stock consolidations.

Following FF (2008), we sort stocks into eight portfolios based on their respective net issuance variables. We place firms with negative net issuance in one of two negative portfolios split at the 50th percentile of negative issuance firms. These portfolios are termed

[3] When a company ends its financial year after June but before January, we use data from the preceding year's financial accounts.

NegLow and NegHigh, where NegLow represents the most negative net issuance firms. We place firms with zero net issuance over the period in a so-called Zeros portfolio.[4] The remaining positive net share issuance stocks are split into quintile portfolios PosLow, Pos2, Pos3, Pos4, and PosHigh, using breakpoints at the 20th, 40th, 60th, and 80th percentiles of positive issuance firms, respectively. Splitting stocks between negative and positive net issuance enables us to examine the differing effects of issuance and repurchase announcements on stock returns.

The study of FF (2008) warns of a bias toward micro stocks when returns are calculated on an EW basis. Given their relatively illiquid nature and high trading costs, returns attributable to micro stocks do not tend to represent achievable investor returns. Therefore, in addition to utilizing an all-stocks sample, we form three size groups: micro, small, and big. We define micro stocks as the lowest 30% of firms, small stocks as the middle 40% of firms, and big stocks as the largest 30% of firms ranked according to market capitalization.[5] In addition, to further remove micro-stock biases, we report both EW and VW returns.

Table 1 presents descriptive statistics for the eight net issuance portfolios across our size groupings. Panel A presents the average number of stocks in each of the portfolios and we observe that our zero and positive net issuance portfolios are well populated. The negative issuance portfolios, however, contain relatively few stocks. Once split between micro, small, and big stocks, the average number of stocks in each negative issuance portfolio becomes so

[4] Firms are assumed to have zero issuance if their shares on issue did not change by more than 0.5% from the end of June of year *t*-2 to the end of June of year *t*-1, thus excluding tiny changes that are unlikely to contain price-relevant information.

[5] We can report that, on average, the market capitalization of the micro, small, and big groups constitute 0.24%, 2.07%, and 97.70% of total market capitalization, respectively.

small there is little value in reporting related results. The occurrence of relatively few stock repurchases in Australia conforms to our expectation that stock buyback activity is significantly less frequent in Australia compared to the U.S. Australian regulation has only permitted stock repurchases since 1989 and a complex and costly regulatory regime, in place until 1995, dissuaded most companies from repurchasing their stock (Harris and Ramsay, 1995). Further, a long-standing regime of dividend imputation in Australia means dividends are not double taxed, thus removing the incentive to distribute company profits to shareholders through stock repurchases over dividends. Therefore, we do not group negative issuance firms according to size but, rather, present results for the all stocks group only.

[Table 1 here]

Consistent with our expectations, the smallest Australian stocks are indeed tiny, with the median market capitalization of micro stocks at only $4.1 million (Table 1, Panel B). There does not appear to be a systematic relation between size and share issuance, except within the big stocks group, where high issuance firms tend to be much smaller than low- and non-issuance firms. Similar to Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995), we document that issuing firms tend to have lower BM ratios than non-issuing firms, with micro and small stocks in the Zeros portfolio tending to have significantly higher BM ratios than stocks contained in the five issuing portfolios. Panel D of Table 1 reports that big firms issue relatively less stock than smaller firms. For example, PosHigh big firms have an average issuance variable of 0.56, compared to an average issuance variable of 1.04 for the corresponding micro stock portfolio.

To remain consistent with the existing literature, we calculate monthly returns using a calendar time portfolio method. However, rather than using the FF (1993) three-factor model to estimate abnormal returns, the study estimates abnormal returns in reference to portfolios matched on size and BM. Lyon, Barber, and Tsai (1999) suggest a number of reasons why such a methodology may be more appropriate. Since a functional form is not imposed, no linearity assumption is required and the approach allows for interaction between the size and BM effects. Reference portfolio methods rely only on the underlying return patterns associated with size and BM rather than on an empirically determined factor model derived from these same return patterns. In addition, test statistics on calendar time reference portfolio abnormal returns are generally more conservative and lead to lower rates of rejection. Our decision to utilize a reference portfolio method is consistent with previous studies, including those of FF (2008) and Bayless and Jay (2003).

Instead of the 25 portfolios formed by FF (2008) for U.S. stocks, we form 16 reference portfolios at the intersection of size and BM quartiles. Gharghori et al. (2009) argue that due to the relatively small size of the Australian market, studies thereof should use fewer portfolios in testing procedures. The authors find that the FF (1993) size and BM factors provide greater explanatory power when tested on fewer portfolios.

The primary method used to identify anomalies involves testing the hedge returns from long–short positions in the extreme anomaly portfolios (FF, 2008). If we observe a statistically significant difference between the returns of the highest issuing firms (PosLow) and the returns of the most-repurchasing firms (NegLow), there is evidence of a net share issuance pattern. Significant spreads in abnormal returns suggest the pattern is robust to the risk factors associated with size and BM.

Daniel and Titman (2006) and Pontiff and Woodgate (2008) argue that the net share issuance effect's explanatory power over expected returns is due to its ability to capture the SEO and repurchase return patterns. Given that long-run evidence of the repurchase effect has not been presented in Australia and that there has only been limited research into the issuance effect, we decompose the net share issuance effect into both a positive net issuance effect and a repurchase effect. The positive net issuance effect is tested using the spread between the returns of the highest issuing firms (PosHigh) and the returns of non-issuing firms (Zeros). On the other hand, our repurchase effect is tested using the spread between the returns of the most-repurchasing firms (NegLow) and the non-issuing firms (Zeros).

3. Sort results

3.1. Raw returns

Table 2 reports average monthly calendar time raw returns for portfolios formed on net share issuance. Notably, we observe a very strong positive net share issuance pattern, where the highest-issuing firms (PosHigh) significantly underperform non-issuing firms (Zeros). The effect is present for all but micro stocks. Reported in Panel A of Table 2, the EW spread amounts to -0.96% (t = -2.53) and -0.84% (t = -3.68) for small and big stocks, respectively. For small stocks, these spreads are even greater in VW terms, with the spread increasing to -1.27% (t = -3.57) (Panel B). In addition, the effect in big stocks has been reasonably consistent through time (Figure 1).

[Table 2 here]

[Figure 1 here]

Consistent with FF (2008), we find that returns attributable to the issuance portfolios do not decrease monotonically across the spectrum of issuance activity and, instead, the positive net share issuance effect is largely limited to the extreme portfolios. The effect is driven by the very poor performance of the highest issuing firms and the relatively good performance of non-issuing firms.

The results presented in Table 2 do not provide evidence of a net share issuance effect (PosHigh minus NegLow). The spreads between the PosHigh and NegLow portfolios in EW and VW terms are -0.66% (t = -1.12) and -0.68% (t = -1.35), respectively. It appears this result is being driven by the lack of a repurchase effect in Australia. Although not presented, we can report that the spread between the most negative issuance portfolio and the zero issuance portfolio is statistically insignificant for both EW and VW portfolios (t = 0.34 and t = -0.27). To our knowledge, these results represent the first long-run findings on the repurchase effect in Australia, and they are not indicative of an anomaly.

3.2. *Abnormal* returns

Next we calculate abnormal returns using the size–BM matching (reference) portfolio approach. Tables 3 and 4 present the EW and VW abnormal returns for our eight share issuance portfolios, respectively. Impressively, the positive net issuance pattern in the small and big stocks appears to maintain its strength after risk adjustment on the basis of size and BM. The EW positive net share issuance spreads for small and big stocks are -1.13% (t = -3.99) and -0.80% (t = -3.63), respectively. This is a striking result given that hedge spread returns associated with the largest Australian stocks are more likely to be exploitable by investors. The U.S. spreads reported by FF (2008) are much smaller, with abnormal hedge spread returns ranging from -0.61% to -0.69% across size groups. Once again, our results suggest a scenario in which the majority of the Australian market exhibits a share issuance effect, the only exception being the smallest of the small Australian stocks. Although representing 30% of the stocks, micro stocks account for only around 0.24% of the market capitalization of our sample.

[Tables 3 and 4 here]

Table 4 reports that the positive net share issuance effect for small stocks remains highly significant in VW terms at -1.08% (t = -3.29). We find the corresponding VW spread for big stocks of -0.39% significant at the 10% level.

What factors are driving the significant negative spreads between the PosHigh and Zeros portfolios? First, we can see from Panel B of Table 3 that across both portfolios of small and big stocks, the PosHigh portfolios provide statistically significant negative abnormal returns in their own right. In fact, the results suggest that investing in an EW portfolio of big, high-issuing firms will result in an average return of -0.56% per month after accounting for the effects of size and BM. Add to this the significant positive abnormal returns documented in the Zeros portfolios and a large, statistically significant spread results.

Our results contribute material to the share issuance literature under a unique set of conditions. They support the view that a decision to repurchase shares conveys positive information to the market about the future prospects of the firm. However, in jurisdictions where barriers to repurchasing stock exist or where dividends are not double taxed, the types of firms that would, in other markets, repurchase their stock instead decide not to issue stock. Under this scenario, a decision not to issue stock conveys positive information to investors. As previously discussed, a restrictive regulatory regime in place until 1995 meant that stock repurchases in Australia were infrequent, and the dividend imputation system has removed tax-based incentives for the distribution of capital through stock repurchases. Panel B of Table 3 reports insignificant abnormal returns associated with the NegLow and NegHigh portfolios; instead, it reports significant positive abnormal returns for the Zeros portfolio. This contrasts the findings of FF (2008), who find highly significant positive abnormal returns attributable to the most-repurchasing U.S. firms (NegLow) but little evidence of abnormal returns for non-issuing U.S. firms (Zeros).

Consistent with our findings above, there is no discernible evidence of a repurchase effect in abnormal returns. Although not presented in the tables, we can report that the average abnormal return spreads between the most negative issuance portfolio and the zero issuance portfolio are 0.02% ($t = 0.33$) and -0.02% ($t = -0.44$) for EW and VW portfolios, respectively.

4. Cross-sectionalregressions

Following FF (2008), we conduct monthly Fama–MacBeth cross-sectional regressions on individual stock returns. The regressions allow us to investigate the marginal benefit of share issuance in explaining the cross section of stock returns. In particular, does share issuance add to our understanding of stock returns above those factors the literature already regards as pervasive?

Our regressions include a number of control variables well documented in the literature. As in our sort tests, we include firm size (*MV*) and BM in our regressions. Jegadeesh and Titman (1993) demonstrate a momentum effect whereby stocks that have performed well (poorly) tend to, on average, subsequently produce positive (negative) abnormal returns. We update our explanatory variables once a year at the end of December, with the exception of momentum (*MOM*), which we update monthly. We define the momentum variable as a stock's past six-month return lagged one month.

Cooper et al. (2008) document a pattern in returns where firms that grow their total assets underperform other similar firms. Both Cooper et al. (2008) and FF (2008) recognize the relation between share issuance and asset growth, where share issuance proceeds fund asset growth. When controlling for the effects of share issuance, FF (2008) find only weak evidence of the asset growth effect, suggesting the share issuance effect subsumes the asset growth effect. Cooper et al. (2008, p. 1642), on the other hand, argue that asset growth is a more influential variable in the cross section of returns, with share issuance "an inherent part of asset growth." Given Gray and Johnson's (2011) recent documentation of the effect in Australia, we employ an asset growth variable (*ASSETG*) in our Fama–MacBeth regressions to test the relation between the variables in the Australian market. The *ASSETG* variable is defined as the log of total assets at the end of June t-1 minus the log of total assets at the end of June t-2.[6]

Finally, to test for a share issuance effect in stock returns we include two net share issuance variables: *ISSUE* and *ZERO-Dum*. We define *ISSUE* as the issuance variable used in our sort tests and *ZERO-Dum* as a zero-issuance dummy variable equal to one in year t if the firm did not issue equity from the end of June t-2 to the end of June t-1 (and zero otherwise).

Results for the Fama–MacBeth regressions are presented in Table 5: Panels A–C report separate Fama–MacBeth regressions for stocks classified as micro, small, and big. The significance of the baseline variables is largely consistent with earlier Australian studies. Only within the micro sort does *MV* become statistically significant, with t-statistics for micro stocks ranging from -7.29 to -7.72 across the four models (Table 5, Panel A). This result reflects evidence that the size effect in Australia is concentrated among the smallest firms (e.g., Brown et al., 1983; Brailsford and O'Brien, 2008; Kassimatis, 2008; O'Brien, Brailsford and Gaunt, 2010). Our results find the *BM* variable significant within both the small and big groupings (Table 5, Panels A and B). Again, this is consistent with Halliwell et al. (1999), Gaunt (2004), and Kassimatis (2008), who suggest the smallest stocks in Australia do not exhibit a *BM* effect. We find the momentum variable *MOM* significant across all size groupings. The coefficient for *MOM* is perversely negative for micro stocks (Table 5, Panel A), consistent with the findings of O'Brien et al. (2010).

[Table 5 here]

Consistent with our sort results, the small and big stock groupings exhibit a share issuance effect. Within small stocks, Panel B of Table 5 reports coefficients of 0.0063 (t = 3.26) and -0.0100 (t = -3.83) for the *ZERO-Dum* and *ISSUE* variables, respectively, when

[6] The AspectHuntley database maintains records back to 1989. Because the asset growth variable for 1990 would require data in 1988 (June t-2), we begin our Fama–MacBeth regressions in 1991.

included in separate models (Models 1 and 2). Moreover, when included in the combined Model 4, we observe significance for both variables. Within the big group, Panel C reports a statistically significant *ISSUE* variable at the 5% level of significance, with a coefficient of -0.0087 (t = -3.19) in Model 2 and a coefficient of -0.0068 (t = -2.08) in the combined Model 4. The *ZERO-Dum* variable produces a weakly significant coefficient for big stocks of 0.002 (t = 1.79) in Model 1 but becomes insignificant in Model 4. In short, the small and big stock groupings exhibit a positive net share issuance effect, although the relative importance of the two share issuance variables varies across the size groups.

Similar to Gray and Johnson (2011), we identify an asset growth effect in Australian stock returns, although it is restricted to small stocks in our sample.[7] The asset growth variable *ASSETG* has a significant coefficient of -0.0019 (t = -1.97) in Model 3 in Panel B of Table 5. However, when we include share issuance variables in the regression (Model 4), the variable becomes insignificant (t = -1.33). The results in Table 5 are inconsistent with the view of Cooper et al. (2008) that asset growth subsumes share issuance and, instead, support FF's (2008) findings.

Since investors are usually only interested in anomalies in large stocks, because of the high trading costs and low liquidity of small and micro stocks, we next check the robustness of our results to the classification method used to define stocks as big. Our big size grouping contains stocks with the largest 30% of market capitalizations. In contrast, the big size grouping for U.S. stocks used by FF (2008) only includes firms with the largest 20% of market capitalizations. Consequently, we conduct further Fama–MacBeth regression tests of the share issuance effect among the largest 20% of Australian stocks. Table 6 reports the

[7] Gray and Johnson (2011) report an asset growth effect in Australia for large stocks. The difference between their results and ours is likely to be driven by sample differences. Their sample covers an earlier period ending in 2006, whereas our sample ends with 2009 and includes the 2007–2009 global financial crisis period.

Fama–MacBeth coefficient estimates for the largest 20th percentile of stocks ranked on market capitalization. In this case, the share issuance effect remains highly significant, with both issuance variables (*ZERO-Dum* and *ISSUE*) having significant coefficients at the 1% level when included separately (Models 1 and 2). When we include these issuance variables together in the combined regression (Model 4), the coefficient for *ZERO-Dum* remains highly significant at the 1% level (t = 3.28). This suggests that for the largest stocks in our sample, what matters for predictability is whether or not new stock is issued rather than the amount of new stock issued.

[Table 6 here]

In short, the findings presented in Tables 5 and 6 support earlier findings of a positive net share issuance effect among small and large Australian stocks. Both our sort and regression results evidence an economically significant share issuance effect in Australia. Further, the effect remains robust to the usual risk adjustment processes, suggesting the existence of an anomaly in the cross section of Australian stock returns.

5. Market efficiency

This study suggests that if an investor utilized a positive net share issuance hedge strategy on big Australian stocks over the period 1990–2009, that investor would have, on average, achieved abnormal returns of 0.80% per month. It is argued by FF that abnormal returns may not necessarily represent evidence of market inefficiency because related tests suffer from a "joint-hypothesis" or "bad-model" problem. When we use a model of expected returns to estimate abnormal returns, we are relying on the model of choice being well specified. Apparent exceptions to the model may represent model inadequacies rather than market inefficiency. Despite this limitation of anomalies research, our results provide material for the ongoing debate about market efficiency.

Consider the raw returns reported earlier, in Table 2: Panels A and B indicate that the average monthly returns on a number of the portfolios are far too low. For example, the PosHigh and Pos4 portfolios for big stocks produced EW monthly average returns of only 0.26% and 0.39%, respectively, over the period 1990–2009 (Panel A). In addition, the PosHigh and Pos4 portfolios for small stocks produced VW monthly returns of 0.17% and 0.32% (Panel B). However, over this same period the risk-free rate in Australia (proxied by the 13-week Treasury note) provided average returns of 0.49% per month.[8] This implies that high-issuance stocks earned a negative risk premium in a period in which the equity market as a whole earned a positive risk premium of 0.38% per month.[9] Although it is possible a risk-based explanation will be found for the share issuance effect, our findings appear to be more consistent with a scenario in which investors systematically underreact to information inherent in announcements to issue shares (e.g. Loughran and Ritter, 1995; Spiess and Affleck-Graves, 1995).

6. Conclusions

Net share issuance is identified by FF (2008) as one of three effects that are pervasively anomalous in U.S. stock returns. This paper investigates the effects of share issuance on the long-run returns of Australian stocks. It demonstrates the existence of a positive net share issuance effect, whereby stocks that issue equity, whether through seasoned issues, stock mergers, or other means, significantly underperform non-issuing firms. We

[8] We obtain returns on Australian 13-week Treasury notes from figures published by the Reserve Bank of Australia. During periods where data on 13-week notes are unavailable, we use three-month overnight index swap rates.

[9] The VW market index achieved an average return of 0.87% per month over the period 1990–2009.

observe the effect in both small and big stock groups, which together represent over 99% of the market capitalization of our sample.

Results from sort procedures are striking. For big stocks, an EW portfolio of non-issuance firms outperforms a portfolio of high-issuance firms by an average of 0.84% per month over the period 1990–2009. The pattern remains significant after adjusting for the effects of size and BM. Notably, we show that abnormal positive returns for Australian stocks are driven by the decision not to issue stock, rather than the decision to repurchase stock, as is the case in the U.S. Australia's regulatory and taxation regime has generally limited stock repurchase activity, creating a situation where firms that would, in other markets, repurchase their stock merely choose not to issue. Our finding suggests that decisions not to issue stock convey positive information to the market about the future prospects of the firm in jurisdictions that have barriers to repurchasing firm shares or which do not double-tax dividends.

Our cross-sectional regression results support the results produced from the portfolio sorts, with either one or both of the share issuance variables having significant regression coefficients between small and big stocks. Regressions on the largest 20% of stocks provide further evidence of a share issuance effect in the Australian stocks that are of the most interest to professional investors. Since studies have found share issuance to be an important component of asset growth, we also investigate the interaction between share issuance and asset growth. The results suggest that share issuance subsumes asset growth in the cross section of Australian stock returns.

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Table 1: Descriptive Statistics for Portfolio Sorts

This table presents descriptive statistics for the eight portfolios constructed on net share issuance at the portfolio formation date. We group our sample into micro, small, and big size groups using breakpoints at the 30th and 70th percentiles of market capitalization at the end of December of each year *t*-1 from 1990 to 2009. Our net share issuance variable is defined as the natural log of shares outstanding at the end of June of year *t*-1 minus the natural log of shares outstanding at the end of June of year *t*-2. Stocks with negative net share issuance from the end of June of year *t*-2 to the end of June of year *t*-1 are sorted into NegLow and NegHigh portfolios split at the median of negative net share issuance. The Zeros portfolio comprises firms whose adjusted number of shares on issue did not change over the period. Stocks whose adjusted number of shares on issue increased over the period are sorted into five portfolios, at the 20th, 40th, 60th, and 80th percentiles of net share issuance (PosLow, Pos2, Pos3, Pos4, and PosHigh). Market capitalization is defined as the number of shares outstanding at the end of December of year *t*-1 multiplied by the price of those shares at that time. Book value figures are calculated as total equity plus deferred taxes less outside equity, convertible equity, and other non-common equity. BM is then defined as book value at the end of June of year *t*-1 divided by market capitalization at that time. This table reports VW BM where stocks contribute to the portfolio BM ratio in proportion to their market capitalization.

Panel A: Average Number of Stocks per Year									
	NegLow	NegHigh	Zeros	PosLow	Pos2	Pos3	Pos4	PosHigh	Total
All	18	17	299	111	110	110	110	111	886
Micro	4	3	97	33	32	32	32	33	266
Small	7	6	117	45	45	45	45	45	354
Big	8	7	85	33	33	33	33	34	266

Panel B: Median Market Capitalization									
	NegLow	NegHigh	Zeros	PosLow	Pos2	Pos3	Pos4	PosHigh	Average
All	28.7	91.6	24.0	135.3	39.4	19.0	12.8	10.6	45.2
Micro	-	-	3.5	4.4	4.0	4.6	3.6	4.2	4.1
Small	-	-	21.0	23.8	22.8	19.4	21.5	18.6	21.2
Big	-	-	314.4	461.1	499.7	486.1	327.1	210.8	383.2

Panel C: VWBM									
	NegLow	NegHigh	Zeros	PosLow	Pos2	Pos3	Pos4	PosHigh	Average
All	0.65	0.50	0.61	0.53	0.51	0.55	0.61	0.60	0.57
Micro	-	-	1.70	1.13	1.00	0.83	0.95	1.11	1.12
Small	-	-	1.46	0.91	0.98	0.78	0.92	0.77	0.97
Big	-	-	0.57	0.51	0.52	0.58	0.54	0.58	0.55

Panel D: Average Net Issuance Variable									
	NegLow	NegHigh	Zeros	PosLow	Pos2	Pos3	Pos4	PosHigh	Average
All	-0.45	-0.06	0	0.02	0.07	0.16	0.33	0.92	0.12
Micro	-	-	0	0.05	0.13	0.25	0.45	1.04	0.32
Small	-	-	0	0.02	0.09	0.20	0.39	1.01	0.28
Big	-	-	0	0.01	0.03	0.07	0.15	0.56	0.14

Table 2: Raw Returns for Portfolio Sorts

This table reports the average EW and VW raw returns of portfolios formed on net share issuance. Portfolios are formed at the end of December of year *t*-1 and held from January of year *t* to December of year *t*. Returns are calculated using the calendar time portfolio method. Average returns reported here cover the sample period 1990–2009. The first spread reported (PosHigh–NegLow) represents the net share issuance effect of Daniel and Titman (2006), FF (2008), and Pontiff and Woodgate (2008). The second spread (PosHigh–Zeros) represents the positive net share issuance effect introduced in this paper. The *t*-statistics are reported in parentheses.

Panel A: Monthly Average EW Raw Returns												
	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High	Spread (PosHigh–NegLow)	Spread*t*-Stat	Spread (PosHigh–Zeros)	Spread*t*-Stat
All	0.0243	0.0130	0.0226	0.0145	0.0145	0.0161	0.0216	0.0177	-0.0066	*(-1.12)*	-0.0049	*(-1.52)*
Micro	-	-	0.0412	0.0392	0.0388	0.0483	0.0480	0.0415	-	-	0.0003	*(0.048)*
Small	-	-	0.0155	0.0124	0.0051	0.0094	0.0045	0.0059	-	-	-0.0096	*(-2.53)*
Big	-	-	0.0110	0.0099	0.0106	0.0079	0.0039	0.0026	-	-	-0.0084	*(-3.68)*

Panel B: Monthly Average VW Raw Returns												
	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High	Spread (PosHigh–NegLow)	Spread*t*-Stat	Spread (PosHigh–Zeros)	Spread*t*-Stat
All	0.0107	0.0129	0.0091	0.0078	0.0067	0.0035	0.0044	0.0039	-0.0068	*(-1.35)*	-0.0052	*(-1.39)*
Micro	-	-	0.0321	0.0282	0.0343	0.0350	0.0371	0.0317	-	-	-0.0004	(-0.063)
Small	-	-	0.0144	0.0101	0.0036	0.0074	0.0032	0.0017	-	-	-0.0127	*(-3.57)*
Big	-	-	0.0089	0.0071	0.0087	0.0058	0.0053	0.0061	-	-	-0.0028	*(-1.14)*

Table 3: Abnormal EW Returns for Portfolio Sorts

This table reports EW mean monthly average abnormal returns for 1990–2009 across net share issuance portfolios and size groups. We define a stock's abnormal return in month *t* as its month *t* return minus the VW month *t* return of a portfolio matched on size and BM. A total of 16 matching portfolios are formed at the intersection of independent quartile sorts on size and BM. Portfolios are formed at the end of December of year *t*-1 and held from January of year *t* to December of year *t*. Monthly average abnormal returns are calculated for each of the portfolios over this holding period. The mean of these averages equals the mean average monthly abnormal return associated with that particular portfolio. Panel B reports standard *t*-statistics for the abnormal portfolio returns.

Panel A: Monthly Average EW Abnormal Returns

	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High	Spread (PosHigh–NegLow)	Spread*t*-Stat	Spread (PosHig–Zeros)	Spread*t*-Stat
All	0.0051	-0.0001	0.0044	0.0030	0.0002	-0.0003	0.0040	-0.0021	-0.0071	*(-1.36)*	-0.0064	*(-2.42)*
Micro	-	-	0.0064	0.0046	0.0032	0.0145	0.0136	0.0060	-	-	-0.0003	*(-0.05)*
Small	-	-	0.0041	0.0027	-0.0035	-0.0005	-0.0052	-0.0072	-	-	-0.0113	*(-3.99)*
Big	-	-	0.0024	0.0027	-0.0026	-0.0002	-0.0038	-0.0056	-	-	-0.0080	*(-3.63)*

Panel B: *t*-Statistics for Monthly Average EW Abnormal Returns

	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High
All	*1.06*	*-0.02*	*4.32*	*2.35*	*0.16*	*-0.16*	*1.06*	*-0.96*
Micro	-	-	*2.63*	*0.99*	*0.63*	*1.23*	*2.81*	*1.07*
Small	-	-	*3.44*	*1.32*	*-1.82*	*-0.21*	*-2.00*	*-3.04*
Big	-	-	*2.00*	*2.07*	*2.00*	*-0.12*	*-1.80*	*-2.55*

Table 4: Abnormal VW Returns for Portfolios Sorts

This table reports VW mean monthly average abnormal returns for 1990–2009 across net share issuance portfolios and size groups. We define a stock's abnormal return in month *t* as its month *t* return minus the VW month *t* return of a portfolio matched on size and BM. A total of 16 matching portfolios are formed at the intersection of independent quartile sorts on size and BM. Portfolios are formed at the end of December of year *t*-1 and held from January of year *t* to December of year *t*. Monthly VW average abnormal returns are calculated for each of the portfolios over this holding period. The mean of these averages equals the VW mean average monthly abnormal return associated with that particular portfolio. Panel B reports standard *t*-statistics for the abnormal portfolio returns.

Panel A: Monthly Average VW Abnormal Returns

	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High	Spread (PosHigh–NegLow)	Spread*t*-Stat	Spread (PosHigh–Zeros)	Spread*t*-Stat
All	-0.0005	0.0021	0.0010	0.0009	-0.0014	-0.0040	-0.0042	-0.0054	-0.0048	*(-0.98)*	-0.0063	*(-1.84)*
Micro	-	-	0.0006	-0.0034	0.0015	0.0048	0.0067	-0.0007	-	-	-0.0013	*(-0.21)*
Small	-	-	0.0042	0.0012	-0.0039	-0.0008	-0.0051	-0.0066	-	-	-0.0108	*(-3.29)*
Big	-	-	0.0009	0.0010	0.0004	-0.0026	-0.0025	-0.0030	-	-	-0.0039	*(-1.69)*

Panel B: *t*-Statistics for Monthly Average VW Abnormal Returns

	Neg-Low	Neg-High	Zeros	Pos-Low	Pos2	Pos3	Pos4	Pos-High
All	*-0.16*	*0.66*	*0.93*	*0.70*	*-1.00*	*-1.82*	*-2.17*	*-1.67*
Micro	-	-	*0.28*	*-0.84*	*0.27*	*0.68*	*1.48*	*-0.13*
Small	-	-	*3.46*	*0.67*	*-2.02*	*-0.36*	*-2.14*	*-2.33*
Big	-	-	*0.79*	*0.59*	*0.23*	*-1.49*	*-1.29*	*-1.57*

Table 5: Results from Monthly Cross-section Regressions

This table reports Fama–MacBeth (1973) regression coefficient estimates at the individual stock level for 1991–2009. The dependent variable is the monthly stock return over the following month, while the independent variables are lagged accounting and return-based variables. Here *MV* is market capitalization at the end of December of year *t*-1, *BM* is book value at the end of June of year *t*-1 divided by market value at the end of June of year *t*-1, *MOM* is the past six-month return updated monthly and lagged one month, *ZERO-Dum* is the zero-issuance dummy variable equal to one if no stock is issued from the end of June of year *t*-2 to the end of June of year *t*-1 (and equal to zero otherwise), *ISSUE* is the natural log of adjusted shares outstanding at the end of June of year *t*-1 minus the log of adjusted shares outstanding at the end of June of year *t*-2, and *ASSETG* is the log of total assets at the end of June of year *t*-1 minus the log of total assets at the end of June of year *t*-2. The *t*-statistics are reported in parentheses.

Panel A: Micro Stocks

Model	Intercept	MV	BM	MOM	ZERO-Dum	ISSUE	ASSETG	Adj. R^2
1	0.5718	-0.0351	-0.0018	-0.0175	-0.0071			0.0125
	(7.57)	(-7.29)	(-0.66)	(-3.88)	(-1.52)			
2	0.5595	-0.0345	-0.0014	-0.0174		0.0137		0.0136
	(8.14)	(-7.72)	(-0.54)	(-3.86)		(1.50)		
3	0.5559	-0.0342	-0.0020	-0.0183			0.0000	0.0118
	(8.08)	(-7.68)	(-0.73)	(-3.95)			(-0.02)	
4	0.5575	-0.0344	-0.0014	-0.0183	-0.0030	0.0141	-0.0004	0.0154
	(7.90)	(-7.57)	(-0.52)	(-4.05)	(-0.61)	(1.30)	(-0.21)	

Panel B: Small Stocks

Model	Intercept	MV	BM	MOM	ZERO-Dum	ISSUE	ASSETG	Adj. R^2
1	0.0648	-0.0033	0.0044	0.0078	0.0063			0.0174
	(1.98)	(-1.84)	(3.72)	(3.12)	(3.26)			
2	0.0724	-0.0035	0.0044	0.0078		-0.0100		0.0166
	(2.20)	(-1.92)	(3.61)	(3.18)		(-3.83)		
3	0.0629	-0.0030	0.0052	0.0081			-0.0019	0.0160
	(1.92)	(-1.65)	(4.07)	(3.28)			(-1.97)	
4	0.0707	-0.0035	0.0041	0.0078	0.0040	-0.0063	-0.0014	0.0186
	(2.11)	(-1.91)	(3.43)	(3.20)	(1.97)	(-1.99)	(-1.33)	

Panel C: Big Stocks

Model	Intercept	MV	BM	MOM	ZERO-Dum	ISSUE	ASSETG	Adj. R^2
1	0.0083	0.0000	0.0025	0.0219	0.0020			0.0450
	(0.65)	(0.01)	(2.84)	(5.70)	(1.79)			
2	0.0142	-0.0002	0.0027	0.0218		-0.0087		0.0476
	(1.17)	(-0.39)	(2.98)	(5.69)		(-3.19)		
3	0.0125	-0.0002	0.0026	0.0221			-0.0015	0.0499
	(1.01)	(-0.26)	(2.87)	(5.78)			(-1.63)	
4	0.0134	-0.0002	0.0025	0.0222	0.0011	-0.0068	-0.0005	0.0528
	(1.10)	(-0.37)	(2.76)	(5.81)	(1.01)	(-2.08)	(-0.53)	

Table 6: Results from Monthly Cross-section Regressions on the Largest Stocks

This table reports Fama–MacBeth (1973) regression coefficient estimates at the individual stock level for stocks in the largest 20th percentile of market capitalization. The regressions are conducted for 1991–2009. The variables are described in Table 5. The *t*-statistics are reported in parentheses.

Model	Intercept	MV	BM	MOM	ZERO-Dum	ISSUE	ASSETG	Adj. R^2
1	0.0076	0.0000	0.0027	0.0224	0.0040			0.0484
	(0.54)	(0.07)	(2.81)	(5.37)	(3.47)			
2	0.0161	-0.0003	0.0027	0.0223		-0.0102		0.0501
	(1.17)	(-0.44)	(2.82)	(5.39)		(-3.13)		
3	0.0140	-0.0002	0.0026	0.0224			-0.0017	0.0520
	(1.01)	(-0.29)	(2.77)	(5.43)			(-1.64)	
4	0.0096	0.0000	0.0023	0.0220	0.0039	0.0005	-0.0022	0.0565
	(0.71)	(-0.06)	(2.42)	(5.35)	(3.28)	(0.12)	(-1.62)	

Figure 1: Time series of annual returns

This figure plots annual returns for spread portfolios formed from long positions in PosHigh issuance big stocks and short positions in Zero issuance big stocks over the period 1990–2009.