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# TARGET PREMIA AND EXCHANGE RATES: AUSTRALIAN EVIDENCE

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## Abstract

This paper documents exchange rate and cross-border effects on Australian target premia. A significant relationship between changes in the real exchange rate and target premia for successful domestic and cross-border acquisitions is identified and shown to be robust to bid characteristics and relatedness of bidder and target. Exchange rate effects on domestic target premia are sensitive to measurement of the exchange rate and to the level of economic exposure experienced by the target. However, exchange rate and US cross-border effect on cross-border acquired targets are robust to model specifications and various definitions of the real and nominal exchange rate.

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## 1. Introduction

There is widespread agreement in the finance literature that shareholders of target firms earn significant positive abnormal returns around the announcement of a takeover bid, regardless of whether the bidder is a domestic or foreign firm. Studies have also found that there is a cross-border target premia whereby the returns to target shareholders of a firm receiving a foreign bid is significantly greater than the target premia for domestic bidders. The cross-border effect on target premia has been established largely within the US merger and acquisition context, although recent studies have examined the UK, Canada, and Japan. The finding remains robust to model specifications that include takeover bid characteristics and relatedness between the bidder and the target.

Explanations of the cross-border effect often include investigation of the proposition that the exchange rate is negatively associated with cross-border target premia. While there are mixed empirical results across countries, US evidence suggests that there is an exchange rate effect with target premia being higher when the domestic exchange rate is weak (e.g. Harris and Ravenscraft 1991; Kang 1993; Cebenoyan, Papaioannou, and Travlos 1992; Kiymaz and Mukherjee). This result is consistent with Froot and Stein (1991) who argue that foreign acquirers experience an increase in relative net wealth during periods of a weak domestic currency and are able to bid more aggressively for targets. More recently, Dewenter (1995a, p. 439) has argued that target premia paid by domestic acquirers may be just as sensitive to exchange rates as cross-border target premia. Real exchange rate changes can impact on relative factor costs and revenue for domestic and cross-border targets influencing the future cash flows of both types of firms. Thus, in periods of an increase in international competitiveness (as measured by a lower real exchange rate) higher target premia should be observed. Empirical evidence on this proposition is also mixed (see Dewenter 1995a, b; Swenson 1993).

This paper investigates whether there are cross-border and exchange rate effects on target premia by examining differences in the wealth effects experienced by Australian target companies when being acquired by domestic and foreign bidders. Australian data may shed light on the effect of the exchange rate on target premia because Australia is a relatively small open economy with gross domestic product highly dependent upon levels of the real exchange rate. The paper presents strong evidence supporting the argument that exchange rates are negatively associated with target premia for cross-border targets. It is found that there is no cross-border effect in Australia when a simple delineation is undertaken between domestic and foreign bidders. However, once country-specific variables are employed to categorise bidder nationality, there is a significant cross-border effect on target premia when US bidders attempt to acquire Australian targets. This premia is robust to the exchange rate effect, bid characteristics (method of payment, contested bids and extent of toehold) and the relatedness of the bidder and target.

The paper then examines the domestic and cross-border sub-samples. Using the cross-border target sub-sample, strong evidence is found to support Harris and Ravenscraft (1991), Swensen (1993), Kang (1993) and Kiymaz and Mukherjee (2000) who find that target gains are significantly higher when the bidder's currency is strong relative to the target's currency. It is shown that a 1% decrease in the domestic exchange rate leads to a 1.78% rise in the cross-border acquirer target premia, after controlling for bid characteristics, relatedness and whether the acquirer had prior business presence in Australia. The sensitivity of the differences in target premia to various definitions of the exchange rate is then examined. The exchange rate effect holds when the exchange rate is defined as the relative strength or weakness of the real exchange rate at the month before the bid as compared to an average prevailing in the previous two years. However, periods of weakness and strength of the real exchange rate as determined by differences between the exchange rate at the month before the bid and the average over the sample period (1990-1999) is not related to target premia. Results are also not significant for levels of the real exchange rate, rather than differences. Finally, using the domestic sub-sample

we examine the proposition that in a small open economy there may be exchange rate effects on domestic target premia even when the acquirer is a domestic firm. We estimate levels of economic exposure for domestic targets, and show that the exchange rate effect on target premia depends upon the level of economic exposure. In particular, domestic acquirer target premia are significantly lower when an export firm is acquired during periods of a strong domestic currency.

The results of this paper fill a research lacuna in a number of areas. Although there is relatively extensive research into the differences in target abnormal returns between foreign and domestic bidders, there is no Australian evidence in this area. The results here confirm that cross-border effects are present in a small open economy case such as Australia as well in the larger economies of the USA, UK, Japan and Europe. Furthermore, evidence for the exchange rate effect on target premia is mixed and most commonly established with regards to cross-border target premia. This paper provides empirical support for the effect of exchange rates on target premia of cross-border targets and shows that the relationship is robust to economies other than the USA. Finally, the paper shows that the exchange rate effect on domestic bidder target is related to the level of economic exposure of the firm. Domestic bidder target premia are higher for firms facing higher economic exposure when the exchange rate is relatively weak, and lower when export firms are acquired during periods of a strong local currency.

The paper has seven sections. Section 2 outlines the theoretical literature and reviews the major empirical findings in relation to mergers and acquisitions and foreign direct investment, with an emphasis placed on the wealth effects experienced by targets and changes in exchange rates. Section 3 outlines the data and methodology employed in the paper. Section 4 presents results on the target wealth effects of domestic and foreign bidders, and undertakes regression analysis to establish whether the cross-border and exchange rate effects exist in Australia. Section 5 investigates the sensitivity of the findings to various definitions of the exchange rate, and section 6 examines the exchange rate effect on domestic acquirer target premia. Some conclusions follow.

## **2. Foreign direct investment, takeover premia and exchange rates**

### *2.1 Theories of foreign direct investment*

Industrial-organisation-based theories of foreign direct investment (FDI) attribute the cross-border expansion of firms to the existence of market imperfections and failures.<sup>1</sup> These theories suggest that direct expansion into foreign markets allows firms to exploit oligopolistic advantages stemming from the possession of specialized resources. Cross-border expansion also allows multinational corporations (MNCs) to internalise the market for their superior managerial and technological resources, and avoid market frictions and costs caused by market failure. Traditional theories of FDI such as Kindleberger (1969) and Hymer (1976), suggest that imperfections in factor, product and capital markets are the main driving forces for FDI. According to this view, firms may decide to invest in foreign countries in order to take advantage of mis-priced factors of production, cope with trade barriers or provide indirect international portfolio diversification to their shareholders. In order to create value, the multinational must be able to generate higher cash flows through higher sales or lower operating costs, and/or a lower risk-adjusted cost of capital through its multinational operations than through its domestic operations as well as relative to local firms.

A related strand of literature on FDI, e.g., Caves (1971) and Magee (1976), places special emphasis on the role of market imperfections for intangible assets in motivating firms to undertake FDI. According to internalisation theory, firms that have intangible assets with a public good property, such as technical and managerial know-how, tend to invest directly in foreign countries in order to utilise these assets on a larger scale and, at the same time, avoid the misappropriations that may occur while transacting in foreign markets through a market mechanism. Cross-border acquisitions can also be motivated by the acquirer's desire to 'acquire

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<sup>1</sup> See Kindleberger (1969), Caves (1971), Buckley and Casson (1976), Hymer (1976), Magee (1976), and Dunning (1993).

and internalise' the target's intangible assets. In this case the acquirer seeks to create wealth by fully appropriating the rent generated from economies obtained from using the target's intangible assets on a larger scale.

More recently, theories of FDI have been restated and synthesised in the eclectic paradigm in an attempt to characterise the breadth, depth, and form of multinational business activity (see, for example, Dunning 1993). It is theorised that there are three primary reasons that firms participate in FDI: ownership-specific advantages, location-specific advantages, and internalisation advantages. According to Dunning's eclectic paradigm, the most successful multinational firms will be those that have the most pronounced ownership-specific advantages from owning proprietary assets and marketing and management expertise, have privileged access to location-specific advantages such as abundant natural resources and high labour productivity, and can most successfully exploit their ownership and location-specific advantages through market internalisation advantages.

## *2.2 Target premia and cross-border acquisitions*

An increasing number of studies have concentrated on the wealth effects of international acquisitions. Harris and Ravenscraft (1991, p. 826) argue that examination of share price returns to international takeovers is useful for supplementing aggregate data on the levels of FDI because it allows "comparison of returns (value creation) from cross-border transactions to those on purely domestic takeovers". Indeed, their study of shareholder wealth gains for US firms acquired by foreign firms concluded that US targets experience higher wealth gains when they are acquired by foreign firms than when acquired by US firms, even after controlling for transaction specific variables such as industry and method of payment. Cebenoyan, Papaioannou, and Travlos (1992) investigated the wealth effects of the announcement of acquisition bids made by

foreign bidders to US target firms, and the factors that might explain the differences in wealth gains across foreign and domestic takeovers. That study found that US targets being acquired by foreign firms experienced significant positive gains which are superior, although not consistently, to those experienced by US target firms being acquired by domestic US bidders. These two papers have established that the existence of a cross-border bidder creates significant positive wealth gains for target shareholders; the findings have been replicated in many subsequent studies (e.g. Shaked, Michel and McClain 1991; Marr, Mohta, and Spivey 1993; Kang 1993; Dewenter 1995a; Eun *et. al.* 1996).

There is less agreement over what determines the cross-border target premia. Firm- and industry-specific characteristics do not explain foreign takeover wealth gains consistently, implying that specialized resources at the firm and/or industry level of the target are not recognized as the principal source of differential synergistic gains in foreign and domestic takeovers (Cebenoyan, Papaioannou, and Travlos 1992). Morck and Yeung (1991) show that multinationality enhances the value of the specialized resources of the firm. An extension of the Morck and Yeung conclusion would suggest that the specialized assets of US target firms are expected to increase in value when acquired by a foreign firm, and accordingly the market recognizes the multinationality of the foreign bidder as a source of excess takeover gains.

Kang (1993) investigated Japanese acquisitions of US targets between 1975 and 1988 and found that Japanese mergers and acquisitions in the US create statistically significant wealth gains for both Japanese bidders and US targets, and that bidder-specific characteristics and exchange-rate movements are useful in explaining the cross-sectional variation in bidder returns. After controlling for the method of payment and other explanatory variables, Kang finds that US targets that sell a majority interest to Japanese bidders earn significantly higher abnormal returns than those selling to US bidders.

Cheng and Chan (1995) examined the price premium paid by international bidders to their corresponding US targets. In relation to British bidders acquiring US targets they found that

British bidders pay a lower premium than other foreign bidders, and argued that this was due to links that British bidders had with the US targets.<sup>2</sup> Cheng and Chan also compared characteristics of international takeovers to that of a control sample of US takeovers and argue that the higher abnormal returns received by US targets in international takeovers are not necessarily due to overpayment but probably due to the type of takeovers and other determinants such as payment methods.

Eun *et. al.* (1996) test the synergy and internalisation hypotheses for international acquisitions using a sample of foreign acquisitions of US firms during the period 1979-90. They find that shareholders of their paired sample of US targets and foreign acquirers experienced significantly positive combined wealth gains indicating that cross-border takeovers are generally synergy-creating activities. They also find that the shareholders of the US targets realise significant wealth gains, regardless of the nationality of the acquirers, and that foreign acquirers benefited from the R&D capabilities of the targets, providing support for the reverse-internalisation hypothesis.

### *2.3 Target premia and exchange rates*

It can be seen from the above research that when the wealth gains of targets in foreign and domestic takeovers are compared, cross-border takeovers are found to generate significantly higher wealth gains. A wide range of literature examines what affects the direction and magnitude of these gains and finds that the gains to foreign acquired targets are found to be affected by whether the foreign bidder has operations in related lines of business (Marr, Mohta, and Spivey 1993) and by the number of bids received (Harris and Ravenscraft 1991). Less agreement is

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<sup>2</sup> It was argued that British companies have been long term trading partners with US companies and as a result they have a better understanding of the US business environment and greater sophistication in merger and acquisition activities which may enable them to identify more accurately value targets.

apparent on whether the exchange rate is related to target premia. Froot and Stein (1991) argue that changes in the exchange rate lead to net wealth gains for cross-border acquirers allowing them to compete better for targets. In a world with asymmetric information about the net present value (NPV) of the target, all bidders may find it difficult to fund the acquisition by debt as capital markets will require a monitoring fee. Thus, the more wealth a bidder can bring to the bid the more competitive that firm will be in the process, and the more likely the bidder will raise their bid closer to the expected NPV. If cross-border bidders hold more of their wealth in foreign currency denominated assets, then a depreciation of the domestic currency will increase relative wealth and allow those firms to raise bids as compared to domestic acquirers (Froot and Stein 1991, p. 1194; Dewenter 1995b, p. 408).

Harris and Ravenscraft (1991) found empirical support for the exchange rate effect on cross-border target premia but work since has been less successful. Swenson (1993), Kang (1993), Dewenter (1995b) and Kiyimaz and Mukherjee (2000) find US support for an exchange rate effect, but Cebenoyan *et. al.* (1992), Cakici *et. al.* (1996) and Eun *et. al.* (1996) have not found significant results. The analysis of the effect of the exchange rate on target premia is largely confined to cross-border acquired targets although Dewenter (1995a) suggests that the effect may be just as important for domestic as cross-border targets. This is especially the case in a small open economy where a change in real competitiveness is an important determinant of changes in gross domestic product (through direct or indirect revenue streams of exporters and import-substitution industries) and cost structures (through reliance on imported capital goods or raw materials). Thus, exchange rate changes may affect firm NPV depending upon the level and nature of exchange rate exposure as much as on whether the bidder is a cross-border firm. If an exchange rate effect is important in explaining domestic acquirer target premia, we would expect that the effect would be identifiable in the Australian case.

## *2.4 Control variables*

Prior evidence has shown that variables such as bid characteristics and the economic relationship between the target and bidder affect the wealth gains of targets in domestic and foreign takeovers. We employ three bid characteristic control variables to ensure that any exchange rate or cross-border effects are robust to other potential determinants of target premia: method of payment, the existence of a contested bid, and the toehold held by the bidder. Two other variables capture the relationship between bidder and target and the experience of the cross-border bidder in the domestic economy: industry relatedness and prior business presence.<sup>3</sup> Each is explained briefly below.

### *2.4.1 Method of payment*

A substantial body of literature suggests that the method of payment used in the bid signals properties or transaction cost/tax implications that affect the share prices of bidding and target firms. Most research indicates that bidder and target firms earn higher abnormal returns over the bid announcement period when cash is offered as consideration. Wansley, Lane and Yang (1983), and Huang and Walkling (1987) find that acquisitions financed with cash and/or debt generate higher excess returns for target shareholders than stock-for-stock financed acquisitions, and Travlos (1987) finds that US target firms earn superior abnormal returns around the takeover announcement date when the takeover is financed with cash as opposed to shares. Similar findings are reported for bidding firms by Travlos (1987) and Wansley, Lane and Yang (1987). However, in a recent Australian study, da Silva Rosa, Izan, Steinbeck and Walter (2000) document that the abnormal returns earned by Australian bidders and targets around the

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<sup>3</sup> Apart from the control variables examined here there is some evidence of size effects in the target premia. However, in Australia, Anderson, Haynes and Heaney (1994) examine the relationship between the size of a target and the market's reaction to a takeover offer, and find that the size effect is sensitive to event window size and sample composition. No size effects were found in the present sample.

announcement of a takeover are not significantly associated with the proposed medium of exchange, i.e. cash or shares. Thus, while we control for potential method of payment effects we assign no prior expectation to the value of the relationship between abnormal returns and method of payment.

#### *2.4.2 Contested Bids*

The presence of multiple bidders has been shown to affect the wealth gains of target shareholders in both domestic and cross-border acquisitions. Harris and Ravenscraft (1991), Swenson (1993) and Dewenter (1995a, 1995b) find multiple bids have a significant positive effect on US targets facing cross-border acquisition. This result is robust across country, with Kang (1993) finding that target shareholders earn larger returns from multiple-bidder contests than for single-bidder offers using Japanese and US data.

#### *2.4.3 Toehold*

A substantial bidder toehold in the target implies that only a few shares are needed to gain control. In this situation target shareholders will sell because of the fear of becoming a minority shareholder, and the bidding firm is also likely to have more influence over target management. Thus, it is argued that there is a higher bid premia when there is a low toehold, as toehold proxies for bargaining power. Walkling and Edminster (1985) find a negative relationship between toehold and the bid premia. By contrast, Franks, Harris and Mayer (1988) find a positive relationship in the UK, arguing that a toehold is indicative of intense bidding competition.

#### *2.4.4 Related Lines of Business*

Whether or not the bidder and target engage in related lines of business has been shown to be a significant variable in explaining target shareholder returns. Previous literature has documented

large and persistent value losses from diversification (e.g. Lang and Stulz 1994; Servaes 1996). Berger and Ofek (1995) attribute the diversification discount to over-investment and the cross-subsidisation of under-performing business segments. This value loss was found to be lower when the segments of the diversified firm had the same two-digit Standard Industrial Classification (SIC) code, and when tax benefits were available through diversification. With respect to wealth effects, Morck, Shleifer and Vishny (1990) found that announcement period returns are lower when a bidder diversifies, and Comment and Jarrell (1995) found a positive relationship between abnormal stock returns and an increase in focus.

#### *2.4.5 Prior Business Presence*

Prior business presence exists when the foreign bidder has a significant influence over any Australian company listed on the Australian Stock Exchange. It is argued that firms with prior experience will more accurately judge the value of the target firm and pay a lower premium. There is little evidence for this argument with respect to target wealth gains (see Eun *et. al.* 1996, p. 1579) although prior business presence has been shown to be important in acquirer return studies (see Doukas and Travlos 1988; Cakici *et. al.* 1996). In this paper we consider a bidder as having prior experience when the firm owns at least 10% of the Australian company, and use this variable in explaining cross-border target premia.

### **3. Data and Methodology**

#### *3.1 Data*

The data used to investigate the wealth gains from successful domestic and cross-border acquisitions comprises announcements of takeovers of publicly listed Australian companies made between 1 January 1990 to 31 December 1999. A sample of takeover announcements was selected from the Securities Data Corporation's Mergers and Acquisitions database. The initial

sample covered 1897 transactions, and was reduced to 1815 by removing any observations where the nationality of the bidder was unknown. Given that we are examining successful bids, 1368 observations were removed due to the bidder owning less than 50% of the voting shares of the target company after the bid. A further 323 observations were removed where the target share prices were not available or where data limitations prevented accurate control variable and beta estimation. The final sample of 124 observations consisted of 83 domestic and 41 cross-border acquisitions.

Sample characteristics are presented in Table 1. The distribution of acquisitions shows that the sample contains an increase in takeover activity, particularly in the level of cross-border acquisitions of Australian companies.

**Table 1**  
**Sample Characteristics**

about here

The nationality of bidders shows that the majority of acquisitions were undertaken by US firms constituting 39% of the sample, with the UK second (19.5%). South Africa, Canada, and New Zealand represented 12%, 9%, and 7% respectively. This distribution by bidder nationality is consistent with the general trend of cross-border acquisitions in Australia. For example, according to the Foreign Investment Review Board “the United States was the most important source of proposed foreign investment in Australia during 1998-99 accounting for around 44 per cent of the total. The other major source of proposed foreign investment was the United Kingdom, increasing its investment in Australia from \$8.4 billion in 1997-98 to \$12.7 billion in 1998-99 or 19 per cent of the total.” Our sample captures the two major bidder nationalities that are important acquirers in the Australian economy.

### 3.2 Methodology and variable measurement

#### 3.2.1 Abnormal returns

A market model with Scholes-Williams adjusted betas was used to calculate abnormal and cumulative abnormal returns of the target firms for a 41-day event window (20 trading days either side of the announcement) using daily share prices adjusted to account for dividends and capitalisation changes.<sup>4</sup> Market model regression betas were estimated using daily data over a 250 day period beginning 270 days prior to the announcement date. Abnormal returns are defined as the difference between the firm's actual return and the firm's expected return as outlined in equation 1 below:

$$AR_{it} = R_{it} - ER_{it} \quad (1)$$

where  $AR_{it}$  = abnormal return for firm  $i$  for period in  $t$ ,  $R_{it}$  = actual return for company  $i$  in period  $t$ , and  $ER_{it}$  = expected return for company  $i$  in period  $t$  as expressed in equation 2:

$$ER_{it} = a + bR_{mt} \quad (2)$$

where  $ER_{it}$  = expected return for company  $i$  in period  $t$ ,  $R_{mt}$  = return on the market (Australian All Ordinaries index) in period  $t$ ,  $a$  = regression constant. Individual stock betas  $\beta$  were calculated

using the Scholes-Williams method:  $b_i^{sw} = \frac{(b_i^{-1} + b_i + b_i^{+1})}{(1 + 2r_m)}$  where  $b_i^{sw} = b_i^{-1}, b_i, b_i^{+1}$  are

OLS regression coefficients on lagged, contemporaneous and lead market returns, and  $r_m$  = first-order serial correlation coefficient of market returns. Abnormal returns were then averaged,

<sup>4</sup> Non-synchronous trading has long been recognised as a problem facing researchers undertaking event studies in Australia.

and summed over different event windows, to compute abnormal, and cumulative abnormal returns.

### *3.2.2 Explanatory and control variables*

Cross-border bidder (*CROSS*) is a dummy variable that takes the value of 1 for cross-border bidders or 0 for domestic bidders. Refinement of this variable was undertaken to capture potential country effects by setting three dummy variables as follows: *US* takes the value of 1 for US bidders and 0 for others, *UK* takes the value of 1 for UK bidders and 0 for others, and *OTHER* assumes the value of 1 for non-US and non-UK bidders and 0 otherwise. The exchange rate is defined as the proportional difference between the real exchange rate (Reserve Bank of Australia trade-weighted Index: TWI) one month before the bid announcement and the average real exchange rate of the preceding 24 months before the bid announcement. Mid-monthly exchange rates are used to avoid noise associated with daily and end-of-month exchange rates. We follow Dewenter (1995a, p. 437; 1995b, 414) by adopting the real exchange rate as the relevant measure to allow analysis of domestic and cross-border target premia. However, Dewenter utilised levels and first differences of the exchange rate in her analysis. We use a difference measure using monthly data from the previous two years in order to assess relative strength or weakness. Various other definitions of the exchange rate such as those using the TWI levels and nominal exchange rate are examined in section 5.

Control variables are obtained from the synopsis generated by the Securities Data Corporation's Mergers and Acquisitions Database. Method of payment was determined by whether the bid was stock or cash or both. *CASH* was assigned a value of 1 if the bid is made in cash, and stock bids (and combinations of cash and stock) are given a value of 0. Where multiple bidders exist we allocate the variable (*CONTEST*) a value of 1, and where there is only a single bidder we give a value of 0. Toehold (*TOEHOLD*) was defined as the amount of shares of the

target already owned by the bidder before the takeover bid was launched. To obtain data for the 'related lines of business' variable, we compared the industries of the bidder and target in each takeover to see whether they operated in related industries. Where the bidder and target operate in related lines of business as defined by two-digit industry classification codes, we allocate the variable (*REL*) a value of 1, and 0 where they operate in different lines of business. Finally, for the cross-border sub-sample we measure the prior business experience of the bidder. Prior business presence (*PRIOR*) was determined by collecting data on whether or not the foreign company had a significant influence over any Australian Stock Exchange listed Australian company prior to the bid, and given the value 0 if there is a prior business presence and 1 if there was no prior business presence.

The distribution of control variables is summarised in Table 2. The sample is split relatively evenly between bidders using cash (65) and those using equity, or a combination of equity and cash (59). Amongst cross-border acquirers there is a preference (71%) for cash, supporting the argument that cross-border bidders are more likely to be constrained in raising equity on the domestic market (Harris and Ravenscraft 1991, p. 833). The number of firms with toehold levels is relatively similar across the two samples. However, the mean (median) toehold for the domestic acquirers was 39.4% (44.7%) of target shares, while cross-border acquirers held 51.8% (61.5%). Thus, of those that held target shares cross-border acquirers were more likely to have had a controlling interest in the target before the bid. Fifty-five percent of takeovers were between firms in a related industry with a clear difference between the sub-samples: as argued by FDI theories, cross-border acquirers are much more likely to undertake acquisitions in related industries (80.5% as compared to 42.2% of domestic acquirers). Finally, within the cross-border sample a slim majority (54%) of cross-border bidders had prior business experience in Australia before undertaking the takeover under examination.

**Table 2**  
**Control Variable Characteristics**

about here

### 3.2.3 Regression analysis

Multivariate regression analysis was performed on the cross-sectional variation in abnormal returns on the whole sample and sub-samples by nationality of acquirer using variants of equation 3:

$$CAR_{it} = a + b_1CROSS + b_2EXCH + b_3CASH + b_4CONTEST + b_5TOEHOLD + b_6REL + e \quad (3)$$

CROSS - cross-border bidder = 1, domestic bidder = 0;

EXCH - the relative strength or weakness of the real exchange rate;

CASH - cash bids = 1, stock and combinations of stock and cash = 0;

CONTEST - existence of a multiple bidder = 1, one bidder = 0;

TOEHOLD - the percentage of target shares owned by the bidder before the bid;

REL - related acquisitions = 1, non-related = 0;

*e* - random error term

## 4. Empirical results: Wealth effects

### 4.1 Domestic versus cross-border acquisitions

Table 3 presents cumulative abnormal returns (CARs) of the target firms for various event window lengths for the total sample and stratified by domestic and cross-border acquirers. Panel A examines the total sample and shows that for all event window lengths, positive CARs occur around the takeover announcement dates. The target premia is 18.45% over the full 41-day event window, and 12.95% over the three days centred on the announcement (CAR[-1, +1]). The significant positive abnormal returns documented here are consistent with the previous Australian studies examining takeovers during the period from 1966 to 1988. In particular, Dodd (1976), Walter (1984), Bishop, Dodd, and Officer (1987), and Anderson, Haynes and Heaney (1994) found significant positive abnormal target returns in both successful and unsuccessful takeovers in the takeover announcement period using Australian data. The results are also consistent with the evidence on takeovers found in the US and the UK.

Significant positive CARs accruing to the sub-samples of 83 domestic acquirer targets and 41 cross-border acquirer targets (Panel B) show that there appears to be a cross-border effect on target premia with the CAR of the cross-border group consistently higher than the target premia for domestic acquirer firms. Over the full event window length cross-border bidder targets experience a 21.87% increase in returns as compared to domestic acquirer targets' 16.77%. However, the difference in mean and Wilcoxon signed-rank tests (Panel C) show that there is no significant difference between the two sub-samples.

**Table 3**  
**Cumulative Abnormal Returns to Australian Targets by Domestic and Cross-Border Acquisitions**

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**Figure 1**  
**Cumulative Abnormal Returns to Australia Targets by Domestic and Cross-Border Acquisitions**

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Figure 1 illustrates the difference in cumulative abnormal returns between the cross-border and domestic bidder groups at announcement date, with the targets of cross-border bidders earning positive CARs peaking at approximately 22%, compared to the lower peak of around 16% for the targets being acquired by domestic bidders. As was the case in the CARs for the total sample, price run-ups are observed for the cross-border and domestic bidder groups.

*4.2 Regression analysis of the exchange rate and cross-border effect*

This section presents the results of the regressions undertaken to investigate whether the univariate results above are robust to other explanations of target premia. The regressions were carried out using different combinations of the explanatory and control variables over four event windows. We find that results are robust to event windows  $[-20, +20]$  and  $[-10, +10]$ ; indeed, the 21-day window present stronger results than the 41-day window so we present the longer event window in this section (understating our results). Regressions estimated over shorter event windows such as  $[-5, +5]$  and  $[-1, +1]$  were not significant.

Table 4 presents examination of the cross-border and exchange rate effects on target premia. Regression 1A confirms univariate analysis which found that there was no significant cross-border effect that significantly increases target premia above that for domestic acquirer target firms. The intercept of regression 1A shows that domestic acquirer targets earn 16.77% and cross-border targets 21.87% abnormal returns over the 41-day event window, confirming the univariate calculations in Table 3 Panel B. Regression 1B shows that in univariate analysis there

is a significant exchange rate effect on target premia for both domestic and cross-border acquired firms. However, this result is driven by the cross-border target sample (see Panel B regressions 2A and 3A) where exchange rates are significantly negatively related to target premia. Regression 1C investigates the cross-border effect in more detail by assigning dummy variables to the nationality of the cross-border bidder (*US*, *UK* and *OTHER*). We find that there are country effects with the cross-border effect being evident for US bidders even when we control for the exchange rate effect observed in regression 1B.<sup>5</sup> No other bidder nationality is significant. Finally, regression 1D shows that the country effect is a significant explanator of the cross sectional variation in target premia in Australia regardless of the exchange rate effect and the inclusion of control variables for bid characteristics and relatedness between bidder and target. The US cross-border effect is consistent with the international cross-border target premia literature results (Harris and Ravenscraft 1991; Kang 1993; Cakici *et. al.* 1996; Eun *et. al.* 1996; Danbolt 2000).

**Table 4**  
**Regression Analysis of Australian Target Wealth Gains in Domestic and Cross-Border Acquisitions**

about here

None of the control variables employed in the regressions are significant in explaining target premia. Furthermore, once we add control variables the models (1D, 2B and 3B) are no longer significant. These results are not surprising as there is disagreement within the Australian merger and acquisition literature about the importance of bid characteristics in explaining target

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<sup>5</sup> Country effects are not unknown in the literature. For example, Eun *et. al.* (1996, p. 1569) find a positive Japan country effect and a negative UK country effect when examining US cross-border target returns. Kiyamaz and Mukherjee (2000) report positive country effects for Australian, Canadian, French, Japanese and UK bidders of US targets.

premia. The method of payment variable (*CASH*) was insignificant in all regressions. This finding is similar to da Silva Rosa, Izan, Steinbeck and Walter (2000) who document that the abnormal returns earned by Australian bidders and targets around the announcement of a takeover are not significantly associated with the proposed medium of exchange. The coefficient for multiple bids (*CONTEST*) is insignificant and inconsistent with the international literature which finds that target shareholders earn larger returns from multiple-bidder contests than for single-bidder offers (eg. Bradley, Desai, and Kim 1988; Kang 1993). Given that only 6% of the sample ( $N=7$ ) in this study were contested bids the results here lack generalisability.

The exchange rate results in regressions 3A and 3B in Panel B show that changes in the real exchange rate are related to target premia of cross-border acquirers. The Froot and Stein (1991) and Harris and Ravenscraft (1991) findings are supported here with regards to cross-border acquisition. However, there is no evidence for an exchange rate effect on domestic takeover premia. This suggests that the exchange rate effect is particular to cross-border acquisition targets and may not, as argued by Dewenter (1995a), work through cost and revenue streams into domestic acquirer target premia as well. We shall examine domestic acquirer targets and exchange rates in more detail in section 6.

## **5. Sensitivity analysis: Alternative measurements of the exchange rate and country effect**

The exchange rate effect documented above involved a relationship between differences in the real exchange rate from a prevailing average over the previous two years and target premia. However, several other definitions have been adopted in the literature to investigate the exchange rate effect, and given the mixed results of previous studies we examine the extent to which our

findings are sensitive to definitional issues. Specifically we calculate the exchange rate in the following two ways and use the total sample to re-estimate our models:

- (i) the level of the real exchange rate at one month before the bid announcement. Dewenter (1995b, pp. 425-27) has found that levels of exchange rates are significantly related to cross-border target premia, but are unrelated to a sample of domestic and cross-border target premia (1995b, p. 437). We use the Reserve Bank of Australia trade-weighted index for the appropriate month.
- (ii) the difference between the real exchange one month before the bid announcement and the average real exchange rate over the sample period January 1990 to December 1999. Changes in the real exchange rate are determined in this variable with respect to a longer term approach to real competitiveness. Here we examine the proportional difference between the trade weighted index of the month before the bid, and the average trade weighted index between 1990 and 1999.

Further to the above, most cross-border wealth effect studies follow the seminal work of Harris and Ravenscraft (1991, p. 832) and adopt the nominal bilateral exchange rate of the acquirer as the explanatory variable in multivariate analysis (e.g. Cakici *et. al.* 1996, p. 321; Eun *et. al.* 1996, p. 1576). Froot and Stein (1991, pp. 1213-14) argue that trade weighted indices may be a poor measure of the relative wealth of cross-border bidders, biasing the exchange rate effect towards zero. Indeed, they find that the link between FDI and exchange rates is sensitive to exchange rate definition, and that bilateral rates better explain FDI when the flow of investment is concentrated between two countries. We examine two versions of the Harris and Ravenscraft variable using different measurements of the average bilateral exchange rate and estimate our models using the cross-border sub-sample:

- (iii) the proportional difference between the nominal bilateral exchange rate one month before the bid announcement and an average nominal bilateral exchange rate over the preceding 24 months; and

- (iv) the proportional difference between the nominal bilateral exchange rate one month before the bid announcement and an average nominal bilateral exchange rate over the sample period January 1990 and December 1999.

**Table 5**  
**Sensitivity Analysis on the Regressions of Australian Target Wealth Gains in Domestic and Cross-Border Acquisitions**

About here

Table 5 Panel A shows the results of sensitivity analysis for various exchange rate definitions. Alternative definitions of the real exchange rate (trade weighted index) are not significantly related to target premia for domestic and cross-border acquired targets. Both univariate models (regressions 4A and 4C) are insignificant. Regressions 4B and 4D estimate the exchange rate and country effects. There is a significant US cross-border exchange rate effect for both the level of the trade weighted index and relative real competitiveness. Table 5 Panel B confirms the exchange rate effect for cross-border acquirer targets when we use the Harris and Ravenscraft variable (regressions 5A-5D). Indeed, nominal bilateral rates are just as strongly related to target premia as is the real exchange rate, and indicate that the exchange rate effect for cross-border acquisitions is robust to measurement differences.

## **6. The exchange rate effect on domestic target premia**

The empirical evidence reported so far suggests that the exchange rate effect on target premia is specific to cross-border acquirer targets. Such evidence is consistent with Froot and Stein's

argument that the relative purchasing power of cross-border acquirers increases during a domestic currency devaluation, allowing those firms to raise bids in domestic currency terms. Some researchers, however, suggest that there may also be an exchange rate effect on domestic acquirer targets if changes in the exchange rate alters firm value through cost and revenue exposures and/or market growth prospects (Dewenter 1995a p. 439; Swenson 1993). In this case, depending upon the exposure of the firm, variations in target premia will be related to changes in exchange rates. In order to assess this argument this section estimates the exchange rate exposure of domestic targets and uses that variable to explain variations in target premia.

Let us take the value of the firm  $V$  and exchange rate  $E$ . Defining  $E$  as the foreign exchange price of one unit of domestic currency, we expect  $dV/dE$ , economic exposure, to be less than zero for exporters and greater than zero for importers. Estimating economic exposure is complicated by the fact that observable changes in firm value are post-hedging so that even though a firm may face exchange rate risk,  $dV/dE$  may equal zero because the firm perfectly hedges. Furthermore, exposure depends upon factors that are time varying which may make estimation difficult - the firm's demand elasticities in foreign and domestic markets and the weight of traded goods in the production process (Amihud 1994, p. 49; Levi 1994). Despite these issues the determinants of economic exposure are often assumed to be constant, and researchers use estimation techniques whereby changes in firm value are regressed against changes in the exchange rate, controlling for changes in market returns (Bodnar and Gentry 1993; Amihud 1994; Jorion 1995; Williamson 2001; Allayannis and Ofek 2001). For example, Jorion (1990, p. 336) estimates exposure from  $R_{it} = a + \beta_1 R_{TWI} + \beta_2 R_{mt} + e$  and uses the beta coefficient of the exchange rate term ( $\beta_1$ ) as the estimation of ex-hedging exposure.<sup>6</sup>

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<sup>6</sup> Definitions of notation:  $R_{it}$  = the firm's share price return;  $R_{TWI}$  = return on an exchange rate index such as the trade weighted index TWI;  $R_{mt}$  = return on a market index; and  $e$  = error term iid. This definition of exposure is used in Loudon's (1993) study of the exchange rate exposure of Australian stocks. Similar specifications of that model have also been used in estimation of interest rate and oil price risk for Australian stocks (see, for example, Faff and Howard 1997; Faff and Brailsford 1999).

Other researchers have noted that the time varying nature of the determinants of exposure mean that the above approach may lead to economic exposure variables being biased towards zero (e.g. Levi 1994, p. 44), or mis-specified given a potential collinear relationship between exchange rates and market returns (Allayannis and Ofek 2001, p. 287). Bartov and Bodnar (1994, pp. 1759-61) argue that the failure of research to document a contemporaneous relationship between  $dV$  and  $dE$  may also be due to sample selection bias (by using firms that are likely to be active hedgers), the use of samples with a mixture of positively and negatively exposed firms, and the lagged response between  $dV$  and  $dE$  due to systematic errors in expectations formation (due to the asymmetric impact of positive versus negative  $dE$  on  $V$ , temporary versus permanent  $dE$  and asymmetric information on firms' hedging activities)(see Bartov and Bodnar 1994, p. 1761; Bartov, Bodnar and Kaul 1996, p. 108). In order to resolve these measurement problems the multivariate regression equation above (and other simple models such as  $R_{it} = a + \beta_I R_{TWI} + e$ ) are modified using lagged exchange rates and/or orthogonalized exchange rate indices to remove multicollinearity. An alternative method to resolve estimation issues is to adopt Levi's (1996, pp. 296-315) argument that exposure can be estimated as the fraction of overall variance in firm value that is explained by exchange rates. Exposure is defined as the regression  $R^2$  of the simple linear model  $R_{it} = a + \beta_I R_{TWI} + e$ . Such a measure is by construction positive, reducing some of the problems identified by Bartov and Bodnar (1994) and evident in the Jorion-style models.

In order to assess the extent to which exchange rates influence target premia we need to take into account three potential determinants: the strength or weakness of the exchange rate during the sample period; the level of economic exposure; and the nature of exposure (positive or negative). Figure 2 shows that if we concentrate on those firms that have exposures, there are four combinations of exchange rates and nature of exposure. The purchase of a target exporter during a period of relative weakness of the domestic currency should yield a higher premia given that the net present value of the target is higher under such conditions. Similarly, targets that are importers will be valued more highly during periods of appreciation.

Figure 2

**Determinants of Firm Value given Exchange Rates and Exposure**

|          | Exchange Rate |             |
|----------|---------------|-------------|
|          | Strong        | Weak        |
| Exporter | $dV/dE < 0$   | $dV/dE > 0$ |
| Importer | $dV/dE > 0$   | $dV/dE < 0$ |

In order to parameterize Figure 2 the domestic acquirer sample is stratified into firms with high and low exchange rate exposure. Exposure is estimated as the  $R^2$  of the simple linear model  $R_{it} = a + \beta_1 R_{TWI} + e$  using mid-monthly data. The firm's return is the continuously compounding monthly return from one month before the bid announcement to three years and one month before the announcement ( $N=36$ ). This period is chosen in order to avoid the effect of pre-announcement abnormal return run-ups on return data. Exchange rates are the TWI returns as described in section 3.2.2 for the same period. Firms are defined as exposed if their  $R^2$  value is greater than the sample median. This procedure leaves 41 firms with which to proceed.<sup>7</sup>

Exchange rates are defined as weak when the TWI prevailing one month before the bid is less than the average TWI of the preceding two years (consistent with the relative exchange rate variable used in section 4). A strong exchange rate regime is one where the TWI is greater than the preceding two year average. The nature of economic exposure (negative or positive) is estimated from the beta coefficient of the Jorion regression  $R_{it} = a + \beta_1 R_{TWI} + \beta_2 R_{mt} + e$ .<sup>8</sup> Firms

<sup>7</sup> There are 82 firms used in this section due to one firm having insufficient share price data three years back for estimation. The overall median  $R^2$  was 0.0275. There were by construction 41 firms with  $R^2$  above the median. That data has mean 0.0759; median 0.0664; standard deviation 0.0437; maximum 0.2332, and minimum 0.0281.

<sup>8</sup> Alternative estimations of beta include a simple linear regression of  $R_{it} = a + \beta_1 R_{TWI} + e$  and an orthogonalized TWI in the Jorion equation  $R_{it} = a + \beta_1 R_{TWI} + \beta_2 R_{mt} + e$ .

with positive beta coefficients are defined as importers and firms with negative coefficients exporters.<sup>9</sup> The data and estimation period of the exposure regressions are the same as for the  $R^2$  calculations. The Jorion beta is not a perfect measure of exposure (as discussed above) but given that our sample contains importers and exporters we are unable to obtain data for all firms on alternative proxies for exposure such as the percentage of foreign sales in total sales.<sup>10</sup> The Australian Accounting Standards Board (AASB 1005 ix) states that firms with significant foreign sales (sales>10%) should report those sales by geographical and industry segmentation. In our sample not all firms will have significant sales and in any case such reporting does not include imported raw materials that may determine exchange rate exposure. Finally, each variable was used to form four dummy variables representing the four types of outcomes listed in Figure 2: exporters under strong ( $ES=1$ , 0 otherwise:  $N=5$ ) and weak ( $EW=1$ , 0 otherwise:  $N=7$ ) exchange rates, and importers under strong ( $IS=1$ , 0 otherwise:  $N=15$ ) and weak ( $IW=1$ , 0 otherwise:  $N=14$ ) exchange rates.

Table 6 presents results of regression estimations using three dummy variables ( $ES$ ,  $EW$  and  $IS$ ) and the intercept denoting  $IW$ :  $CAR_{20} = a + b_1ES + b_2EW + b_3IS + e$ . The relationships in Figure 2 suggest that the cumulative abnormal returns to target shareholders should be significantly higher for  $EW$  and  $IS$  and lower for  $IW$ .

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<sup>9</sup> Using the 41 firms identified in the first stage, there were 12 negative beta firms (hereafter exporters) and 29 positive beta firms (hereafter importers). Five number summary for the beta data is: mean 0.4461; median 0.7342; standard deviation 1.3482; maximum 3.5210; minimum -3.3463. Nine percent of the regressions yield significant beta coefficients at the 5% level (compare 5.2% for Jorion 1990, and 6.4% for Loudon 1993). By comparison, an alternative estimation using a simple regression of  $R_{it} = a + \beta_1 R_{TWI} + e$  gave the following data: mean 0.4829; median 0.7500; standard deviation 1.3160; maximum 3.4249; minimum -3.1170. Fifteen percent of the beta coefficients were significant at the 5% level.

<sup>10</sup> The “Jorion beta” has been shown to be positively associated with the ratio of foreign sales to total sales; see for example, Jorion 1990, pp. 340-43; Allayannis and Ofek 2001, p. 280. Thus many studies use the level of foreign sales as a proxy for exposure.

**Table 6**

**Regressions Results for the Exchange Rate Effect on Domestic Target Premia**

about here

**Figure 3**

**Cumulative Abnormal Returns to Australia Targets by Domestic Acquisition: Positive  
versus Negative Exchange Rate Exposure**

About here

Table 6 reports mixed evidence for an exchange rate effect on target premia. There is a significantly lower premia for exporters during periods of strong exchange rates but no other significant differences between the groups. Alternative estimation of exposure and exchange rate variables using variations of the beta economic exposure (see footnote 8) and exchange rates (defining strong and weak relative to a 1990s average) give similar results (not reported). Figure 3 illustrates the cumulative abnormal returns over the 41 day event window, with a clear difference between *ES* and the other groups. In sum, although the sample size used in this section is relatively small, the results provide some indication that a framework and set of variables that allows for levels and nature of exchange rate exposure may yield better results in identifying any exchange rate effect on domestic acquirer target premia.

## **7. Conclusion**

This paper has investigated the exchange rate and cross-border effects on target premia using a sample of Australian targets representing data from a small open economy. It was hypothesised that changes in the real exchange rate have an impact on the cash flows of Australian firms through cost structures and revenue streams, and so target premia may be related to changes in

real competitiveness regardless of the nationality of the bidder. A US cross-border effect was identified and a significant relationship was found between the real exchange rate and the target premia. The US-cross-border effect is consistent with US findings that show that the cross-border effect on target premia depends upon nationality of the bidder. The exchange rate effect for cross-border acquirers was robust to inclusion of control variables for bid characteristics, relatedness of bidder and target, and prior business experience in Australia. This effect is also robust to various definitions of the exchange rate. By contrast, we find mixed evidence for an exchange rate effect on domestic acquirer target premia. While there is a strong relationship between changes in the trade weighted index and target returns, this finding is sensitive to measurement of the real exchange rate. By estimating economic exposure for importers and exporter targets it was shown that target exporter firms acquired during periods of relative strong exchange rates received significantly lower premia than other firms.

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**Table 1**  
**Sample Characteristics**

This table shows the distribution of the sample across the sampling period 1990 to 1999.

| <b>Panel A: Distribution by Year</b> |               |                   |       |
|--------------------------------------|---------------|-------------------|-------|
| Year                                 | Domestic Bids | Cross-border Bids | Total |
| 1990                                 | 4             | 1                 | 5     |
| 1991                                 | 7             | 1                 | 8     |
| 1992                                 | 2             | 1                 | 3     |
| 1993                                 | 9             | 1                 | 10    |
| 1994                                 | 3             | 4                 | 7     |
| 1995                                 | 9             | 3                 | 12    |
| 1996                                 | 14            | 7                 | 21    |
| 1997                                 | 7             | 7                 | 14    |
| 1998                                 | 13            | 7                 | 20    |
| 1999                                 | 15            | 9                 | 24    |
| Total                                | 83            | 41                | 124   |

| <b>Panel B: Cross-border bidder nationality</b> |           |        |
|-------------------------------------------------|-----------|--------|
|                                                 | Frequency | %      |
| Austria                                         | 1         | 2.44   |
| Canada                                          | 4         | 9.76   |
| Hong Kong                                       | 1         | 2.44   |
| Japan                                           | 1         | 2.44   |
| Malaysia                                        | 1         | 2.44   |
| Netherlands                                     | 1         | 2.44   |
| New Zealand                                     | 3         | 7.32   |
| South Africa                                    | 5         | 12.20  |
| United Kingdom                                  | 8         | 19.51  |
| United States                                   | 16        | 39.03  |
| Total                                           | 41        | 100.00 |

**Table 2****Control Variable Characteristics**

This table reports summary statistics for the control variables. All definitions are as described in section 3. *PRIOR* is only relevant to the observations involving foreign bidders.

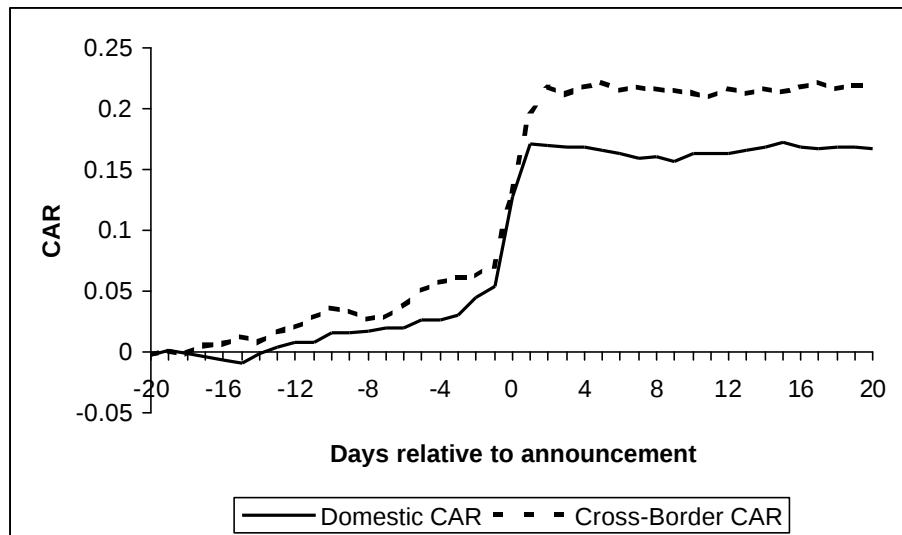
|                |         | Domestic |       | Cross-Border |       |
|----------------|---------|----------|-------|--------------|-------|
|                |         | Obs.     | %     | Obs.         | %     |
| <i>CROSS</i>   | 0 (No)  | 83       | 100.0 | 0            | 0.0   |
|                | 1 (Yes) | 0        | 0.0   | 41           | 100.0 |
| <i>CASH</i>    | 0 (No)  | 47       | 56.6  | 12           | 29.3  |
|                | 1 (Yes) | 36       | 43.4  | 29           | 70.7  |
| <i>CONTEST</i> | 0 (No)  | 78       | 94.0  | 38           | 92.7  |
|                | 1 (Yes) | 5        | 6.0   | 3            | 7.3   |
| <i>TOEHOLD</i> | Yes     | 22       | 26.5  | 11           | 26.8  |
|                | No      | 61       | 73.5  | 30           | 73.2  |
| <i>REL</i>     | 0 (No)  | 48       | 57.8  | 8            | 19.5  |
|                | 1 (Yes) | 35       | 42.2  | 33           | 80.5  |
| <i>PRIOR</i>   | 0 (Yes) |          |       | 22           | 53.7  |
|                | 1 (No)  |          |       | 19           | 46.3  |

**Table 3**  
**Cumulative Abnormal Returns to Australian Targets by Domestic and Cross-Border Acquisitions**

This table presents target cumulative abnormal returns and test-statistics for the full sample (Panel A) and sub-samples (Panel B). Panel C reports difference in means and medians tests for the sub-sample groups. Differences in means are calculated assuming non-equal variances. Differences in medians report the Wilcoxon signed-rank test. T- and Z-statistics are presented in parentheses. \* and \*\* indicates significance at the 10% and 5% level respectively.

| <b>Panel A: Total sample</b>                                                |                    |                    |                     |                     |
|-----------------------------------------------------------------------------|--------------------|--------------------|---------------------|---------------------|
|                                                                             | CAR[-20,+20]       | CAR[-10,+10]       | CAR[-5,+5]          | CAR[-1,+1]          |
|                                                                             | (t-stat)           | (t-stat)           | (t-stat)            | (t-stat)            |
| All takeovers                                                               | 0.1845<br>(8.81)** | 0.1645<br>(9.73)** | 0.1581<br>(11.31)** | 0.1295<br>(12.07)** |
| <b>Panel B: Sample by domestic and cross-border acquisition</b>             |                    |                    |                     |                     |
| Domestic bidder                                                             | 0.1677<br>(6.82)** | 0.1542<br>(7.73)** | 0.1456<br>(9.10)**  | 0.1265<br>(10.20)** |
| Cross-border bidder                                                         | 0.2187<br>(5.59)** | 0.1853<br>(5.93)** | 0.1836<br>(6.85)**  | 0.1353<br>(6.59)**  |
| <b>Panel C: Differences between cross-border and domestic target premia</b> |                    |                    |                     |                     |
| Cross-border less domestic                                                  |                    |                    |                     |                     |
| Mean diff.                                                                  | 0.0510             | 0.0310             | 0.0381              | 0.0088              |
| (T-stat)                                                                    | (1.10)             | (0.84)             | (1.22)              | (0.37)              |
| Median diff.                                                                | 0.0335             | 0.0338             | 0.0529              | 0.0258              |
| Z-stat.                                                                     | (1.28)             | (0.64)             | (1.52)              | (0.35)              |

**Figure 1**  
**Cumulative Abnormal Returns to Australia Targets by Domestic and Cross-Border Acquisitions**



**Table 4**  
**Regression Analysis of Australian Target Wealth Gains in Domestic and Cross-Border Acquisitions**

This table reports OLS regression results for various models relating  $CAR_{20}$  (the market model cumulative abnormal return for the target over a 41-day event window) to the variables described in section 3. Panel A uses the full sample ( $N=124$ ), and Panel B stratifies the sample into domestic ( $N=83$ ) and cross-border ( $N=41$ ) acquirer targets. Test statistics are presented in parentheses. Jacque-Bera statistics are on the distribution of the residuals to the OLS regression and p-values are in parentheses. White's  $F$ -statistic is for the null that the residuals are distributed homogeneously. Where the White's  $F$ -statistics is significant we report White's adjusted t-statistics. \* and \*\* indicates significance at the 10% and 5% level respectively.

| <b>Panel A: Regression on Australian targets (N=124)</b> |                    |                     |                     |                    |
|----------------------------------------------------------|--------------------|---------------------|---------------------|--------------------|
| Regression                                               | 1A                 | 1B                  | 1C                  | 1D                 |
| <i>Intercept</i>                                         | 0.1677<br>(6.56)** | 0.1845<br>(8.90)**  | 0.1628<br>(6.49)**  | 0.1698<br>(4.76)** |
| <i>CROSS</i>                                             | 0.0510<br>(1.15)   |                     |                     |                    |
| <i>EXCH</i>                                              |                    | -0.7881<br>(-1.73)* | -0.7707<br>(-1.88)* | -0.6860<br>(-1.60) |
| <i>US</i>                                                |                    |                     | 0.1219<br>(1.95)*   | 0.1236<br>(1.90)*  |
| <i>UK</i>                                                |                    |                     | 0.0651<br>(0.77)    | 0.0620<br>(0.71)   |
| <i>OTHER</i>                                             |                    |                     | 0.0135<br>(0.21)    | 0.0111<br>(0.17)   |
| <i>CASH</i>                                              |                    |                     |                     | -0.0142<br>(-0.32) |
| <i>CONTEST</i>                                           |                    |                     |                     | 0.0789<br>(0.89)   |
| <i>TOEHOLD</i>                                           |                    |                     |                     | 0.0649<br>(0.16)   |
| <i>REL</i>                                               |                    |                     |                     | -0.0125<br>(-0.27) |
| Adjusted $R^2$                                           | 0.0025             | 0.0220              | 0.0307              | 0.0057             |
| $F$ -statistic                                           | 1.31               | 3.76*               | 1.97                | 1.09               |
| Jacque-Bera<br>(p-value)                                 | 0.8503<br>(0.65)   | 0.6535<br>(0.72)    | 0.2309<br>(0.89)    | 0.4209<br>(0.81)   |
| White's $F$ -stat.                                       | 0.61               | 3.51**              | 1.79                | 1.11               |

| <b>Panel B: Regression on domestic (N=83) and cross-border (N=41) acquired targets</b> |                    |                    |                      |                      |
|----------------------------------------------------------------------------------------|--------------------|--------------------|----------------------|----------------------|
| Regression                                                                             | 2A                 | 2B                 | 3A                   | 3B                   |
| <i>Intercept</i>                                                                       | 0.1664<br>(6.75)** | 0.1709<br>(4.64)** | 0.2305<br>(6.17)**   | 0.2372<br>(2.56)**   |
| <i>EXCH</i>                                                                            | -0.4417<br>(0.96)  | -0.3389<br>(-0.69) | -1.9940<br>(-2.39)** | -1.7789<br>(-1.96)** |
| <i>CASH</i>                                                                            |                    | -0.0246<br>(-0.46) |                      | -0.0123<br>(-0.14)   |
| <i>CONTEST</i>                                                                         |                    | 0.0436<br>(0.39)   |                      | 0.1670<br>(1.05)     |
| <i>TOEHOLD</i>                                                                         |                    | 0.5630<br>(1.14)   |                      | -0.7723<br>(-0.95)   |
| <i>REL</i>                                                                             |                    | 0.0079<br>(0.15)   |                      | -0.0058<br>(-0.06)   |
| <i>PRIOR</i>                                                                           |                    |                    |                      | -0.0248<br>(0.29)    |
| Adjusted $R^2$                                                                         | -0.0008            | -0.0300            | 0.1053               | 0.0318               |
| <i>F</i> -statistic                                                                    | 0.93               | 0.53               | 5.71**               | 1.22                 |
| Jacque-Bera                                                                            | 0.6301             | 0.2695             | 1.1118               | 1.8227               |
| ( <i>p</i> -value)                                                                     | (0.73)             | (0.87)             | (0.57)               | (0.40)               |
| White's <i>F</i> -stat.                                                                | 2.13               | 1.37               | 0.89                 | 0.53                 |

**Table 5**  
**Sensitivity Analysis on the Regressions of Australian Target Wealth Gains in**  
**Domestic and Cross-Border Acquisitions**

This table reports OLS regression results for models relating  $CAR_{20}$  (the market model cumulative abnormal return for the target over a 41-day event window) to the exchange rate and control variables described in section 5. Panel A uses the full sample ( $N=124$ ), and Panel B uses the cross-border ( $N=41$ ) acquirer targets. The cross-border sample was reduced by one due to the lack of bilateral exchange rate data for one acquirer. Test statistics are presented in parentheses. Jacque-Bera statistics are on the distribution of the residuals to the OLS regression and p-values are in parentheses. White's  $F$ -statistic is for the null that the residuals are distributed homogeneously. Where the White's  $F$ -statistics is significant we report White's adjusted t-statistics. \* and \*\* indicates significance at the 10% and 5% level respectively.

| <b>Panel A: Regression on Australian targets for exchange rate and country effects (<math>N=124</math>)</b> |                    |                    |                                        |                    |
|-------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------|--------------------|
| Regression                                                                                                  | 4A                 | 4B                 | 4C                                     | 4D                 |
|                                                                                                             | TWI levels         |                    | TWI differences<br>(average 1990-1999) |                    |
| <i>Intercept</i>                                                                                            | 0.2029<br>(0.49)   | 0.1531<br>(0.37)   | 0.1846<br>(8.77)**                     | 0.1655<br>(6.51)** |
| <i>EXCH</i>                                                                                                 | -0.0003<br>(-0.05) | 0.0002<br>(0.03)   | -0.0095<br>(-0.02)                     | 0.0175<br>(0.04)   |
| <i>US</i>                                                                                                   |                    | 0.1238<br>(1.95)*  |                                        | 0.1239<br>(1.95)*  |
| <i>UK</i>                                                                                                   |                    | 0.0612<br>(0.71)   |                                        | 0.0611<br>(0.70)   |
| <i>OTHER</i>                                                                                                |                    | -0.0068<br>(-0.11) |                                        | -0.0069<br>(-0.11) |
| Adjusted $R^2$                                                                                              | -0.0082            | 0.0020             | -0.0082                                | 0.0020             |
| $F$ -statistic                                                                                              | $F<0.00$           | 1.06               | $F<0.00$                               | 1.06               |
| Jacque-Bera stat.                                                                                           | 1.3121             | 0.2599             | 1.3121                                 | 0.2593             |
| ( $p$ -value)                                                                                               | (0.52)             | (0.88)             | (0.52)                                 | (0.88)             |
| White's $F$ -stat.                                                                                          | 0.70               | 1.37               | 0.73                                   | 1.39               |

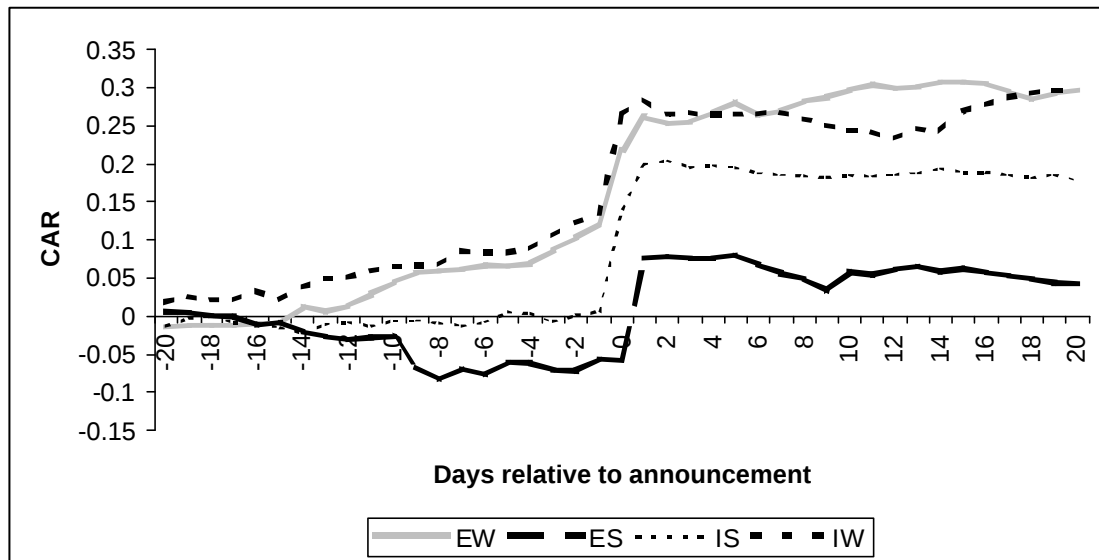
| <b>Panel B: Cross-border acquirer targets (N=41)</b> |                                                           |                      |                                                          |                      |
|------------------------------------------------------|-----------------------------------------------------------|----------------------|----------------------------------------------------------|----------------------|
| Regression                                           | 5A                                                        | 5B                   | 5C                                                       | 5D                   |
|                                                      | Bilateral exchange rate differences<br>(24 month average) |                      | Bilateral exchange rate differences<br>(average 1990-99) |                      |
| <i>Intercept</i>                                     | 0.2051<br>(5.86)**                                        | 0.1818<br>(2.21)**   | 0.2210<br>(6.08)**                                       | 0.2488<br>(2.82)**   |
| <i>EXCH</i>                                          | -1.4439<br>(-3.41)**                                      | -1.6100<br>(-3.78)** | -0.9130<br>(-2.72)**                                     | -0.9986<br>(-2.83)** |
| <i>CASH</i>                                          |                                                           | 0.0050<br>(0.06)     |                                                          | -0.0374<br>(-0.43)   |
| <i>CONTEST</i>                                       |                                                           | 0.2230<br>(1.59)     |                                                          | 0.2444<br>(1.61)     |
| <i>TOEHOLD</i>                                       |                                                           | -1.2266<br>(-1.73)*  |                                                          | -0.8513<br>(-1.12)   |
| <i>REL</i>                                           |                                                           | -0.0354<br>(-0.40)   |                                                          | -0.0530<br>(-0.55)   |
| <i>PRIOR</i>                                         |                                                           | 0.0153<br>(0.20)     |                                                          | -0.0213<br>(-0.26)   |
| Adjusted $R^2$                                       | 0.2095                                                    | 0.2414               | 0.1374                                                   | 0.1283               |
| <i>F</i> -statistic                                  | 11.60**                                                   | 3.12**               | 7.37**                                                   | 1.98**               |
| Jacque-Bera stat.                                    | 0.2177                                                    | 0.5741               | 1.1998                                                   | 1.5730               |
| ( <i>p</i> -value)                                   | (0.90)                                                    | (0.75)               | (0.55)                                                   | (0.46)               |
| White's <i>F</i> -stat.                              | 2.42                                                      | 1.79                 | 1.29                                                     | 0.79                 |

**Table 6**  
**Regressions Results for the Exchange Rate Effect on Domestic Target Premia**

This table reports OLS regression results for the models relating  $CAR_{20}$  (the market model cumulative abnormal return for the target over a 41-day event window) to the variables described in section 6:  $CAR_{20} = a + b_1ES + b_2EW + b_3IS + e$  ( $N=41$ ). Jacque-Bera statistics are on the distribution of the residuals to the OLS regression and p-values are in parentheses. White's  $F$ -statistic is for the null that the residuals are distributed homogeneously. Where the White's  $F$ -statistics is significant we report White's adjusted t-statistics. \* and \*\* indicates significance at the 10% and 5% level respectively.

|                    | <i>Coefficient</i> | <i>t-statistic</i> |
|--------------------|--------------------|--------------------|
| <i>Intercept</i>   | 0.2962             | 4.97**             |
| <i>ES</i>          | -0.2534            | -2.18**            |
| <i>EW</i>          | 0.0007             | 0.01               |
| <i>IS</i>          | -0.1182            | -1.43              |
| Adjusted $R^2$     | 0.0731             |                    |
| $F$ -statistic     | 2.05               |                    |
| Jacque-Bera stat.  | 0.8264             |                    |
| (p-value)          | (0.66)             |                    |
| White's $F$ -stat. | 1.86               |                    |

**Figure 3**  
**Cumulative Abnormal Returns to Australia Targets by Domestic Acquisition: Positive versus Negative Exchange Rate Exposure**



*Notes:* EW is the CAR for exporter targets under a weak exchange rate regime; ES is the CAR for exporter targets under a strong exchange rate regime; IS is the CAR for importer targets under a strong exchange rate regime, and IW is the CAR for importer targets under a weak exchange rate regime.