

THE DETERMINANTS OF
TAKEOVER RISK FOR ACQUIRING
AND TARGET COMPANIES
AUSTRALIAN EVIDENCE

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THE DETERMINANTS OF TAKEOVER RISK FOR ACQUIRING AND TARGET COMPANIES

Australian Evidence

Abstract

The characteristics of acquiring and target companies involved in Australian takeovers are explored in this study. Employing fresh methodology developed by Palepu (1986), this study improves on the methodological flaws of past studies. Proxies are developed from takeover theory. These include: synergy, managerial motives and agency theory, market valuation of assets and tax considerations. Their significance is determined using both probit analysis and the independent-samples t-test procedure. The empirical findings suggest that targets are low growth companies, with potentially valuable assets that are not being utilised due to inefficient management. In addition, an inverse relationship between the characteristics of acquiring and target companies has been determined.

1.0 Introduction

Thirteen years ago, Bishop, Dodd and Officer (1987), described how no single corporate activity had been the subject of more public attention in the Australian capital market than mergers and acquisitions (M&A's). Anecdotal evidence highlights the fact that this is still very much the case today. Two major aspects of takeovers are of particular interest to researchers, managers of companies, regulators and other involved parties. The first aspect is concerned with the determinants of mergers and takeovers, or the motives which prompt mergers and takeovers. Papers by Mueller (1980), Jensen (1988), and Berkovitch & Narayanan (1993) address this aspect. The second aspect is concerned with the effects of such corporate events on the companies involved, and on the whole economy. Studies on this topic have been undertaken by Bradley (1980), and Jensen & Ruback (1983) in the United States; and Bishop, Dodd & Officer (1987) in Australia.

This paper is concerned with the area of the determinants of mergers and takeovers. The main objective of this paper is to investigate the characteristics of *both* acquiring and target companies. It is also anticipated that suitable proxies can be developed for the major merger and takeover theories. These will be used to test whether the defined theories apply to the companies involved in Australian takeovers. The study's scope is limited to companies listed on the Australian Stock Exchange (ASX) that were involved in takeovers during the period 1 January 1990 to 31 December 1998.¹

We are not interested in whether a takeover actually occurred in this study. Rather, we are concerned with whether an initial takeover offer was made. The ground for this distinction is that there are a number of factors that can impact upon the outcome of a successful takeover. The offer amount, the form of the proposal, and the economic environment at the time of the offer, are but

¹ For a more detail on the actual sample, see Section 4

a few examples of factors that impact upon whether the takeover is completed or not.

The majority of studies are concerned with the characteristics of target firms. For example, studies by Vance (1969), Simkowitz and Monroe (1971), Stevens (1973), Castagna and Matolcsy (1976), Belkoui (1978), Dietrich and Sorensen (1984), and Palepu (1986). Moreover these studies have endeavoured to develop models that predict the likelihood of takeover targets. However, Jensen and Ruback (1983, p.29) argue, "...it is difficult if not impossible, for the market to predict future targets."

There have been relatively few studies undertaken which examine specifically the characteristics of *both* acquiring and target firms. Specific studies which have followed this wider scope include McDougall and Round (1986) (Australia); Hayes and Taussig (1967), and Mueller (1980) (United States); and Singh (1971), and Cosh, Hughes and Singh (1980) (United Kingdom).

The objectives of this paper are to update the McDougall and Round paper in relation to Australian industry and to incorporate a revised, and in our view, more robust methodology.

2.0 Theoretical Framework

Typically, to acquire control of a target in a takeover transaction, a premium over the market value of the company's shares must be paid to the target company's shareholders (Slusky & Caves, 1991). On average, the acquirer's shareholders break even in takeovers, whilst target shareholders receive premiums in excess of 30 per cent (Jensen, 1992). In a later paper, Jensen and Ruback (1983, p47) summarise the empirical work presented in over 40 papers and conclude:

"...that corporate takeovers generate positive gains, that target firm shareholders benefit, and that bidding firm shareholders do not lose"

This view is challenged by Roll (1986) who argues that the gains to target shareholders represent wealth transfers from the acquirer's shareholders, and not necessarily synergistic gains. Therefore, the takeover gains received by the acquirers (Roll, 1986, p198):

"...may have been overestimated if they exist at all".

This interpretation is referred to as the hubris hypothesis.

A range of theories have been advanced to explain why acquirers are prepared to pay an acquisition premium.

2.1 Premium Theories

This section briefly describes some of the theories from previous research. Using these theories we develop hypotheses about the characteristics which can be attributed to *both* acquiring and target companies.

2.1.1 Synergy

Manne's (1965) seminal paper introduced the profit maximisation theory. This theory explains that companies will enter into takeovers if it results in increased shareholder wealth for the acquirer. One way of achieving increases in profit is through synergy, which occurs where the value of the combined company (AB) exceeds the value of the individual companies (*company A and company B*). This may be expressed algebraically as:

$$\therefore V_{AB} > V_A + V_B$$

The definition of synergy has been simplified into two main areas by Martin & McConnell (1991) and Slusky & Caves (1991); namely:

1. The efficiencies that result from combining the physical operations, and the coordination of the assets of the two companies; and
2. The "*disciplining*" of managers, by shifting control of the assets into the hands of more effective managers.

For the purposes of this paper, the term synergy will refer to the first definition. The second definition will be discussed as part of the Hubris theory.

Implicitly, the efficiencies resulting from the combination of physical operations and the coordination of assets are achieved by operating economies of scale. Economies of scale involve '*indivisibilities*', such as people, equipment, and overhead. These fixed costs, when spread over a large number of outputs, can provide increasing returns to a firm (Copeland & Weston, 1988, p.684). Also, the way in which firms integrate their businesses, dictates the types of economies that are achieved through a takeover.

This study is not concerned with making distinctions between the three types of takeovers (vertical, horizontal and conglomerate), and the synergies resulting from each. It has been noted that in practice, takeovers have the characteristics of more than one type of classification due to the multi-product nature of most public companies (McDougall and Round, 1986, p.30). Therefore, it is difficult to categorize takeovers into a particular type.

2.1.2 Hubris Hypothesis

Roll (1986) suggests that acquiring managers make the mistake of overpricing the potential takeover targets when estimating their *real* economic value. Therefore, they pay more than they should, and in doing so, transfer virtually all gains from the transaction to the target's shareholders. This is why the acquirers do not experience increases in their share price, a situation which would be consistent with the maximisation theory of Manne (1965).

Empirical research on takeovers in the United Kingdom, conducted by Firth (1980), many years prior to Roll (1986), found evidence consistent with the hubris hypothesis. In his sample, target gains and acquirer losses are both statistically significant. Firth concludes (1980, p.254):

"This supports the view that the stock market expects zero benefits from a takeover, that the gains to the acquired firm represent an 'over-payment' and that the acquiring companies' shareholders suffer corresponding losses."

The hubris hypothesis highlights the problem of agency theory and managerial motives.

2.1.3 Agency Theory and Managerial Motives

In their seminal paper, Jensen and Meckling (1976) explored the implications of the agency problem. They argue that the agency problem arises when managers have a limited ownership of the firm. By increasing managerial ownership, shareholders are able to encourage diligence and this reduces management incentives to consume excess perquisites. This is because managers bear a higher fraction of the cost of poor decisions.

The literature on agency theory and its relevance to mergers and takeovers, may be summarised in two areas:

1. Takeovers may mitigate the agency problem by substituting the need for individual shareholders to monitor managers; and
2. Takeovers may be the manifestation of the agency problem rather than the solution.

An example of the first aspect was mentioned in the previous section. That is, takeovers may be undertaken to shift the control of the company's assets into

the hands of more effective managers [Martin & McConnell (1991), and Slusky & Caves (1991)]. Martin and McConnell (1991, p.671), suggest that takeovers are undertaken to *discipline* the management of poorly performing targets. They find evidence that indicates that takeovers play an important role in controlling corporate managers, and aligning their incentives with shareholder's interests.

The second aspect of the agency problem is concerned with maximising management utility. Studies which have examined this aspect include: Mueller (1969), Jensen and Meckling (1976), Firth (1980), Amihud and Lev (1981), and Shleifer and Vishny (1989).

Firth (1980, p.236), states that:

"This theory holds that beyond achieving a certain "satisfactory" level of profits, managers will attempt to maximise their own self-interests, and these do not necessarily correspond to maximising shareholder wealth. Management self-interests are likely to include such factors as reducing the risk of losing their jobs, increasing their salary levels, and increasing their power and job satisfaction. These self-interests can be aided by growth in size, and takeovers are, in practice, the quickest way of growing."

Essentially, managers are the agent of shareholders, and because both parties are self-interested, there are serious conflicts between them over the choice of the best corporate strategy (Jensen, 1988, p.28).

Jensen (1988, p.29) argues that:

"Conflicts of interest between shareholders and managers over payout policies are especially severe when the organization generates substantial free cash flow."

One of the major causes of takeover activity, as suggested by Jensen (1988, p.28), is the agency cost associated with conflicts between managers and shareholders over the use of free cash flow.

Jensen (1988, p.28) defines free cash flow as:

“...cash flow in excess of that required to fund all projects that have positive net values when discounted at the relevant cost of capital.”

If a company is to be efficient, such free cash flow must be paid out to shareholders to maximise their value. A conflict of interest exists where the payment of cash to shareholders reduces the resources under managers' control, thereby reducing managers' powers, and potentially subjecting them to the monitoring by the capital markets that occurs when a firm must obtain new capital (Jensen, 1988, p.28).

Takeovers allow managers to spend cash instead of paying it out to shareholders. The free cash flow theory implies that managers of companies with unused borrowing power and large free cash flows are more likely to undertake low-benefit or even value-destroying mergers (Jensen, 1988, p.33). Jensen (1988) discovered that this was occurring in the US oil industry between 1973 through to the late 1970's.

Free cash flow is only one of the many factors involved in the decision to make a takeover. However, it is important and provides a useful perspective on agency theory (Jensen, 1988, p.36).

Similarly to Firth (1980) and Jensen (1988), Shleifer and Vishny (1989) suggest that managers may undertake takeovers to increase the company's dependence on management, enabling them to extract higher compensation from the shareholders and increase their job security. Amihud and Lev (1981), find empirical evidence that managers undertake conglomerate mergers in order to reduce their own '*employment risk*' through diversification.

2.1.4 Risk reduction

Benston (1980, p.33) argues that conglomerate takeovers are a means by which two companies, whose net cash flows over time may not be correlated (due to industry, or product or service differences), can reduce the expected variance of these cash flows and thus reduce the risk of the combined firm. However, Alberts (1966) and Levy and Sarnat (1970) argue convincingly that in perfect capital markets, even when market imperfections such as transaction costs are admitted, the risk-reduction benefits of takeovers cannot be beneficial to shareholders. This is due to the fact that shareholders can achieve their own desired level of risk by holding diversified portfolios. Moreover, Black and Scholes (1973) suggest that the adoption of projects that reduce the variance of the firm's income distribution (i.e. diversification through takeovers), may adversely affect equity holders by inducing a wealth transfer from shareholders to bondholders.

Treynor and Black (1976, p.311) explain the risk reduction issue further:

"There is some difference between the stockholders' and managers' points of view on the question of risk. If the corporation undertakes a risky new venture, the stockholders may not be very concerned, because they can balance this new risk against other risk that they hold in their portfolios. *The managers, however, do not have a portfolio of employers* [emphasis added]. If the corporation does badly because the new venture fails, they do not have any risks except the others taken by the same corporation to balance against it. They are hurt by a failure more than the stockholders, who also hold stock in other corporations, are hurt. Thus the managers may be interested in an acquisition because it will give their company more stability; because it will balance the risks in their company against the somewhat independent risks of the acquired company. The managers' jobs and incomes will be more stable."

Essentially, Treynor and Black (1976) are suggesting that conglomerate takeovers, while not of obvious benefit to investors, are a means by which

managers reduce their employment risk which is largely undiversifiable in capital or other markets (Amihud & Lev, 1981, p.606).

2.2 Information Theories

Bradley, Desai and Kim (1983, p.183) examine the returns realised by the shareholders of companies that were the targets of unsuccessful tender offers and companies that had made unsuccessful offers. Past empirical evidence on corporate acquisitions by tender offers, demonstrate significant and positive abnormal returns to the shareholders of both the targets and acquirers [Dodd and Ruback (1977), Bradley (1980), and Bradley, Desai and Kim (1983)]. Bradley, Desai and Kim (1983, p.184) offer the hypothesis that the revaluation of the target's shares is due to new information that is generated during the tender process.

Two sub-hypotheses stemming from this *information hypothesis* are provided (Bradley, Desai and Kim, 1983, p.184):

1. The '*sitting on a gold mine*' hypothesis: that the dissemination of the new information prompts the market to revalue previously '*undervalued*' target shares.
2. The '*kick in the pants*' hypothesis: that the new information induces the current target management to implement higher-valued operating strategy on its own.

Another aspect of undervaluation is concerned with the market valuation of a company's assets. That is, it may be cheaper for a company to acquire the assets of another, than to build or buy those same assets new. The ratio of the current market value of a company's assets to the replacement value of those assets is known as the Tobin's q measure.

There are several explanations for the role of Tobin's q and its relationship to the likelihood of a takeover. The most familiar of these, as proposed by Tobin

(1969), is that a takeover bid of a low q company is an attempt to acquire valuable resources at a cost below that of the market. More generally, Hasbrouck (1985, p.353) proposes that Tobin's q may be an indication of managerial performance, a role consistent with the profit maximisation hypothesis previously advanced.

Lang, Stulz & Walkling (1989, p.138) support Hasbrouck's (1985) view. They suggest that Tobin's q is an increasing function of the quality of a company's current and anticipated projects under existing management. Lang, Stulz & Walkling (1989, p.139) find:

"...that financial markets reward well-managed firms, namely, high q firms, taking over poorly managed firms, but not poorly managed firms taking over well-managed firms...Our results are consistent with the view that some takeovers create wealth by leading to a better use of the target's resources."

Hasbrouck (1985, p.351) found that when comparing targets with non-targets, the former were characterised by low q (market to replacement value) ratios, and to a lesser extent, relatively high levels of liquid assets. Morck, Schleifer and Vishny (1988, p.114), suggest that, if a low q reflects a low valuation of physical assets relative to their potential, acquiring the company might be a cost-effective way to redeploy the company's physical capital.

Australian Accounting Standards, unlike American Accounting Standards, do not make it necessary for companies to report the replacement cost of their assets. Therefore, in order to calculate Tobin's q previous Australian studies have compared the market value of a firm's assets to the book value of those assets.² Essentially, this is the market to book ratio.

For the purpose of this paper, the market to book ratio will be used instead of Tobin's q to test whether acquiring companies take over targets to acquire

² A. Baker, unpublished PhD Thesis. Faculty of Business and Law, Central Queensland University.

valuable resources at a cost below that of the market. This is the theory proposed by Tobin (1969).

2.3 Taxation Motives

Mergers and takeovers may also be undertaken to minimise the impact of taxation. An acquirer can substitute capital gains taxes for ordinary income taxes by acquiring a growth company with a small or no dividend payout and then sell it to realise capital gains. The justification for this process is that in certain taxation environments, for example the US and Australia, capital gains attracts a lower effective tax rate than company income tax does.

Also, a company may acquire a company which has accumulated tax losses that can be used by the acquirer to generate tax savings, and hence, increase its value. However, in Australia, Section 80 DA of the Income Tax Act imposes stringent tests, under the headings of "Continuity of Ownership" and "Same Business", for the utilisation of tax losses of targets.

3 0 ANALYTICAL FRAMEWORK

Five of the preceding merger and takeover theories, which are relevant to the Australian environment, have been selected for consideration in relation to both target and acquiring companies. They are summarised in Table 1.

EXPLANATORY THEORIES	ACQUIRERS	TARGETS
SYNERGY	Yes (Efficient Companies)	Yes (Inefficient Companies)
HUBRIS	No	No
MANAGERIAL MOTIVES & AGENCY	Yes (Free Cash Flow Theory) (High Risk Companies)	Yes (Inefficient Management Theory) (Low Risk Companies)
INFORMATION THEORIES	No	No
MARKET VALUATION OF ASSETS	Yes (High q Companies)	Yes (Low q Companies)
TAX CONSIDERATIONS	Yes (Large Taxable Incomes)	Yes (Tax Losses)

Table 1: A comparison of theories relevant to acquiring and target companies.

3.1 Acquirer Characteristics

The arguments of synergy and achieving economies of scale are initially examined. This is reflected by the absorption of a direct competitor via a takeover, thereby increasing market share and retaining market dominance and is examined in the initial hypothesis.

H1_A: Synergy is a significant determinant of the likelihood of a company being an acquirer.

The second hypothesis considers the free cash flows and unused borrowing power concepts.

H2A: Free cash flow is a significant determinant of the likelihood of a company being an acquirer.

The agency conflict theory whereby a takeover may be undertaken as a means of decreasing a manager's own 'employment risk' is then examined.

H3A: High risk is a significant determinant of the likelihood of a company being an acquirer.

The possible application of the Tobin's q concept is then tested. To determine whether companies which have a high market to book ratio (where the market is paying a premium), will seek to invest in low market to book companies in an attempt to acquire valuable resources at a cost below that of the market.

H4A: Market valuation of assets is a significant determinant of the likelihood of a company being an acquirer.

Finally, we examine the taxation motivations, which result in a company acquiring another company that has accumulated tax losses that can be used by the acquirer to generate tax savings and hence, increase its value. This suggests that an acquirer would therefore be a company with a large income tax liability.

H5A: Tax considerations are a significant determinant of the likelihood of a company being an acquirer.

3.2 Target Characteristics

The effects of merger and acquisition theories on target companies are then tested.

Companies that experience declines in their sales, are more vulnerable to be taken over by companies that are constantly growing and aiming to consolidate a dominant position in a particular market. This leads to the development of the following hypothesis.

H6_A: Synergy is a significant determinant of the likelihood of a company being a target.

The hubris theory is then examined. Takeovers may be undertaken to shift the control of the company's assets into the hands of more effective managers. Therefore, target companies are more likely to have lower levels of profitability and returns on investments.

H7_A: Inefficient management is a significant determinant of the likelihood of a company being a target.

As previously discussed , targets are likely to have a lower level of risk.

H8_A: Low risk is a significant determinant of the likelihood of a company being a target.

The application of Tobin's q to target companies is then tested.

H9_A: Market valuation of assets is a significant determinant of the likelihood of a company being a target.

The final test in terms of the outlined theories relates to the likelihood that targets are likely to have accumulated tax losses.

H10_A: Tax considerations are a significant determinant of the likelihood of a company being a target.

The classification of industry difference is then examined as the final characteristic which may influence firms to either become acquirers, or be acquired.

Jensen and Ruback (1983) and Lamoreaux (1985), have looked at the determinants of takeovers within certain industries. Similarly, Singh (1971) examined the food, drink, electrical engineering, clothing and footwear, and non-electrical engineering industries, during the period 1948-1960. Therefore, acquirers and targets will be classified as either industrial or resource companies. This is based on the ASX's classification of Australian publicly listed companies into their principal aggregate indicies.

H11_A: Industry classification is a significant determinant of the likelihood of a takeover in Australia.

4.0 Data and Sampling

A list of the companies that had been involved in mergers and acquisitions from the period 1 January 1990 to 31 December 1998, was gathered from hardcopies of *The Australian Financial Review's* (AFR) 'Current Takeovers' column. The AFR sources the data from the ASX. This data source was chosen as it provided the date of the initial intention, and also an accurate description of the targets and acquirers.

The data used to calculate the independent variables were extracted from *Company Analysis* and *Datastream Advance* electronic databases. The independent variables are measured; (1) at the end of the financial year (in the year the takeover offer was first announced) for targets and acquirers; and (2) as at 30 June 1998 for non-targets-non-acquirers.

During the sampling period the AFR reported 578 takeover announcements. From this initial sample, companies that were involved in mergers, and could not be distinguished as targets or acquirers were excluded (5 mergers). The sample was then divided into targets and acquirers. Those companies that had been both targets and acquirers were excluded from the sample (83 companies). After the initial screening process, there were 490 targets and 490 acquirers.

The second screening process was conducted for data requirements. Targets and acquirers were only included in the estimation sample if (1) the companies were listed on the ASX, and (2) the companies had data available for the announcement year, and a year prior to the announcement in the *Company Analysis* Database. After the second screening process, the final sample included 27 targets and 30 acquirers.

A random sample of 80 firms that were neither targets or acquirers as of 30 June 1998 were selected for the estimation of the acquisition models.³ The random sample was selected by employing the methodology outlined by Palepu (1986). The entire population of 1113 companies listed on the ASX as of 30 June 1998 were arranged in alphabetical order (excluding those companies that were either targets or acquirers during 1 January 1990 to 31 December 1998), and then every fourteenth company (i.e. $1113 \div 80 \approx 14$) was

³ A confidence interval for the sample probability is given by: $\hat{p} \pm t \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$,

\therefore Let $\hat{p} = 0.5$ and $t = 2$,

selected to generate a random sample of 80 companies. All 80 companies satisfied the data requirements. The composition of the estimation sample is summarised in Table 2.

YEAR	TARGETS	ACQUIRERS	NON-TARGET / NON-ACQUIRER
1990			
1991		1	
1992		1	
1993	2		
1994	2	3	
1995	7	4	
1996	7	11	
1997	4	7	
1998	5	3	80
	27	30	80
Total Sample for Target Estimation			107
Models:			110
Total sample for Acquirer Estimation			
Models:			

Table 2: Composition of the estimation sample.

Of the original sample of 27 targets, 30 acquirers and 80 non-target-non-acquirers, only 21 targets, 26 acquirers and 73 non-target-non-acquirers had available betas. The individual company betas are measured (1) at the end of the financial year (in the year the takeover offer was first announced) for targets and acquirers, and (2) as at 30 June 1998 for non-targets-non-acquirers. Data has only been collected for the announcement year. This sample will be used to test hypotheses 3 and 8.

5.0 Methodology

The methodology employed in this paper is based on the methodological improvements made by Palepu (1986) on past acquisition studies. Palepu undertook a critical examination of the methodology used by earlier acquisition studies and highlighted the principal methodological flaws.⁴

Past studies have typically drawn a sample of target and then matched these targets with an equal number of non-targets [For example; Stevens (1973) uses a sample consisting of 40 targets and 40 non-targets for estimating his models; and McDougall and Round (1986) use a sample consisting of 88 takeovers (88 targets, 88 acquirers and their matching companies)]. The criteria used by McDougall and Round (1986, p.110) for matching targets with non-targets, and acquirers with non-acquirers, was formed on the basis of whether the matching company was; of similar size, industry, nature of operation, similar reaction to economic conditions, similar buyers and suppliers and produce similar goods or services. This type of sample is known as a state-based sample and it is not a pure random sample. Palepu (1986, pp.6-10) shows that the use of non-random, equal-share samples in the model estimation, without appropriate modification to the estimators, leads to inconsistent and biased estimates of the model parameters. Therefore, the methodology employed in this study parallels that developed by Palepu (1986). This study will be the first study employing this type of methodology to be used on Australian data.

We also extend our analysis by employing both probit analysis as well as an independent-samples t-tests procedure.

The probit model allows us to determine which variables are statistically significant in explaining the likelihood of a company being (1) an acquirer or otherwise, and (2) a target or otherwise. Furthermore, given the independent

⁴ See Palepu (1986) for an extensive review of the methodological flaws.

variables, the model can predict the probability of a company being an acquiring or target company. The dependent variable for the probit analysis is assigned the value (a) 1 if the company is an acquirer, and 0 otherwise, and (b) 1 if the company is a target, and 0 otherwise.

The independent-samples t-test procedure will compare the means of the different variables for both acquirers and targets. This procedure will also provide an empirical explanation of which variables are statistically significant in explaining whether a company is an acquirer or target.

5.1. Development of Proxies

Once the takeover and merger theories which are to be tested had been determined, proxies were then developed to reflect the theories in an empirically testable manner. The proxies represent the different characteristics of a company. The proxies in this study:

1. Were specified on the basis of whether they apply to the takeover theories;
2. Are frequently used in the academic and popular finance literature; and
3. Contain data that is available on the *Company Analysis* and *Datastream Advance* Databases.

The proxies that are tested, the theories they are representing, and how they are calculated are presented in Table 3 (over page).

THEORY	VARIABLE	DEFINITION
SYNERGY	<i>Size1</i>	Sales Revenue
	<i>Size2</i>	Total Assets
	<i>Size3</i>	Total Assets - Depreciation
	<i>Growth</i>	Sales Growth
INEFFICIENT MANAGEMENT THEORY - FREE CASH FLOW THEORY	<i>Liquidity</i>	Net Liquid Assets (current assets - stock) / Total Assets
	<i>Debt to Equity</i>	Total Debt / Shareholder Equity
INEFFICIENT MANAGEMENT THEORY - AGENCY THEORY	<i>Return on Equity</i>	Earnings / Equity
	<i>Earnings per Share</i>	Reported Earning per Share
	<i>Profitability</i>	Net Income / Sales
RISK	<i>Beta (β)</i>	See Appendix 1.
MARKET VALUATION OF ASSETS	<i>Market to Book</i>	Market Capitalisation / Shareholders Equity
TAX MOTIVE	<i>Tax</i>	Tax Due
INDUSTRY DUMMY	1 if the company is an industrial 0 if the company is a resource	

Table 3: A list of proxies used in this study.

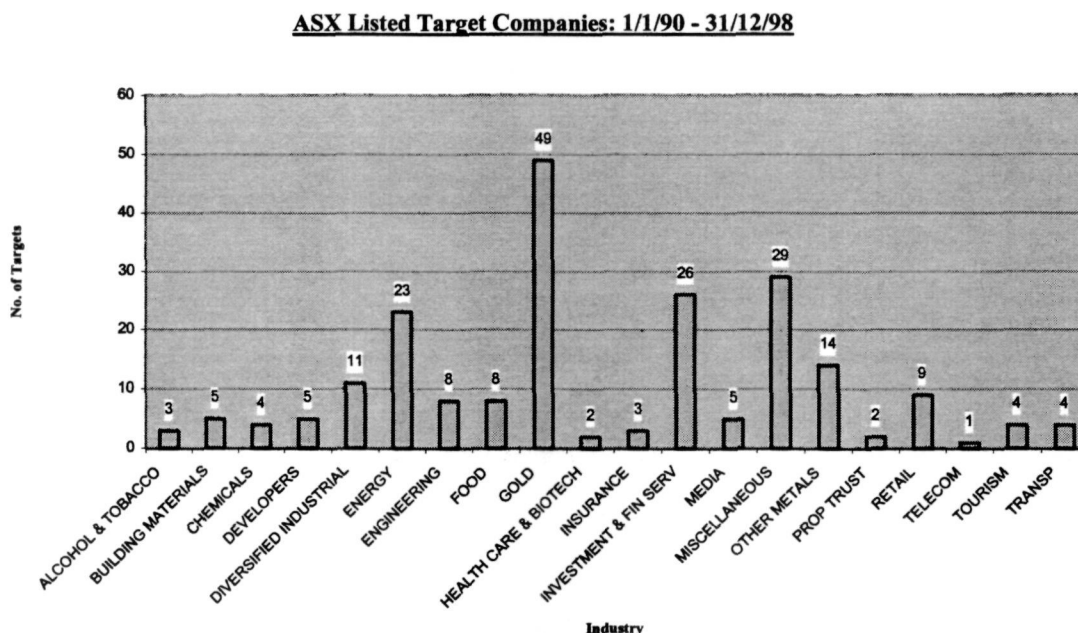
The proxies represent the independent variables used in probit analysis and the independent-samples t-test procedure. All of the independent variables are included in the probit analysis of target companies and then acquiring companies. This is done to determine whether an inverse relationship exists between the variables of target and acquiring companies.

Probit analysis was initially performed using announcement year data. The analysis was then re-run using the announcement year and the year prior to the announcement year data, to establish any lagging effect. Palepu (1986) and past studies have not examined lagged effects. The independent-samples t-test was used as an additional statistical tool to compare the targets with acquirers.

6.0 Results and Analysis

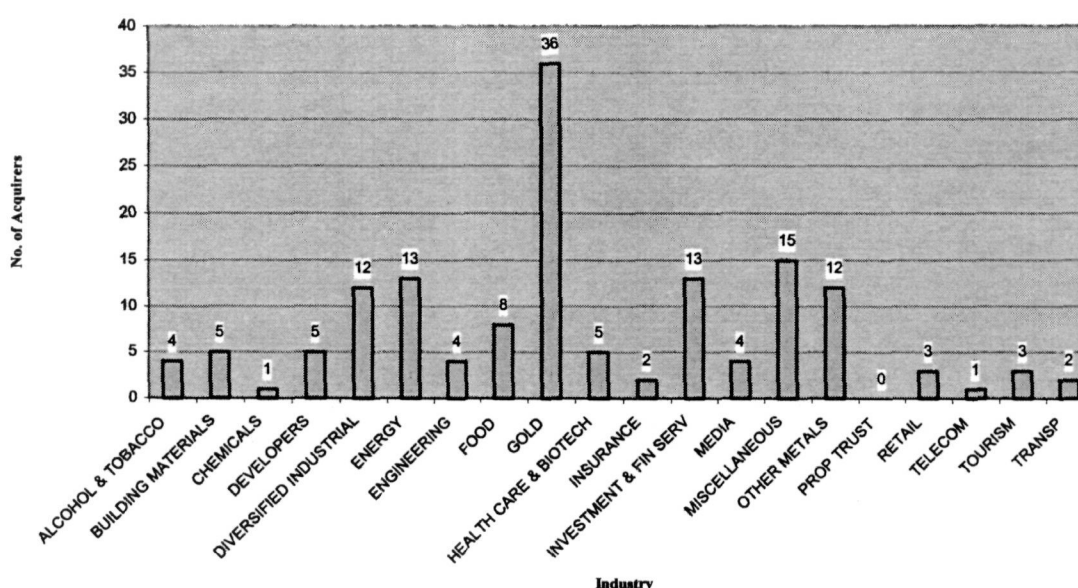
6.1. Preliminary Findings

The initial analysis provides some interesting results. A significant number of targets and acquirers came from the 'Gold' industry. Overall, the resource sector [including Gold, Energy (mining), and Other Metals], accounted for 40% of targets, and 45% of the acquirers in the sample. Graphs 1 and 2 provide a breakdown of acquirers and targets into their corresponding industry classification during the sampling period.



Graph 1: ASX Listed Target Companies: 1/1/90 -31/12/98.

ASX Listed Acquiring Companies: 1/1/90 - 31/12/98



Graph 2: ASX Listed Acquiring Companies: 1/1/90 - 31/12/98.

Many takeovers between mining companies are the result of the acquisition of a mining leasehold on land. Essentially, the target mining company owns a piece of land that is assumed to have exploration potential. If another company wants to obtain the right to explore, and if successful, extract the resources on that particular piece of land, they find they have to purchase the company holding the leasehold. In these cases, the acquisition is effectively part of the acquiring company's exploration program, and is therefore, not motivated by one of the theories outlined in Section 2. To explore this issue further, target companies in the gold industry were further analysed. It was found that over 50 % ⁵ of those target companies analysed did not generate any sales in previous years leading to the takeover announcement. This supports the theory that they were taken over as part of an acquirers' exploration program.

⁵ Data was only available for 25 of the 49 targets in the gold industry. Of those 25 companies, 14 companies did not have a history of revenue from mining operations.

6.2. Probit Analysis Estimates for Targets

The estimates of the probit analysis for targets using announcement year data are presented in Table 4.

Variables	Expected Sign	Estimates ^a			
		Model 1	Model 2	Model 3	Model 4
Size 1	-	b	b	b	b
Size 2	-	b	b	b	b
Size 3	-	b	b	b	b
Tax	-	b	b	b	b
Debt to Equity	-	-0.005121 (-1.110179)	-0.007681 (-1.822080) ^e		-0.007696 (-1.874736) ^e
Earnings per Share	-	1.270367 (1.494828)	1.103798 (1.338641)	1.003021 (1.244025)	
Growth	-	-0.005370 (-1.285853)			
Industry Dummy		-1.139476 (-3.096302) ^c	-1.055542 (-3.095349) ^c	-1.115835 (-3.349526) ^c	-0.977351 (-2.931959) ^c
Liquidity	-	-0.001360 (-0.166436)			
Market to Book	-	-0.170164 (-2.288599) ^d	-0.151043 (-2.105794) ^d	-0.144497 (-1.920627) ^d	-0.129651 (-1.928315) ^d
Profit	-	-0.005433 (-1.363156)			
Return on Equity	-	-0.012741 (-2.017054) ^d	-0.016713 (-2.865309) ^c	-0.014420 (-2.551277) ^c	-0.012256 (-2.663844) ^c
Constant		0.735742 (1.907061) ^e	0.625181 (1.811830) ^e	0.369746 (1.185451)	0.609423 (1.772546) ^e
Akaike Info Criteria		1.024173	1.012273	1.031072	1.015367
Schwartz Criteria		1.248990	1.162151	1.155970	1.140265
Likelihood Ratio Statistic		29.29942 (8 df)	24.57269 (5 df)	20.56126 (4 df)	22.24166 (4 df)
Probability (LR statistic)		0.000281	0.000168	0.000387	0.000179
McFadden R-squared		0.242372	0.203272	0.170088	0.183989

^a Four different versions of the model are estimated and the coefficients and z-statistics are reported.

^b These variables have been excluded due to high correlation.

^c Significant at the 0.01 level, two-tailed test.

^d Significant at the 0.05 level, two-tailed test.

^e Significant at the 0.10 level, two-tailed test.

Table 4: Target Estimates from Probit Analysis – Announcement Year Data

The variables found to be statistically significant in all of the four models developed to analyse target companies include Return on Equity, Market to Book and Industry Dummy. The likelihood ratio statistic illustrates that all four models are statistically significant. That is, the models provide a statistically significant explanation of whether a firm is a target or otherwise. However, the magnitude of this explanation is quite small, as shown by a McFadden R-squared of 24.23% for model 1.

Earnings per share is the only variable where the estimated sign of the coefficient did not match the expected sign. Intuitively, one would expect that the earnings per share ratio for target companies would be lower than that of non-targets. Palepu (1986) found a similar result in his study. He used the price-earnings ratio variable in all four models and found that the variable was not statistically significant, and the estimated sign of the coefficient was negative (opposite to the expected sign). Palepu did not elaborate on this finding. Therefore, to explore this issue further, a price-earnings dummy variable (PE Dummy) was developed as a substitute for earnings per share. If a company in the sample had a positive price-earnings ratio it was assigned the value of 1, and 0 otherwise.

The PE dummy was substituted for the earnings per share variable in Model 2. This model was chosen because it appears to be the 'best model' in terms of the goodness of fit (McFadden R^2), low probability (LR statistic), and significance level of variables. The output of the probit analysis for this model is presented in Appendix 1.

By substituting the PE dummy variable for the earnings per share variable, the estimated sign of the coefficient matches the expected sign. However, the substitution does not improve the statistical explanation power of Model 2 (as shown by the McFadden R^2 and LR statistic). The remaining analysis continues to employ the earnings per share variable.

As can be seen from Table 5, the introduction of another year of data into the probit analysis yields some interesting findings. The variables found to be significant include Debt to equity, LAG (grow), Industry dummy, LAG (market to book) and Return on equity. The extra year of data improves the explanatory power of the models. All four models display a larger McFadden R^2 , lower Probability (LR statistic), and lower Akaike and Schwartz information criteria.

Variables	Expected Sign	Estimates ^a			
		Model 1	Model 2	Model 3	Model 4
Size 1	-	b	b	b	b
Size 2	-	b	b	b	b
Size 3	-	b	b	b	b
Tax	-	b	b	b	b
Debt to Equity	-	-0.009983 (-1.073855)	-0.010965 (-1.788856) ^e	-0.010626 (-1.771989) ^e	-0.011259 (-2.106913) ^d
LAG (Debt to Equity)	-	-0.001159 (-0.121580)			
Earnings per Share	-	1.357623 (1.528920)	1.347437 (1.522632)	1.339065 (1.539031)	1.357502 (1.567041)
LAG (Earnings per Share)	-	0.001380 (0.561102)	0.001409 (0.578928)	0.001355 (0.564890)	
Growth	-	-0.004710 (-0.870735)	-0.004777 (-0.917496)	-0.005039 (-0.986436)	
LAG (Grow)	-	-0.013406 (-1.620593) ^e	-0.013554 (-1.658488) ^e	-0.012806 (-1.681358) ^e	-0.013786 (-1.915103) ^e
Industry Dummy		-1.007403 (-2.308245) ^d	-1.017768 (-2.422952) ^c	-1.032717 (-2.546928) ^c	-1.000290 (-2.626393) ^c
Liquidity	-	-0.000682 (-0.034262)	0.000922 (0.095924)		
LAG (Liquidity)	-	0.001633 (0.083705)			
Market to Book	-	0.225870 (1.348566)	0.226306 (1.391163)	0.237866 (1.536317)	
LAG (Market to Book)	-	-0.471449 (-2.711374) ^c	-0.471423 (-2.772435) ^c	-0.471484 (-2.829128) ^c	-0.327878 (-2.523797) ^c
Profit	-	-0.008319 (-1.095465)	-0.008326 (-1.097758)	-0.007096 (-1.155101)	-0.007360 (-1.096136)
LAG (Profit)	-	0.002691 (0.423104)	0.002774 (0.451657)		
Return on Equity	-	-0.019252 (-2.356820) ^d	-0.019496 (-2.554329) ^c	-0.019772 (-2.785175) ^c	-0.017852 (-2.536684) ^c
LAG (Return on Equity)	-	-0.000197 (-0.024159)			
Constant		0.990914 (2.014667) ^d	1.004340 (2.226943) ^d	1.014789 (2.369122) ^d	1.103161 (2.387816) ^d

Akaike Info Criteria	1.023464	0.967639	0.932557	0.909239
Schwartz Criteria	1.423140	1.292375	1.207334	1.109076
Likelihood Ratio Statistic	43.37522 (15 df)	43.34860 (12 df)	43.10232 (10 df)	39.59739
Probability (LR statistic)	0.000138	0.0000197	0.00000477	0.00000150
<i>McFadden R-squared</i>	0.358811	0.358591	0.356554	0.327560

^a Four different versions of the model are estimated and the coefficients and z-statistics are reported.

^b These variables have been excluded due to high correlation.

^c Significant at the 0.01 level, two-tailed test.

^d Significant at the 0.05 level, two-tailed test.

^e Significant at the 0.10 level, two-tailed test.

Table 5: Target Estimates from Probit Analysis - Announcement Year & Previous Year's Data

6.3. Probit Analysis Estimates for Acquirers

The only variable found to be statistically significant in all of the models developed to analyse acquiring companies was the industry dummy. The results of the probit analysis are presented in Table 6.

All four models are unable to provide a statistically significant explanation of the likelihood of a company being an acquirer or otherwise. The McFadden R² of 11.21% for model 1 shows how small this explanatory power is. The introduction of the previous years data into the models slightly improved the explanatory power of the model. (see Appendix 2).

Variables	Expected Sign	Estimates ^a			
		Model 1	Model 2	Model 3	Model 4
Size 1	+	5.19E ⁻¹¹ (1.020478)	5.37E ⁻¹¹ (1.056338)	7.04E ⁻¹¹ (1.437105)	7.22E ⁻¹¹ (1.472871)
Size 2	+	b	b	b	b
Size 3	+	b	b	b	b
Tax	+	b	b	b	b
Debt to Equity	+	0.002299 (0.806304)	0.001792 (0.651238)	0.001511 (0.571211)	
Earnings per Share	+	0.506848 (0.827373)	0.525209 (0.881709)		
Growth	+	-0.000215 (-0.501350)			
Industry Dummy		-0.564365 (-1.602600) ^c	-0.580926 (-1.658656) ^c	-0.584977 (-1.742703) ^c	-0.569641 (-1.706717) ^c
Liquidity	+	-0.002851 (0.316268)	-0.002761 (-0.307459)		
Market to Book	+	-0.040989 (-0.698501)	-0.042532 (-0.736016)	-0.041152 (-0.770366)	-0.041501 (-0.778093)
Profit	+	-0.002284 (-1.137769)	-0.002182 (-1.192745)	-0.001723 (-1.153252)	-0.001730 (-1.145993)
Return on Equity	+	0.000839 (0.172091)			
Constant		-0.124312 (-0.314629)	-0.098478 (0.251242)	-0.13486 (-0.394950)	-0.069565 (-0.217613)
Akaike Info Criteria		1.222282	1.192231	1.198790	1.185646
Schwartz Criteria		1.467780	1.388629	1.346089	1.308395
Likelihood Ratio Statistic		14.45854 (9 df)	13.76419 (7 df)	9.042667 (5 df)	8.488481 (4 df)
Probability (LR statistic)		0.106923	0.055538	0.107374	0.075237
<i>McFadden R-squared</i>		0.112160	0.106774	0.070147	0.065848

^a Four different versions of the model are estimated and the coefficients and z-statistics are reported.

^b These variables have been excluded due to high correlation.

^c Significant at the 0.10 level, two-tailed test.

Table 6: Acquirer Estimates from Probit Analysis – Announcement Year Data

The same variables used in the testing of target companies were used in the testing of acquiring companies to find evidence of any inverse relationships. Evidence of an inverse relationship is determined by examining the sign of the estimated coefficients for each of the variables. These are summarised in Table 7.

	ACQUIRERS		TARGETS	
Variables	Expected Sign	Estimated Sign	Expected Sign	Estimated Sign
Size 1	+	+	-	-
Size 2	+	+	-	-
Size 3	+	+	-	-
Tax	+	+	-	-
Debt to Equity	+	+	-	-
Earnings per Share	+	+	-	+
Growth	+	-	-	-
Industry Dummy		-		-
Liquidity	+	-	-	-
Market to Book	+	-	-	-
Profit	+	-	-	-
Beta	+	+	-	-
Return on Equity	+	+	-	-

Table 7: A summary of signs.

This is an informative result which largely conforms with our intuition of the characteristics of acquirers, in terms of both the estimated sign, and the inverse relationship in comparison to target companies.

6.4. Findings of the Independent-Samples T-Test Procedure

As explained in Section 4, the independent-samples t-test procedure is a statistical tool useful for comparing target and acquiring companies. The results from the independent-samples t-test procedure are shown in Table 8.

It will be noted from the table that:

- The variables found to be significant at the 1% level are Size 2 and Size 3.

- The variables found to be significant at the 5% level are Size 1, Tax, Debt to Equity and Return on Equity.

That is, the means of these variables for targets are statistically different to the means of the variables for the acquirers.

- It is also shown in Table 8 that the target companies have a higher liquidity measure than acquiring companies.

	Size 1	Size 2	Size 3	Tax	Debt to Equity	Earnings per Share	Growth	Liquidity	Market to Book	Profit	Return on Equity	Beta
<u>ACQUIRER</u>												
Number	30	30	30	30	30	30	30	30	30	30	30	26
Mean	1,259,846,833	987,624,433	950,832,467	11,705,866.7	58.0233	0.1740	34.2667	23.3347	1.9950	-35.007	6.6667	0.8954
<u>TARGET</u>												
Number	27	27	27	27	27	27	27	27	27	27	27	21
Mean	140,690,519	228,146,667	215,443,185	3,066,370.37	32.6481	0.0493	6.8370	25.2241	1.7595	-17.1247	-12.3630	0.7657
t-value	2.22	3.15	3.19	2.46	2.38	1.64	1.06	-0.45	0.91	-0.40	2.30	0.851
2-Tail Sig.	0.031	0.003	0.002	0.017	0.021	0.106	0.292	0.658	0.367	0.693	0.025	0.399

Table 8: Results for the Independent-Samples T-Test Procedure.

The results of the empirical analysis are summarised in Table 9.

Hypothesis	Probit Analysis	Independent-Sample T-Test	Conclusion
ACQUIRERS			
H1: Synergy	Not Significant	Significant	A mixed result. H1 could not be unequivocally accepted.
H2: Free Cash Flow	Not Significant	Significant	A mixed result. H2 could not be unequivocally accepted.
H3: High Risk	Not Significant	Not Significant	H3 was rejected. It was concluded that high risk is not a significant determinant of the likelihood of a company being an acquirer.
H4: Market Valuation of Assets	Not Significant	Not Significant	H4 was rejected. It was concluded that Tobin's q is not a significant determinant of the likelihood of a company being an acquirer.
H5: Tax Considerations	Not Significant	Significant	Again, a mixed result.
TARGETS			
H6: Synergy	Significant	Significant	H6 was accepted. It was concluded that synergy is a significant determinant of the likelihood of a company being a target.
H7: Inefficient Management	Significant	Significant	H7 was firmly accepted. It was concluded that inefficient management is a significant determinant of the likelihood of a company being a target.
H8: Low Risk	Not Significant	Not Significant	H8 was rejected. It was concluded that low risk is not a significant determinant of the likelihood of a company being a target.
H9: Market Valuation of Assets	Significant	Not Significant	A mixed result. It was not possible to conclusively state that Tobin's q is a significant determinant of the likelihood of a company being a target.
H10: Tax Considerations	Not Significant	Significant	Again, a mixed result.
INDUSTRY DIFFERENCES			
H11: Industry Classification	Significant	-	H11 was firmly accepted. It was concluded that industry classification is a significant determinant of the likelihood of a takeover in Australia.

Table 9: A summary of the empirical analysis

7.0 Conclusion

In this study the characteristics of acquiring and target companies in Australia during 1 January 1990 to 31 December 1998 were examined. The objective of this section is to provide a summary of the findings of the paper.

7.1 Target Companies

7.1.1 Theories supported by the findings of the study:

In this study, evidence was found that the following takeover theories apply to target companies:

- Synergy
- Inefficient Management

That is, the target companies examined in this study were found to:

- Experience lower levels of sales growth than non-targets in the year prior to a takeover announcement,
- Be significantly smaller than acquiring companies in terms of sales revenue and total assets,
- Have a lower return on equity than non-targets in the two years prior to an announcement,
- Have a lower return on equity than acquirers in the year of the announcement,
- .

It may be concluded that targets are low growth companies with potentially valuable assets that are not being utilised due to inefficient management. This conclusion is consistent with earlier studies by Hayes and Taussig (1967) [with respect to cash takeover bids in the United States during 1957-65] and Singh (1971) [for the period 1954-60 in the United Kingdom]. Both these

studies found evidence that targets were relatively unprofitable, sluggish, over-liquid companies, often with a history of static or declining earnings (Steiner, 1975, p.185). Also, Palepu (1986) found evidence that the targets in his sample had inefficient management and were smaller in terms of net book assets than non-targets.

7.1.2 Theories not supported by the findings of the study:

The empirical evidence did not support the following theory applying to target companies in this study:

- Low Risk

That is, the target companies examined in this study were found to:

- Have similar betas to non-targets and acquirers,

It may be concluded that target companies are no riskier than non-targets or acquirers.

The position regarding Market Valuation to Assets and Tax Considerations was mixed, and hence, inconclusive.

7.2 Acquiring Companies

7.2.1 Theories supported by the findings of the study:

In this study, mixed evidence was found that the following takeover theories apply to acquiring companies:

- Synergy
- Free Cash Flow
- Tax Considerations

McDougall and Round (1986) found that the average size of acquiring companies in Australia was considerably greater than the average size of target companies in terms of total assets (McDougall and Round, 1986, p.169). Mueller (1980) found a similar situation in his study. However, Mueller (1980) also found that, overall, acquiring companies were as profitable, or more profitable than the firms they acquired. McDougall and Round (1986, p.170) found that acquiring companies enjoyed significantly higher before-tax profitability than the target companies, but superior after-tax profitability was experienced only by acquirers in horizontal takeovers.

7.2.2 Theories not supported by the findings of the study:

The empirical evidence did not support the following theories applying to the acquiring companies in this study:

- High Risk
- Market Valuation of Assets
-

The acquiring companies examined in this study were found to:

- Have a similar liquidity position to non-acquirers, and be less liquid than targets,
- Have similar debt to equity ratios to non-acquirers, but marginally bigger than targets,
- Have a smaller profit ratio than non-acquirers and targets,
- Have similar betas to non-acquirers and targets,
- Have a similar market to book ratio to non-acquirers and targets,
- Pay similar tax to non-acquirers, but more tax than targets.

The characteristics of acquiring companies, as predicted by takeover theories, have, apart from industry classification, not been found to be statistically significant. However, the expected signs for the majority of the variables are confirmed by the results of this study. In addition, an inverse relationship between the characteristics of acquiring and target companies has been

determined. This has not been established by past studies, and is encouraging.

7.3. Industry Classification

Evidence was found in this study that acquirers and targets are likely to come from the resource sector of the economy. Moreover, many takeovers occurring within the gold industry, are motivated by the acquisition of land as part of an acquirers exploration program. It may be concluded that most takeovers occur within the same industry.

7.4 Summary

An attempt to determine the characteristics of acquiring and target companies involved in Australian takeovers has been made in this study. Many variables were examined, and mixed results were found. It was discovered that targets are low growth companies, with potentially valuable assets, that are not being utilised due to inefficient management. The characteristics of acquiring companies were found to be more difficult to distinguish than target companies. However, it appears that acquirers are significantly bigger than target companies in terms of sales revenue and total assets.

Exploratory research on the companies involved in takeovers has been provided in this study. More specifically, the characteristics of those companies involved in Australian takeovers were examined. The findings should provide a useful contribution to this increasingly important corporate activity.

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Appendix 1: Acquirer Estimates from Probit Analysis – PE Dummy Sample

Announcement Year Data

Variables	Expected Sign	Estimates ^a
Size 1	-	b
Size 2	-	b
Size 3	-	b
Tax	-	b
Debt to Equity	-	-0.006942 (-1.771740) ^d
PE Dummy	-	-0.519159 (-1.396423)
Growth	-	
Industry Dummy		-0.815830 (-2.288394) ^c
Liquidity	-	
Market to Book	-	-0.131537 (-1.795319) ^d
Profit	-	
Return on Equity	-	-0.008494 (-1.614823) ^d
Constant		0.833116 (2.136281) ^c
Akaike Info Criteria		1.016118
Schwartz Criteria		1.165996
Likelihood Ratio Statistic		24.16134 (5 df)
Probability (LR statistic)		0.000202
McFadden R-squared		0.199869

^a The variables in Model 2 are estimated with the PE Dummy variable, and the coefficients and z-statistics are reported.

^b These variables have been excluded due to high correlation.

^c Significant at the 0.05 level, two-tailed test.

^d Significant at the 0.10 level, two-tailed test.

Appendix 2: Acquirer Estimates from Probit Analysis

Announcement Year & Previous Year's Data

Variables	Expected Sign	Estimates ^a			
		Model 1	Model 2	Model 3	Model 4
Size 1	+	-1.98E-10 (-0.722874)	-2.11E-10 (-0.775693)		
LAG (Size 1)	+	2.98E-10 (0.917546)	3.29E-10 (1.018421)	8.63E-11 (1.467043)	9.09E-11 (1.552054)
Size 2	+	^b	^b	^b	^b
Size 3	+	^b	^b	^b	^b
Tax	+	^b	^b	^b	^b
Debt to Equity	+	0.006532 (1.465741)	0.005599 (1.284314)	0.005718 (1.375790)	0.004195 (1.123126)
LAG (Debt to Equity)	+	-0.001873 (-0.919579)	-0.001820 (-0.866939)	-0.001811 (-0.878044)	-0.001334 (-0.728530)
Earnings per Share	+	0.531140 (0.848127)			
LAG (Earnings per Share)	+	-0.000294 (-0.244074)	-0.000303 (-0.257687)		
Growth	+	-0.000267 (-0.622350)	-0.000242 (-0.579253)	-0.000300 (-0.708928)	
LAG (Grow)	+	-0.001062 (-1.056873)	-0.001013 (-0.996882)	-0.001017 (-1.002898)	-0.000920 (-0.915438)
Industry Dummy		-0.682883 (-1.817398) ^c	-0.641916 (-1.765703) ^c	-0.668425 (-1.909430) ^c	-0.655528 (-1.888052) ^c
Liquidity	+	-0.004435 (-0.266055)	-0.004924 (-0.308436)		
LAG (Liquidity)	+	0.005546 (0.370676)	0.003859 (0.263844)		
Market to Book	+	0.015247 (0.135894)	0.025797 (0.275064)		
LAG (Market to Book)	+	-0.052810 (-0.497949)	-0.054021 (-0.646958)	-0.038451 (-0.716911)	-0.034856 (-0.707107)
Profit	+	-0.002132 (-1.079076)	-0.001794 (-1.145961)	-0.001803 (-1.127679)	-0.001713 (-1.141480)
LAG (Profit)	+	-0.0000493 (-0.041788)			
Return on Equity	+	-0.001143 (-0.173215)			
LAG (Return on Equity)	+	0.002376 (0.503812)	0.002567 (0.652877)	0.001931 (0.540728)	
Constant		-0.249687 (-0.550948)	-0.181274 (-0.405202)	-0.152625 (-0.422862)	-0.125729 (-0.353990)
Akaike Info Criteria		1.317916	1.297408	1.218857	1.198919
Schwartz Criteria		1.759813	1.665655	1.464355	1.395318
Likelihood Ratio Statistic		19.93878 (17 df)	16.19468 (14 df)	14.83534 (9 df)	13.02848 (7 df)
Probability (LR statistic)		0.277373	0.301631	0.095559	0.071418
<i>McFadden R-squared</i>		0.154673	0.125628	0.115083	0.101067

^a Four different versions of the model are estimated and the coefficients and z-statistics are reported.

^b These variables have been excluded due to high correlation.

^c Significant at the 0.10 level, two-tailed test.