Mergers and Acquisitions in Australia: Reasons and Timing

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DECLARATION

I, Socrates Karagiannidis, declare that the DBA thesis entitled, *Mergers and Acquisitions in Australia: Reasons and Timing* is no more than 65,000 words in length including quotes and exclusive of table, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work.

Signature **Socrates Karagiannidis** **Date: 29 September 2010**

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ABSTRACT

This study addresses mergers and acquisitions in Australia, particularly fluctuations in the merger rate, the role of the business cycle in such fluctuations, the reasons for mergers and their role in explaining any cyclical variability and the parallels between the timing of merger fluctuations in Australia and in USA and UK. The international and Australian merger literature is reviewed, consistent merger data for Australia for 1949-2007 are assembled for the first time and both qualitative and econometric analyses are undertaken of merger trends and business cycles in the three countries.

Six main conclusions are reached. First, the Australian merger rate has had a significant downward trend over 1949-2007, with pronounced periods of variability over time. Secondly, these fluctuations in the merger rate show clear pro-cyclical behaviour in some cycles but limited or no pro-cyclical variation in other cycles, a phenomenon we refer to as selective cyclical sensitivity. Thirdly, this finding is confirmed by simple econometric analyses: there are limited signs of the significance of a cyclical measure over the full period, but when the 1972-1984 period is excluded the cyclical variable is significant at the 5% level. Fourthly, merger reason variables do not appear to explain selective nature of cyclical sensitivity nor, fifthly, is there any evidence that merger reasons can explain the overall temporal pattern of merger waves in a systematic fashion. Finally, merger activity in Australia is closely correlated with that in UK, while there is no significant relationship between mergers patterns in Australia and USA.

There is a strong theme in the literature that mergers are influenced by many different factors, and that these vary over time and over economic cycles. The analysis of this thesis, and especially the finding of selective cyclical sensitivity for Australia, is fully consistent with this view.

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GLOSSARY OF TERMS

Readers need to be aware that a number of terms and definitions have been used throughout this paper. Terms such as 'take-over', 'acquisition' and 'merger' are used interchangeably, as are the terms, 'company', 'business' and 'firm'. A clear understanding of the terms and definitions is required from the outset in order for the reader to obtain maximum advantage from a review of this research.

However there are formal definitions of the terms in this paper and several are taken from Weston, Mitchell and Mulherin (2004), as this was found to be the most comprehensive set of definitions, and are used as in the following table:

ACCC	Australian Competition and Consumer Commission. The Commission resulted from the merger of the Trade Practices Commission (TPC) and the Prices Surveillance Authority (PSA) in 1995 following the implementation of the Commonwealth's *Competition Policy Reform Act* 1995.
Acquisition	The purchase of a controlling interest in a firm, generally via a tender offer for the target shares.
Agency problem	The conflict of interest between principal (e.g. shareholders) and agent (e.g. managers) in which agents have an incentive to act in their own self-interest because they bear less than the total cost of their actions.
ANZSIC	Australian and New Zealand Standard Industry Classification. Similar to the U.S. Standard Industry Classification (SIC, below) and is system of categorising industry group, mainly product or process oriented. (Researcher's definition).
Arbitrage	The purchase of an asset for near-term resale at a higher price. In the context of M&A, risk arbitrage refers to investing in the stock of takeover targets for short-term resale to capture a portion of the gains that typically accrue to target shareholders.

Arbitrage pricing theory	A general approach to asset pricing that allows for the possibility that multiple factors may be used to explain asset returns, as opposed to the capital asset pricing model.
Bear hug	A takeover strategy in which the acquirer, without previous warning, mails the directors of the target a letter announcing the acquisition proposal and demanding a quick decision.
Beta	In the capital asset pricing model, the systematic risk of the asset; the variability of the asset's return in relation to the return on the market.
Bidder	The acquiring firm in a tender offer.
Bust-up takeover	An acquisition followed by the divestiture of some or all of the operating units of the acquired firm, which can be sold at prices greater than their current value.
Capital asset pricing model	Calculates the required return on an asset as a function of the risk-free rate plus the market risk premium times the asset's beta.
Cash cows	A Boston Consulting Group term for business segments that have a high market share in low-growth product markets and thus throw off more cash flow than needed for reinvestment.
Chinese wall	The imaginary barrier separating investment banking and other activities within a financial intermediary.
Clayton Act	U.S. Federal antitrust law originally passed in 1914 and strengthened in 1950 by the Celler-Kefauver amendment. Section 7 gives the Federal Trade Commission (FTC) power to prohibit the acquisition of one company by another if adverse effects on competition would result, or if the FTC perceives a trend that ultimately might lead to decreased competition.
Clean-up merger	Also called a take-out merger. The consolidation of the acquired firm into the acquiring firm after the acquirer has obtained control.
Coefficient of determination	The coefficient of determination is a trendline and equation that shows as an indicator between 0 and 1 how closely the estimated values for the trendline correspond to the actually

	observed data. A trendline is most reliable when its R squared value is at or near 1. The closer the value of R squared to 1 the more reliable the trend line is of the estimation data. (Researcher's definition).
Collusion	Illegal coordination or cooperation among competitors with respect to price or output.
Concentration	Measures of the percentage of total industry sales accounted for by a specified number of firms, such as 4,8, or 20.
Concentric merger	A merger in which there is carryover in specific management functions (e.g. marketing) or complimentary in relative strengths among specific management functions rather than carryover complementarities in only generic management function (e.g. planning).
Conglomerate	A combination of unrelated firms; any combination that is not vertical or horizontal.
Defensive diversification	Entering new product markets to offset the limitations of the firm's existing product-market areas.
Delist code	Refers to an alphabetical code that has been assigned to a company that has been delisted from the ASX. (Researcher's definition).
Delisted company	Refers to a company that was publicly listed on the Australian Stock Exchange (ASX) that was removed from this public listing for any number of reasons. (Researcher's definition).
Discounted cash flow valuation (DCF)	The application of an appropriate cost of capital to a future stream of cash flows.
Diversification	The holding of assets whose returns are not perfectly correlated
Divestiture	Sale of a segment of a company (assets, a product line, a subsidiary) to a third party for cash and /or securities.
Dogs	A Boston Consulting Group term for business segments characterised by low market shares in product markets with low growth rates.

Earnings before interest, taxes, and depreciation and amortization (EBITDA)	Earnings before interest and taxes (EBIT) plus depreciation and amortization.
Economic profit	Return on invested capital (ROIC) less the weighted average cost of capital (WACC) multiplied by invested capital.
Employee stock ownership plan (ESOP)	Defined contribution pension plan (stock bonus and/or money purchase) designed to invest primarily in the stock of the employer firm.
Extra merger premium hypothesis	The possibility that a higher price will be paid for superior vote shares if a duel-class stock firm becomes a takeover target and causes the price of superior vote stock to be higher even in the absence of a takeover bid.
Financial conglomerates	Conglomerate firms in which corporate management provides a flow of funds to operating segments, exercises control and strategic planning functions, and is the ultimate financial risk taker but does not participate in operating decisions.
Financial synergy	A theory that suggest a financial motive for mergers, especially between firms with high internal cash flows (but poor investment opportunities) and firms with low internal cash flows (and high investment opportunities which, absent merger, would require costly external financing). Also includes increased debt capacity or coinsurance effect and economies of scale in flotation and transactions costs of securities.
Free cash flow	Cash flows in excess of positive net present value investment opportunities available.
Free cash flow hypothesis	Jensen's theory of how the payout of free cash flows helps resolve the agency problem between managers and shareholder. Holds that bonding payout of current (and future) free cash flows reduces the power of management as well as subjecting it more frequently to capital market scrutiny.

Game theory	An analysis of the behaviour (actions and reactions) of participants under specified rules, information, and strategies.
Going-concern value	The value of the firm as a whole over and above the sum of the values of each of its parts; the value of organization learning and reputation.
Going private	The transformation of a public corporation into a privately held firm (often via a leveraged buyout or a management buyout).
Golden parachute	Provision in the employment contracts of top managers providing for compensation for loss of jobs following a change of control.
Goodwill	The excess of the purchase price paid for a firm over the book value received. Recorded on the acquirer's balance sheet, to be amortized over not more than 40 year (amortization not tax deductible) in the US.
Herfindahl-Hirschman index (HHI)	The measure of concentration under the 1982 Merger Guidelines, defined as the sum of the squares of the market shares of all the firms in the industry.
Holding company	An organization whose primary function is to hold the stock of other corporations but that ho not operating unites of its own. Similar to the multidivisional organization, which has profit centres and single central headquarters; however, the segments owned by the holding company are separate legal entities that in practice are controlled by the holding company.
Horizontal merger	A combination of firms operating in the same business activity.
Hostile takeover	A tender offer that proceeds even after it has been opposed by the management of the target.
Hubris hypothesis (Winner's curse)	Roll's theory that acquiring firm managers commit errors of overoptimism in evaluating merger opportunities (due to excessive pride, animal spirits) and end up paying too high a price for acquisitions.
Industry life cycle	A conceptual model of the different stages of an industry's development. (1) Development stage-new product, high investment needs, losses. (2) Growth stage-consumer

	acceptance, expanding sales, high profitability, case of entry. (3) Maturity stage-sales growth slows, excess capacity, prices and profits decline-key period for merger strategy. (4) Decline stage-substitute products emerge, sales growth decline, pressure for mergers to survive.
Inflation rate	Provided in Table 5.7b by the Reserve Bank of Australia as the Consumer Price Index. For the purposes of this research the annual average has been adopted for the purposes of this research. (Researcher's definition).
Initial public offering (IPO)	The first offering to the public of common stock (e.g. of a former privately held firm) or a portion of the common stock of a hitherto wholly owned subsidiary.
Interest rate	Provided by the Table 3.22b by the Reserve Bank of Australia as the Interest Rates and Yields: Bill and Deposit Markets. For the purposes of this research the 90 days average of Bank Deposit Bills has been adopted as the interest rate for the purposes of using a measurement of the applicable interest rate. (Researcher's definition).
Internal rate of return (IRR)	A capital budgeting method that finds the discount rate (the IRR) that equates the present value of cash inflows and investment outlays. The IRR must equal or exceed the relevant risk-adjusted cost of capital for the project to be acceptable.
Joint venture	A combination of subsets of assets contributed by two (or more) business entities for a specific business purpose and a limited duration. Each of the venture partners continues to exist as a separate firm, and the joint venture represents a new business enterprise.
Junk bond	High-yield bonds that re below investment grade when issued, that is, rated below BBB (Standard & Poor's) or below Baa3 (Moody's).
Leveraged buyout (LBO)	The purchase of a company by a small group of investors, financed largely by debt. Usually entails going private.

Liquidation	Divestiture of all the assets of a firm so that the firm ceases to exist.
Management buyout (MBO)	A going private transaction led by the incumbent managers of the formerly public firm.
Managerialism	A theory that managers pursue mergers and acquisitions to increase the size of the organizations they control and thus increase their compensation.
Marginal cost of capital (MCC)	The relevant discount factor for a current decision.
Market extension merger	A combination of firms whose operations had previously been conducted in non-overlapping geographical areas.
Matrix organization	Company that has functional departments assigned to subunits organised around products or geography. Employees report to a functional manager as well as a product manager.
Merger	Any transaction that forms one economic unit from two or more previous units. When two or more groups of assets of companies, which were previously separately owned, are brought under the control of the same or one group. (Researcher additional definition).
Merger & acquisition (M&A) activity	Refers to the number of disappearances of publicly listed firms due to their merger with another firm (public or private) or their takeover of another or themselves being taken over by another. For our research the Delist Code M has been used to differentiate this. Also, the delist code N (for Name Change) might also be a valid indicator of M&A activity as many companies undergo a name change when a merger or takeover occurs (Researcher's definition).
Monopoly	A single seller.
NASDAQ	Stock quotation system of the National Association of Securities Dealers for stocks (in the US) that trade over the counter as opposed to being traded on an organised exchange.
Net operating income (NOI)	Revenues minus all operating costs including depreciation.

Net operating profit after tax (NOPAT)	Net operating income (NOI) multiplied by one minus the actual cash tax rate applicable to a line of business.
Net present value (NPV)	Capital budgeting criteria that compares the present value of cash inflows of a project discounted at the risk adjusted cost of capital to the present value of investment outlays (discounted at the risk adjusted cost of capital).
Normal return	In event studies, the predicted return if no event took place, the reference point for the calculation of abnormal, or excess, return attributable to the event.
Oligopoly	A small number (few) of sellers.
Open corporations	Fama and Jensen's term for large corporations whose residual claims (common stock) are least restricted. The identify the following characteristics: (1) They have property rights in net cash flows for an indefinite horizon; (2) stockholders are not required to hold any other role in the organization; (3) common stock is alienable (transferable, saleable) without restriction.
Operating free cash flows (FCF)	Gross cash flow minus investment requirements.
Operating synergy	Combining two or more entities results in gains in revenues or cost reductions because of complementarities or economies of scale or scope.
Pac Man defence	The target makes a counter bid for the acquirer.
Perfect competition	Set of assumptions for an idealized economic model: (1) Large number of buyers and sellers so none can influence market prices and output; (2) economies of scale exhausted at relatively small size, and cost-efficiencies are the same for all companies; (3) no significant barriers to entry; (4) constant innovation, new product development; (5) complete knowledge of all aspects of input/output markets is costlessly available.
Poison pill	An anti-takeover defence that creates securities that provide their holders with special rights (eg. To buy target or acquiring firm shares) exercisable only after a triggering event (eg. A tender offer for or the accumulation of a specified percentage of

	target shares). Exercise of the rights would make it more difficult and/or costly for an acquirer to take over the target against the will of its board of directors.
Poison put	A provision in some new bond issues designed to protect bondholders against takeover related credit deterioration of the issuer. Following a triggering event, bondholder may put their bonds to the corporation at an exercise price of 100% to 101% of the bond's face amount.
Pooling of interest accounting	Assets and liabilities of each firm are combined based solely on their previous accounting values.
Predatory behaviour	A theory that holds that a dominant firm may prive below cost or build excess capacity to inflict economic harm on existing firms and to deter potential entrants.
Product differentiation	The development of a variety of product configurations to appeal to a variety of consumer tastes.
Product life cycle	A conceptual model of the stages through which products or line of business pass. Includes development, growth, maturity, and decline. Each stage presents its own threats and opportunities.
Pure conglomerate merger	A combination of firms in non-related business activities that is nether neither a product extension nor a geographic extension merger.
Puts	An option to sell an asset at a specified price for a designated period of time.
q-ratio	(Tobin's q-ratio) The ratio of the market value of a firm's securities to the replacement costs of its physical assets.
Restructuring	Significant changes in the strategies and policies relating to asset composition and liability and equity patterns as well as operations.
Return on invested capital (ROIC)	The percentage of net operating profit after taxes (NOPAT) to total operating assets.
Returns to scale	As scale of operations becomes larger, marginal and average costs decline.

Reverse mergers	The un-combining of firms via spin-offs, divestitures, and so on.
Risk free rate	The return on an asset with no risk of default. In theory, the return on short-term government securities.
Risk premium	The differential of the required return on an asset in excess of the risk-free rate.
Scale economies	The reduction in per-unit costs achievable by spreading fixed costs over a higher level of production.
Securities Act of 1933 (SA) (US)	First of the U.S. Federal securities laws of the 1930's. Provides for federal regulation of the sale so securities to the public and registration of public offerings of securities.
Securities Exchange Act of 1934 (SEA) (US)	U.S. Federal legislation that established the Securities and Exchange Commission (SEC) to administer securities laws and to regulate practices in the purchase and sale of securities
Securities Investor Protection Act of 1970 (SIPA) (US)	U.S. Federal legislation that established the Securities Investor Protection Corporation empowered to supervise the liquidation of bankrupt securities firms and to arrange for payment to their customers.
Sell off	General term for divestiture of part or all of a firm by any one of a number of means – sale, liquidation, spin-off, and so on.
Sherman Act of 1890 (US)	Early U.S. antitrust legislation. Section 1 prohibits contracts, combination, and conspiracies in restraint of trade. Section 2 is directed against actual or attempted monopolization.
Silver parachute	Reduced golden parachute provisions that extend to a wider range of managers.
Spin off	A transaction in which a company distributes on a pro rata basis all of the shares it owns in a subsidiary to its own shareholders. Creates a new public company with (initially) the same proportional equity ownership as the parent company.
Stakeholder	Any individual or group who has an interest in a firm; in addition to shareholders and bondholder, includes labour, consumer, suppliers, the local, and so on.

Standard Industrial Classification (SIC)	The U.S. Census Bureau's system of categorising industry group, mainly product or process oriented.
Strategy	The long range planning process for an organization. A succession of plans (with provisions for implementation) for the future of a firm.
Structural theory	An approach to industrial organization that argues that higher concentration industry causes less competition due to tacit co-ordination or over collusion among the largest companies.
Swaps	Exchanges of one class of securities for another.
SWOT	Acronym for Strengths, Weaknesses, Opportunities, and Threats; an approach for formulating firm strategy via assessment of firm capabilities in relation to the environment.
Synergy	The "2+2=5" effect. The condition of the output of a combination of two entities being greater than the sum of their individual outputs.
Take-out merger	The second step transaction that merges the acquired firm into the acquirer and thus "takes out" the remaining target shares that were not purchased in the initial (partial) tender offer.
Take-over	A general term that includes mergers and tender offers (acquisitions). A take-over is a situation whereby one company undertakes the course of action by which it acquires the assets of another company so as to give it effective control over the affairs of the company that was taken over. (Researcher's additional definition).
Takeover defences	Methods employed by targets to prevent the success of takeover efforts.
Target	The object of takeover efforts.
Targeted share repurchases	Refers to re-purchasing the stock of a large block-holder (an unwanted acquirer) at a premium over market price (greenmail).
Tender offer	A method of effecting a takeover via a public offer to target firm shareholders to buy their shares.

Tobin's q	The ratio of the current market value of the firm's securities to the current replacement costs of its assets; used as a measure of management performance.
Total capitalisation	The sum of total debt, preferred stock and equity.
Transaction cost	The cost of transferring a good or service across economic units or agents.
Trigger point	The level of share ownership by a bidder at which provisions of a poison pill anti0-takeover defence plan are activated.
Undervaluation	A firm's securities are selling for less than their intrinsic, or potential, or long-term value for one or more reasons.
Unemployment rate or level	Provided by the Reserve Bank of Australia in Table 4.15 as detailed by the Australian Bureau of Statistics. This provides a number of measures of measuring the unemployment level or rate. The measure that has been adopted in this research is the total persons seeking work and is expressed as thousands of persons and as a rate or percentage out of 100. (Researcher's definition).
Value chain	An approach to strategy that analyses the steps or chain of activities in the firm to find opportunities for reducing cost outlays while adding product characteristics valued by customers.
Value drivers	Operating measures that have a major influence on the value of a firm.
Vertical merger	A combination of firms that operate at different levels or stages of the same industry (eg. A toy manufacturer merges with a chain of toy stores - forward integration; an automotive manufacturer mergers with a tyre company – backwards integration).
Weighted average marginal cost of capital (WACC)	The relevant discount rate or investment hurdle rate based on targeted capital structure proportions.

Williams Act of 1968 (US)	U.S. Federal legislation designed to protect target shareholders from swift and secret takeovers in three ways: (1) Generating more information during the takeover process; (2) requiring minimum period for tender offer to remain open; (3) authorising targets to sue bidders.
WOTS UP	Acronym for Weaknesses, Opportunities, Threats, and Strengths; a technique to identify these key elements as part of the alternative process used to develop strategy.

CHAPTER 1 OVERVIEW

1.1 INTRODUCTION

Merger waves, merger activity and merger cycles have long captured the attention of researchers, governments and business analysts, starting from the consolidation of industry in the USA and Britain, partly through merger activity, in the latter half of the 19th Century. The topic has been one of recurring interest, with this interest re-ignited by the explosion of merger and acquisitions activity in the USA and in some other countries in 1998-2000 and by concern about the behaviour of both private and public corporations in a globalised economy.

Mergers have had, and will continue to have, significant impacts on economic activity, corporate strategy and industry structure, as well as on the effectiveness of government policies. Mergers can affect the operation of an economy, the structure of its industry and the level of industry concentration, as well as international competitiveness, employment and skill requirements, and can shape government policy concerns. In considering mergers, interpretive issues arise such as whether merger activity can be predicted in certain circumstances; what factors might give rise to a period of heightened merger activity (a merger peak) and what circumstances and factors might give rise to a period of lower merger activity (a merger trough); what economic, political or external factors might affect the level and timing of merger activity, thereby creating merger waves, and whether such waves are linked to the business cycle; and whether common international factors might result in merger waves occurring in Australia being coordinated with those in major countries such as the USA and the UK. Issues such as these motivate the research outlined in this thesis.

1.2 AIMS OF RESEARCH

This study is primarily focused on mergers and acquisitions (hereafter referred to as just mergers) in Australia, and addresses the following four questions:

1. What the main quantitative facts about the level of merger activity in Australia, and about trends and fluctuations in the rate of mergers? Does the Australian experience show pronounced merger waves?

2. If there are periodic fluctuations in merger activity in Australia, are these fluctuations systematically related to the business cycles in the Australian economy?
3. What the main reasons that have been proposed for mergers and acquisitions, and do those reasons explain such cyclical variability in merger activity as is observed in Australia?
4. Is the timing of merger fluctuations in Australia closely related to that of merger fluctuations in the USA and the UK, so that variations in Australian activity could be explained in terms of common international factors?

One striking feature of the Australian literature is that, while a number of studies are available, they use data from different sources assembled for various specific periods, so that no consistent, longer term data on Australian mergers are available. For example, Table 5.1 in Chapter 5 reviews nine major studies of merger activity in Australia, using four distinct data sources, each for different limited periods: stock exchange and newspaper reports of individual mergers, data from the Trade Practices Commission on mergers approved by it, data on takeover bids for listed companies and delisting data from Australian stock exchanges. Thus the first aim of the study is to assemble a consistent data set on merger activity for Australia, for the longest period possible, and to use that data set to analyse broad merger trends and fluctuations. To examine these trends over a long period of time some appropriate scaling factor is also required, and for this purpose the total number of listed companies is used. Data for the USA and UK are more readily available, although again there are various data sources and inconsistencies between them. For the US data is assembled and collated from 1895 to 2006 and for the UK data is assembled and collated from 1885 to 2007.

The second aim of the study is to investigate fluctuations over time in mergers in Australia during the period 1950 to 2007, with a view to examining the role of the Australian business cycle in the nature and timing of merger waves. These issues are examined below in terms of trends and fluctuations in the merger rate, which is defined as the ratio of mergers to the number of listed companies.

The third aim is to examine the main reasons for mergers that have been proposed in the literature, and to investigate whether these factors provide grounds for variations in merger activity over the business cycle. Many reasons have been proposed in the

international and Australian literature as to why firms undertake mergers, such as to realise economies of scale, to minimise transaction or operational costs, to diversify risk or to take advantages of perceived undervaluation of target companies. It is possible that the strength of these motives might vary over the business cycle, and also that the ability or willingness of firms to act on these reasons vary over the cycle.

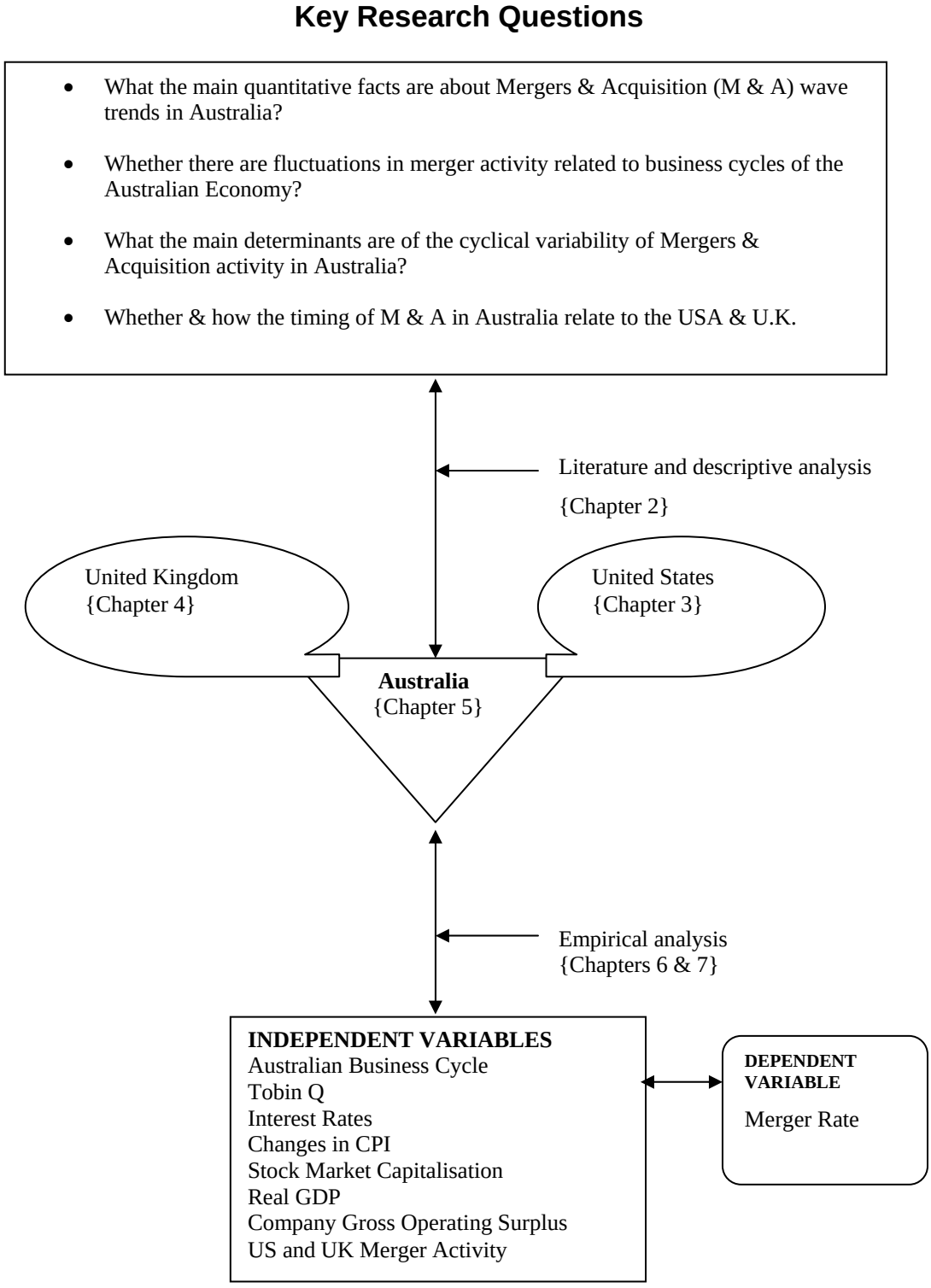
This analysis is undertaken through the examination of the Australian merger rate and the effects on it of several independent variables (such as Tobin's q, interest rates, yearly changes in the Consumer Price Index (CPI), stock market capitalisation, real GDP and company gross operating surplus for private capital). In addition, the history of the merger rate in Australia is examined in some detail, encompassing the period 1950 to 2007, including the behaviour of the independent variables during this period. In analysing cyclical variability in mergers, data from the Melbourne Institute on an index of the Australian business cycle was also used, for the period 1960-2007.

The final aim of the research is to place the variation in mergers in Australia in the context of trends in the USA and the UK. This is accomplished by both a qualitative analysis and by assembling and analysing the merger rate data for the three countries (Australia, USA and UK).

This thesis appears to be the first time that research in Australia that has examined merger activity in one continuous stream from 1950 to the present, hence allowing the issues at hand to be examined in the light the full cyclical variability in the Australian economy over that time. Given this context, the conclusions reached may be of some value to analysts working in this field.

The above comments are reflected in Figure 1.1 below which provides a reflection (snapshot) of the overall structural approach to this thesis.

Figure 1.1 Structure of Analysis:
Merger Reasons, Variables & Key Merger Trends



1.3 THE THEORY OF MERGERS, AND IMPLICATIONS FOR CYCLICAL ACTIVITY

Previous research has offered a number of views on the theory of mergers, and on the importance of mergers within the public debate. For example Neumann (2001) asserts that since mergers affect the interests of different people in different ways, competition policy has often been the subject of political controversies. On the one hand, mergers and the formation of giant firms are welcomed as supposedly enhancing international competitiveness yet, on the other, the political clout they may wield gives rise to serious concerns. An important issue is that the enlargement of markets following globalisation seems to require firms to grow in size in order to withstand the challenge of more vigorous competition, but when firms become (perceivably) too large, then there are political and social welfare concerns that arise that also need to be addressed. Frequently, however, competition is seen as zero sum game, holding the promise of large gains for a few and losses for the many.

Such a situation of opposing views gives rise to the perceived need for competition policy. Behind these views are the differing perceptions as to whether mergers and acquisitions play a beneficial or retrogressive role in economic activity. Ultimately the theoretical framework of mergers and acquisitions and the decisions made by policy and business leaders as to which aspect of the theoretical framework to adopt and implement will influence the reasons for and timing of merger activity. Singh (1971) notes that mergers and acquisitions have been long an integral part of the development of capitalist economies. Another underlying issue here is the fact that different theories of the firm – such as the neoclassical theory of the firm and the new theories of the firm promulgated by authors such as Robin Marris, Oliver Williamson and W. J. Baumol - have different implications for the theory and assessment of mergers.

Researchers have offered numerous theories for the reasons and timing of merger activity. These are reviewed in some detail in Chapter 2, and include economies of scale, transaction costs, growth, monopoly, diversification, debt/equity considerations, firm undervaluation, empire building, synergy achieved through economies of scale and economies of scope, and so on. Table 1.1, drawing on Gammelgaard (1999) and the literature review in Chapter 2, provides a summary classification of some of the major

merger motives and their reasons. The diversity of motives and reasons that have been put forward is evident, and this diversity will play an important role in the argument of this thesis. The examination of several of these merger motives may suggest various reasons why mergers occur at some periods of time and not at others.

Table 1.1 Summary of Merger Motives and Reasons

Merger Motive	Reason
Economies of scale	Horizontal acquisitions to reduce costs
	Vertical integration
	Reduction in over capacity
	Achievement of economies of scale
	Asset purchases
Transaction costs	Minimise governance costs
	Vertical integration to reduce cost and gain advantage
	Extant legal and regulatory framework
Growth	Main corporate strategy
	Main decision is internal versus external growth
	Access to new markets
Monopoly	Desire to become market leader
	Achieved through horizontal integration
Diversification	Desire to minimise risk
	Achieved through conglomerate mergers
Debt/equity	Minimise financial cost
	Minimise bankruptcy risk
Undervaluation	Imperfections in sectors create firm price variations
	Hubris theory
Empire building	Managers have various reasons for their behaviour
	Hubris reason
	Executive compensation
Synergy	More profitable combined entity than single parts
	Elimination of inefficiencies
	Achieved through economies of scale and scope

Gammelgaard (1999) summarises several reasons why firms engage in merger activity. There is no one prominent reason for the timing of the occurrence of mergers; at one period and in light of the economic environment, mergers may occur because companies may pursue objectives of growth or diversification, while at other times the motives may be for economies of scale, increase in monopoly power or the desire to obtain synergies through amalgamation. In a particular period, the regulatory framework may reduce the opportunities for monopoly motives while in another economic period, such as during a recession, the motive for a merger may be the desire to improve the debt/equity position of a company, i.e. strengthen its balance sheet. It was also found that companies within the same industry pursue different merger motives under similar economic circumstances.

Furthermore, the theory of mergers has implications for cyclical variability, in that some of the promulgated reasons for mergers will have an effect on the cyclical nature of mergers (either in merger peaks or merger troughs over time). Golbe and White (1988) offer seven forces that cause mergers (discussed in Chapter 2), whereas Gort (1969), twenty years earlier, contended that economic disturbances generate discrepancies in valuation of the type to produce mergers. Taxation (according to Post, 1994) can be viewed as a cause for the occurrence or lessening of mergers. The implications for cyclical variability as explained by McDougall and Round (1986) is that researchers tend to agree there are a few predominant motives which can explain most takeover activity, either singly or together. There is no one theory of mergers and therefore no one reason for the implications for cyclical activity. Rather, there may be one or several in a certain time period but they may be different in others.

1.4 MERGERS IN THE USA AND THE UK

The literature on mergers in the US and the UK is reviewed extensively in Chapters 3 and 4 below. The review includes the reasons and motives for temporal variations in merger activity in each of these economies, with an eye to their implications for the reasons and motives for temporal variations in merger activity in Australia.

Most of the US literature agrees that the US economy experienced several merger booms during the last 120 years. The major point of divergence is whether there have been four or five merger waves since the latter part of the 19th Century, although this difference can be partly explained by the time at which the respective authors are writing. The later view is that there have been five merger waves in the US economy and each wave having different causal origins. Generally, the descriptive summary given for each waves is as follows: the first wave (1895-1902) was merging for monopoly; the second wave (1920-1929) was merging for oligopoly; the third wave (1960-1973) was the conglomerate merger wave; the fourth wave (1978-1989) was the hostile conglomerate wave and the fifth wave (1993-2001) was the strategic or international merger wave. These issues are discussed further in Chapter 3.

The UK economy also experienced merger waves, as discussed in Chapter 4, and many of these paralleled to some degree the experience of merger waves in the US. The

literature strongly indicates that there have been five merger waves in UK industry since the latter part of the 19th Century. The major and minor waves that occurred in the UK economy occurred around the early 1900's, the mid to late 1920s, the mid to late 1950s, the late 1960s and early 1970s, the late 1980s, the late 1990s to the early 2000s. Though the peaks and troughs of UK merger activity do not entirely replicate those of the US, adequate data has been presented and reviewed in the literature to show strong evidence of periodic merger wave activity in the UK. The extent of correspondence between merger waves in the US and the UK is an empirical issue which is examined in Chapter 7. But, due to the different economic and political developments of the UK compared to the US, it appears that the reasons and causes for merger waves have differed somewhat from those of the US. This is discussed further in Chapter 4.

1.5 QUESTION 1: MERGERS IN AUSTRALIA

The Australian literature on mergers presents interesting information and data, although much of the macroeconomic research was conducted in the 1970s and 1980s, with some further research in the late 1990s. This literature is reviewed in Chapter 5, and is surprisingly patchwork in nature (Bureau of Industry Economics, 1990), with particular analyses of mergers being undertaken using specific data sets for limited period, such as the period 1946-1959 by Bushnell (1961); the period 1959-1970 by Stewart (1977); the period 1972-1985 by Bishop, Dodd and Officer (1987); the period 1960-1985 by Treasury (1986); and specific period studies within 1946-1986 by the Bureau of Industry Economics (1990). Bushnell (1961) was the main researcher prior to the 1970s, covering the post-war period up to the end of the 1950s. The literature also analyses the reasons and motives for mergers within the specifically Australian economic and political environment, again in a very case-specific manner. Many of the motives for mergers listed are in line with those summarised in Table 1.1 above.

The Australian literature has also highlighted that there are several reasons why firms engage in merger activity. There is no one prominent reason for the timing for the occurrence of mergers in Australia; at one period, and in light of the economic environment at the time, mergers may occur because companies may pursue growth or diversification, while at other times the motives of achieving economies of scale or increased monopoly power may predominate. As with the international literature,

changing circumstances may change the relevance of particular motives for mergers, and companies within the same industry pursue different merger motives, even given similar economic circumstances.

The issue of how to measure mergers is an important one in the Australian literature, which reveals that several measures have been employed by researchers in Australia, based on different data sources (see Table 5.1). For example, Bushnell (1961) uses data on successful takeover bids; McCarthy (1973) uses data on companies taken over by listed companies and companies taken over by unlisted companies; OECD (1984) used data on mergers approved by the Trade Practices Commission; Bishop, Dodd and Officer (1987) examined the frequency of takeover activity through the number of bids made, with data on bids assembled from a range of public sources, and Treasury (1986) examined bids as a proportion of listed companies. The Bureau of Industry Economics (1990) study examined a range of data sources, but used stock exchange delisting data as their central source.

The merger measure utilised in this research is the merger rate, defined as the number of firms delisted from the Australian Stock Exchange (ASX) due to takeover or merger divided by the total number of companies listed on the ASX at the time. These data could be obtained for an extensive period (1950-2007) and were obtained by the researcher from various ASX sources, after which they were assembled, collated, manipulated and analysed to determine the merger rate. Considerable time and effort was expended in collating the data from narrative to numeric formats and then constructing the necessary tables and charts as well as conducting econometric testing on it. Details are provided in Chapter 6.

This merger rate measure has both strengths and weakness. Its overriding strength is as a single consistent measure over a period of more that 50 years, enabling systematic analysis over time. One limitation is the exclusion of mergers among non-listed companies. Little is known about the extent of such mergers, but it is widely held that they are much less important than mergers involving listed companies. Another issue is that, while the number of mergers needs to be scaled by an appropriate variable reflecting the level of corporate activity (here the number of listed companies), this latter variable is also subject to cyclical fluctuations, with the creation and demise of

companies changing over the cycle. While such variations are appropriate for the scaling variable, it is possible that cyclical fluctuations in the denominator can mask fluctuations in the 'true' merger rate.

Over the past 58 years (1950-2007) there have been evident peaks and troughs in merger activity and the Australian merger rate has exhibited a downward trend. The long-term trend in the merger rate reflects a small increase in the number of firms delisted due to mergers but an increasing number of new ASX listings, implying growth over time in the number of firms listed. In other words, new firm listings have more than compensated for firm disappearances. The main findings of this analysis are summarised in conclusion (i) below:

Conclusion (i): Merger waves are evident in the Australian data, about a declining trend in the merger rate. One contribution of this thesis is to construct a consistent series for the merger rate (the ratio of mergers in a given year to the number of listed companies during the year) in Australia over the period 1949-2007. This data set shows that the merger rate has had a significant downward trend over this period, with pronounced periods of variability over time, both above and below that trend (merger waves).

1.6 QUESTION 2: CYCLICAL VARIABILITY IN AUSTRALIAN MERGERS

Given the finding that there are merger waves in Australia, the next question to be addressed is whether these fluctuations are significantly influenced by cyclical factors. The central finding of this research is that of selective cyclical sensitivity (SCS), that is that there is strong evidence that merger fluctuations are influenced by cyclical trends in some cycles but not in others. This finding is supported both by qualitative and by econometric analyses of mergers and cyclical trends, and is interpreted in terms of the diversity of potential reasons for mergers discussed above.

Over 1950-2007 there have been periods where the merger rate peaks and troughs have closely coincided with similar peaks and troughs in the business cycle, and other periods where no relationship is evident. Concurrent peaks in the merger rate in conjunction

with economic booms in the business cycle occurred in the upswings in 1959-60, 1969-70, 1977-80 and 1987-90, while there was significant divergence between the two during the mid 1960s, mid 1970s and mid 1980s. Detailed discussion is provided in Chapter 7, including Tables 7.2 and 7.3. The most notable period of divergence was in the Whitlam years (1972-74) and the subsequent decade. This divergence is discussed further in Chapter 7 and tested in the econometric analysis.

The econometric analysis conducted on the above data sets has provided results that tend to support the notion of selective cyclical sensitivity. Two main forms of analysis were undertaken. In the first a simple functional form is used to regress a cyclical variable and a time trend against the merger rate, while in the second a range of variables encapsulating different merger reasons were added to the cyclical and trend variables. For the simple form, initial regressions for the full period show evidence of a positive business cycle effect on the merger rate and a negative effect of time on the merger rate, with the coefficient on the cyclical variable significant at the 10% level. But this equation has a low Durbin-Watson statistic indicating serial correlation in the residuals and that the uncorrected results are not reliable. When corrected by including an auto-regressive term, the cyclical variable is no longer significant, so that an overall relationship cannot be established. Similar findings (that is, significance of the cyclical variable which is not sustained when the correction for autocorrelation is performed) also result when merger reason variables are added to the cyclical and trend variables.

Given that the divergence from pro-cyclical behaviour was most evident in the Whitlam period and the subsequent decade (that is the years 1972-1984), this period was excluded from the analysis. When the simple function form is run over 1960-2007, excluding 1972-84, the adjusted R-squared improves considerably, as does the t-statistic on the cyclical variable and the Durbin-Watson statistic. Correction for autocorrelation is still required, but after correction the cyclical variable is significant at the 5% level. The data analysis implies that the cyclical relationship had broken down sharply during the Whitlam period and its aftermath. When this period is excluded there is strong evidence of a cycle/trend relationship between the business cycle and the merger rate. We interpret this as strong evidence of selective cyclical sensitivity, and as highlighting the impact of the Whitlam period and subsequent years on merger activity in Australia. As noted below, similar results (significance of the cyclical variable not sustained after

correction for autocorrelation) are obtained when the simple functional form is supplemented with merger reason variables.

The main conclusions are then as follows:
Conclusion (ii): Qualitative analysis suggests some evidence of cyclical sensitivity. These fluctuations in the merger rate show clear pro-cyclical behaviour in some cycles (e.g. pronounced upswings in the booms of 1958-1960 and of 1988-90, with downturns in the subsequent recessions) but limited or no pro-cyclical variation in other cycles (such as the upswing in 1972-1973 and the subsequent sharp downturn). This phenomenon of merger waves being partly but not consistently associated with economic cycles we refer to as selective cyclical sensitivity.

Conclusion (iii): Quantitative analysis confirms the conclusion of selective cyclical sensitivity. Simple econometric analyses provide evidence of selective cyclical sensitivity. Various regressions with a cyclical measure and other variables over the full period show a positive sign for the cyclical variable but not significance even at the 10% level after correction for serial correlation in the residuals. However, when the Whitlam and post-Whitlam periods (1972-1984) are excluded the cyclical variable is significant at the 5% level.

One issue not fully explored here is the extent to which cyclical fluctuations in the number of listed companies (the denominator in the merger rate) masks fluctuations in the 'true' merger rate. This is an issue for further work, involving more detailed econometric analysis.

1.7 QUESTION 3: CAN CYCLICAL VARIABILITY BE EXPLAINED BY MERGER REASONS

The discussion in the earlier chapters led to the identification of six variables that could capture merger reasons in quantitative form for Australia, and which hence might help to explain either the fluctuations in the merger rate over time or selectivity of the response of mergers to the economic cycle. The six variables are Tobin's q (the ratio of the market value of assets to their replacement cost), the interest rate, the inflation rate, the ratio of stock market capitalisation to GDP, the rate of change in GDP and the ratio

of the gross operating surplus of private companies to GDP. In theory, each of these might explain fluctuations in the merger rate over time or the selective nature of the cyclical response. For example, if the ratio of market value to the replacement cost of assets falls in a recession, it becomes cheaper to purchase a target company's assets through merger or takeover rather that to invest directly in new assets. This might lead to an increase in merger or takeover activity in recessions. On the other hand, when market values are down this will also affect the financial position of the initiating company, reducing their ability to launch merger and takeover activity.

These issues are addressed in both qualitative and quantitative terms in Chapter 7, and the results are essentially negative. The inclusion of merger reason variables in the cycle/trend equations did nothing to improve the overall statistical power of the equations or the significance of the cyclical variables, especially when the correction for autocorrelation is made. As above, the cycle variable was often significant in equations with a low Durbin Watson statistic, but the significance fell away when the autocorrelation correction was made. The details of the equations estimated are provided in Chapter 7. Experiments were made with many combinations of merger variables but without the cyclical variables, to investigate the power of these variables to explain merger rate fluctuations on their own. A selection of these results is reported in Chapter 7, but none were satisfactory on theoretical and statistical grounds. They allow only a limited and negative conclusion – that no evidence was discovered that the defined merger reason variables can explain Australian merger rate fluctuations over the period studied.

The main conclusions from this section are thus as follows:

Conclusion (iv): Merger reason variables do not appear to explain selective nature of cyclical sensitivity. There is an extensive international literature, which is reviewed in this thesis, on the reasons for mergers and acquisitions and hence on how they might vary over time. Some econometric analysis has been undertaken to explore whether such factors (such as a measure of corporate profitability or Tobin's q – the ratio of market value to replacement cost) explain the selective nature of the response of the merger rate to cycles. This analysis was unsuccessful, and no evidence has been uncovered that this selective response can be explained by more fundamental variables.

Conclusion (v): Leaving aside the cyclical variables, there is no evidence that merger reasons can explain the overall temporal pattern of merger waves. Similarly, time series econometric analysis with the standard variables in the literature proved unsuccessful in explaining the temporal pattern of mergers in Australia over the period 1960-2006. As detailed in Chapter 7, no relationships were uncovered that met the necessary criteria: that the variables were statistically significant and had the expected sign, and that the equation was free from serial correlation in the residuals.

1.8 QUESTION 4: DO AUSTRALIAN MERGER FLUCTUATIONS MIRROR THOSE IN THE USA AND UK?

The work undertaken to address this final question again involves both qualitative and simple econometric analysis, in this case of the level of mergers (rather than merger rates) in the USA, UK and Australia. Given the dominant role of the USA in the world economy over the period of study (1950-2007) and Australia's historical links and institutional similarities with the UK, it is possible that there are strong links between merger fluctuations in these economies and in Australia.

Looking initially at merger patterns in the USA and the UK (e.g. Chart 7.10), some broad similarity in cyclical patterns is evident but there are also notable differences. These include:

- rapid growth in mergers in the UK over 1958-62 which is not reflected in the USA data;
- significant timing differences in the mergers booms in the late 1960s/early 1970s, with merger peaking in the USA in 1969 but not peaking in the UK until 1972;
- much more rapid growth in the boom of the second half of the 1980s in the UK (with mergers more than trebling between 1985 and 1987) than in the USA; and
- very rapid growth in merger numbers in the USA in the 1990s and into the 'high-tech' boom of the late 1990s in the USA (with mergers increasing fourfold between 1992 and 2000), with no growth in UK mergers over this time.

Econometric analysis (Table 7.18) showed that, in spite of these differences, there is evidence of a strong relationship between USA and UK mergers, with the country coefficient significant at the 1% level after correction for autocorrelation.

In terms of the comparison between merger patterns in the USA and Australia (Chart 7.12) the differences are in many respects more striking that the similarities, mirroring in a more extreme way those between USA and UK. In particular:

- the big peak in mergers in Australia in the 1959-60 boom had no parallel in the USA;
- as with the UK, significant timing differences in the merger boom in the late 1960s/early 1970s, with merger peaking in the USA in 1969 but not peaking in Australia until 1972;
- while not at high levels, mergers in Australia in the 1970s were relatively much stronger than in the USA, where they fell sharply after the first oil shock recession of 1973 and remained at low levels until the mid 1980s;
- the peak in mergers in the boom of the second half of the 1980s was much higher in Australia than in the USA; and
- the very rapid growth in merger numbers in the USA in the 1990s and into the 'high-tech' boom of the late 1990s in the USA was not replicated in Australia.

The econometric analysis (Table 7.20) supported this assessment of major differences in merger fluctuations between these two countries, with the country coefficient in USA/Australia regressions not being significant even at the 10% level, neither before nor after correction for autocorrelation.

By contrast, and as is implied by the foregoing discussion, there are strong similarities between merger fluctuations in the UK and in Australia over this period. These similarities are especially marked after about 1963, as there is little parallel in the UK to the strong peak in mergers in Australia in the 1959-60 boom. The econometric analysis supported this finding, with the country coefficient in the UK/Australia regression significant at the 1% level after correction for autocorrelation. Given the fact that there are pronounced differences in merger behaviour in both the UK and the USA relative to Australia prior to 1963, we tested these findings by excluding the period before 1963 from the regressions. The results (Tables 7.21-7.22) strongly confirm the findings, with

the country coefficient in the UK/Australia regression significant at the 1% level (t-statistic of 5.0) while that in the USA/Australia regression was not significant at all (t-statistic of 1.1).

Conclusion (vi): Mergers waves in Australia are temporally correlated with those in the UK but not in the USA. Merger activity in Australia is closely correlated with that in the UK, especially after about 1963, while there is no significant relationship between mergers patterns in Australia and the USA.

1.9 CONCLUSIONS

The overall finding then is that the number of mergers and acquisitions appears to be influenced by many different factors at different times, including cyclical factors. But no fixed relationship is discernible in simple empirical studies, either in the cyclical characteristics of merger waves or in the role of 'merger reason' variables in explaining the wave character of mergers. Owen (2006) has argued that:

> 'The history of US and UK merger waves shows that each wave has had a different motivator, including regulatory and economic factors. The nature of waves also changed with differences in the types of deal, the behaviour of the involved companies and the methods of payment. Why then should there be a single explanation for the existence of merger waves? Considering their history there is no reason to believe that a single model exists to explain this phenomenon.' (p. 1)

The conclusions of this thesis about Australian mergers are consistent with this view, although there is clear evidence of the cyclical sensitivity of mergers in many economic cycles and the close correlation between merger activity in Australia and the UK remains to be explained.

CHAPTER 2 THEORIES OF MERGERS AND ACQUISITIONS

2.1 ECONOMIC THEORY ON M&A

A central component of the economic structure expounded by the standard model of neoclassical economic theory is that the economy consists of a large number of firms and none are able to exercise market power to the extent that any one may be able to influence or determine prices. Each one of these firms is assumed to have immediate and full access to appropriate technology and to produce according to that technology with non-increasing returns to scale. Each firm is a powerless and independent agent, using market signals to assist it in making individual decisions.

Baumol, Panzar and Willig (1982) provide a response to neoclassical economic theory in that the existence of economies of scale and scope in production, marketing and distribution implies the existence of a minimum efficient size for these firms in a given industry, and in some situations this minimum size may be quite large relative to the industry. If firms cannot achieve this minimum size they vanish (or disappear). Such economies (and the limits placed upon them) may explain why multiple large firms may exist while others vanish through M&A.

Panzer (1989) provides key definitive concepts of economies of scale and scope. Economies of scale exist where, in a simple production process for a single product or group of products, a proportional increase in all inputs generates a more than proportional increase in outputs. Economies of scope for the production process of two products exist if a given level of output of the two products can be produced more cheaply as joint outputs of a single process rather than by each being produced separately. These concepts provide the central theoretical approach to mergers and acquisitions in the literature – where profit maximising firms are operating in a situation of economies of scale and scope, there is an incentive to undertake merger and acquisition activity to reduce costs by taking account of these economies.

One assumption of neoclassical economic theory is that firms operate to maximise their profits and the important economic function of the stock market is to allocate capital

resources to their most profitable uses (Singh, 1971). Where there is a situation of sunk costs, economies of scale and scope, mergers and acquisitions make sense to cover sunk costs and increasing scale and scope. In such a model, mergers and acquisitions may be either offensive or defensive in nature and the timing of mergers should reflect this. Aggressive mergers are likely to occur where opportunities are greatest in relation to costs, i.e. shareholder values are high, interest rates are low and the economy is strong. Defensive mergers are likely to occur when the economy is weak, interest rates are high and shareholder values are low. Takeover bids – or their threat – are an important disciplinary device by which a well-organised stock market ensures the efficient allocation of existing assets.

According to Andrade, Mitchell and Stafford (2001) economic theory offers the followings reasons why mergers and acquisitions occur: efficiency related reasons (economies of scale or other "synergies"); attempts to create market power (through monopolies or oligopolies); market discipline, (removing incompetent target management); acquirer management "over-expanding" and other agency costs; to take advantage of opportunities for diversification, (exploiting internal capital markets and managing risk for undiversified managers).

2.2 THEORETICAL BASIS FOR M&A ACTIVITY

The general theoretical aspect is within the realm of macroeconomics while the specific basis for M&A falls within the perspective of the theory of the firm.

Singh (1971) summarises the more important reasons usually given for acquisitions, being: desire to achieve production economies of large-scale and multi-unit operations; achieving distribution and advertising economies; financial advantages of large size; strategic control of patents; acquisition of financial resources; response to legal and institutional environment; tax advantages; gains from the sale of securities; gains of promoters; desire to limit competition.

Through the following questions, this chapter reviews the many possible motives/factors behind M&A activity and what it may be about these motives that might lead to waves.

- Is there any underlying 'real' motivation that determines when M&A strategy is pursued (economies of scale, lower transaction costs, sales growth, monopoly power)?
- What is it about these motives that might cause cyclical activity in M&A?
- Do the effects of some motives result in more M&A activity than otherwise would occur?
- Do government policy initiatives or changes effect the occurrence of M&A?
- Do these government policy initiatives cause fiscal and monetary changes in the economy that result in M&A waves or clusters?

2.3 MOTIVES OR REASONS FOR MERGER STRATEGY

Companies often merge for strategic motives (Gaughan, 1999) and do in an attempt to diversify into another line of business, to consolidate a business, increase vertical concentration and thereby safeguard backward and forward supply and customer bases, etc. Scherer offers a short list of reasons that complement and add to these reasons, through five broad categories, namely: financial motives; strategic motives; asymmetric competence motives, empire building motives; and monopoly motives. And Gammelgaard (1999) explains that the reason for acquisitions appears from such different theories as the neo-classical, capital market, institutional and the managerial behavioural approach. The end goal of the acquisitions is quite different, and firms have used acquisitions for more than 100 years to fulfil different strategies (Chandler, 1990).

Gammelgaard offers nine theoretical reasons for the different motives for acquisitions and Scherer's five motives fit succinctly into these. Since Gammelgaard's motives are more comprehensive than Scherer's, these have been adopted in order and discussed in light of the available literature. These motives for mergers are summarized in Table 2.1 below with the discussion of each motive following this table.

Table 2.1 Summary Table: Motives For Mergers and Acquisitions

Merger Motive	Reason	Reference
Economies of scale	Horizontal acquisitions to reduce cost	Gammelgaard, 1999.
	Vertical integration	Dettmer, 1963.
	Reduction in over capacity	Goldberg, 1983.
	Achieving economies of scale	Golbe and White, 1988.
	Asset purchases re asset price (Tobin's q)	
Transaction costs	Minimise governance costs	Hart, 1995 and Williamson, 1975.
	Vertical integration to reduce costs and gain competitive advantage	Porter, 1985.
	Extant legal and regulatory framework may lead to M&A	
Growth	Main strategy by companies	Starbuck, 1965.
	Decision is down to whether it will be through internal or external means	Hallen & Wiedersheim-Paul, 1982.
	Accessing new markets	
Monopoly	Desire to become market leader	Gilbert & Newbery, 1992
	Achieved through horizontal integration	Eckbo, 1983.
		Kim & Singal, 1993.
Diversification	Desire to minimise risk and uncertainties	Pfeffer & Salancik, 1978.
	Achieved through diversification or conglomerate mergers	Lewellen, 1971.
		Weston & Mansignhka, 1971.
		Gort, 1974.
Debt/Equity	Minimise financial cost	Steiner, 1975.
	Minimise risk of bankruptcy by sharing capital	Brearley & Myers, 1988.
	Tax motives	Gilson, Scholes & Wolfson, 1988.
Undervaluation	Imperfections in strategic sector create firm price variations	Barney, 1986.
		Roll, 1986.
	Hubris theory	Barney, 1988; Gort, 1969.
Empire building	Managers have private and personal reason for their behaviour	Gammelgaard, 1999.
		Ravenscraft & Scherer, 1987.
	Hubris reason	Roll, 1986.
	Executive compensation	Baumol, 1959.
Synergy	More profitable single entity than separate parts	Teece, 1987.
	Elimination of inefficiencies	Gaughan, 1999.
	Can be achieved through economies of scale	Asquith, 1983.
	Can be achieved through economies of scope	Sanchez, 1999; Mester, 1987.

2.3.1 Economies of scale

Gammelgaard's (1999) motive for this theory is to minimise cost (large scale reduces different kinds of cost). Large-scale operations (and desire for efficient use of resources and diminished per unit costs) may be an impetus for merger activity thereby fuelling merger wave occurrence; and especially when several companies pursue this strategy in an industry.

The reduced cost motive is common in horizontal acquisitions where the takeover in the same line of business increases the production capacity directly. The merger wave activity in the U.S. of the 1960's was described as a period of horizontal merger activity. Physically, the acquisition leads to the access of extra and sometimes unused production facilities, and the purpose of the investment is to reduce the overhead cost per unit (Dettmer, 1963). Vertical integration may result in the reduction of transport costs between steps in the production. General cost reductions could be the financial or the marketing cost (Hughes, Mueller and Singh, 1980). This approach relates to obtaining efficiency in administration, because the trouble dealing with large quantities often is no greater than dealing with small quantities (Florence, 1953). The preponderance of vertical integration mergers was perceived as a hallmark of the merger wave of the late 1980's in the U.S., Australia, and in other parts of the world.

Acquisitions can be a tool to reduce over-capacity in an industrial sector (Goldberg, 1983), and often the gain rises from the rationalisation in replicated working hours. Scale economies also relates to a better use of knowledge such as a full utilization of specialised and indivisible resources. It makes economical sense to use specialised individuals, technology, machines or information to their full capacity. Using these indivisible resources for other purposes is not profitable, because there is a possibility of using less expensive resources instead (Itami, 1987). Additionally, large management teams are better to allocate resources and determine strategies for the whole corporation (Penrose, 1959).

Large organizations do not always face decreasing costs (Penrose, 1959), as there can be wastage through high employee numbers, which ultimately affects selling prices. Huge firms can run into complex managerial problems (Penrose, 1959), because large

production series may demand highly qualified, and expensive, management or production-specialists. The gain from rationalization is obvious, but the link to producing in large scale seems to be less obvious; so the question is how economies of scale relate to M&A rather than green-field establishments. Firms adopt this strategy in competitive industries, where the fight for the market demands quick growth in market shares obtained by the lowest price. The American oil industry in the late 19th Century was a famous example of this (Chandler, 1990). Firms have choices as to how to achieve cost reduction strategies. If it is difficult to reduce staff in an organization below its critical mass level, then the merger motive could be pursued whereby companies amalgamate resources to create a bigger economic and financial unit, but after the merger, discard extra staff. Conglomerates undertake such activity. As companies seek to improve their economies of scale, the quickest way to achieve this is through M&A activity rather than through green field operations.

2.3.2 Transaction Costs

The transactions costs motive (vertical integration) minimises costs so that the result is that hierarchical solutions reduces governance cost. Acquisitions reduce the cost related to governance structures, supplier's monopolistic gains and risk premiums and finally the cost related to the negotiation of contracts (Hart, 1995 and Williamson, 1975). Further, even if suppliers are reliable, they may not be able to deliver the necessary flow of input, and this is especially important when talking about critical resources (Jervis, 1971). Before takeover firms may have very high growth rates and production depends on semi-manufactured items that may run into difficulties because of lags in the delivery from the suppliers. After the takeover, the firm will face intra-organisational character issues rather than one of external supplier relationship issues. The question is, which of these costs are lower. The U.S. and Australian merger wave activity of the late 1980's was one described as the merger for integration (backwards and forwards).

Several reasons explain why companies opt for vertical integration strategies. One could be to ensure of a dependable source of supply as well as dependability through quality maintenance and timely delivery issues (including just in time inventory management) and therefore take advantage of vertically integrated corporate structure to lower inventory costs. If a leading competitor or several companies in an industry

pursues such objectives, others may follow, creating a cyclical merger environment. Another reason for vertical integration could be because the company needs specialised inputs such as custom designed materials or machinery that might have little or no markets other than the buyer (themselves at the mercy of others). Fixed costs associated with the initial manufacture of the material may prevent switching suppliers. Other suppliers might not want to produce these specialised products unless the buyer compensates them through an initial long-term contract. Once the buyer has acquired the supplier they possess unfettered access to these specialised inputs and may also be in a position to oversee the maintenance or enhancement of the company's own standards of manufacturing. Others might follow and engage in merger activity (creating a merger wave), since each seeks to protect its own share, while attempting to grow at the expense of others.

Vertical integration may be used to obtain competitive advantage or to reinforce a supplier's competitive position and recalcitrant intermediate buyers can be forced to bear the switching costs of substitution (Porter, 1985). The outcome of this process is that vertical integration may enable firms to better compete and consumers may be better off (resultant lower prices). A further outcome is that since more firms may be able to compete, another avenue for them to grow is to engage in merger activity by acquiring other competitors.

Conversely, vertical integration may be a threat to and lessen competition (another strong motive for mergers), avenues which were not previously available. This occurred in the early/mid 1980's in the US where the American Civil Aeronautics Board (CAB) and the Department of Justice took action against American, United and TWA since they had a hold on and lessened competition in the industry through their computer reservation systems (CRS) because they had established CRS outlets at travel agencies; and this restricted the ability of the agencies to compete and exclude others from using their own reservation systems.

The extant legal and regulatory framework provides other compelling reasons for the reasons and timing of mergers. Once rules and legislation have the force of law then this would conceivably affect the "if" and "when" mergers and acquisitions might occur. Governments can change the operating paradigm and organizations will review

new/renewed legislation to assess how they may gain competitive advantage. For instance, if the legal framework prevented a merger the relevant parties would re-evaluate their strategies. In other cases, mergers may be allowed to proceed for valid reasons affecting the timing and intensity of mergers. A recent example is when the Federal Government relaxed media ownership laws, which companies perceived these changes as opportunities for growth through acquisitions and consolidations. Over the years, there have been many significant changes in the regulatory environment in Australia (such as the introduction of the Takeovers Panel). The introduction and implementation of the so-called Eggleston Principles in 1968 was a major change, which Bugeja and da Silva Rosa (2006) show that this had a major impact on M&A activity in Australia.

2.3.3 Growth

The common motive for mergers and acquisitions is corporate growth (size, a benchmark for progress) and is an easily measured goal, and therefore often chosen as the main strategy (Starbuck, 1965) and becomes a goal for its own sake. Many firms believe that if they are large enough, they will possess a sustained competitive advantage by building an effective position (barrier against threats) in the market through acquisitions versus green field establishments. Announced growth rates, of say 10% per year that might be difficult to reach by internal growth, stresses the acquisition process. To keep up with this goal, the amount of acquisitions must rise by acquiring larger and larger firms, or more of smaller firms (Penrose, 1959).

Internal growth may be a slow and uncertain process, whereas growth through mergers and acquisitions (with its own risks and rewards) may be much more rapid. Through M&A companies may grow within their own industry or may grow outside their industry (a strategy of diversification). A decision when to merge must consider several factors such as (but not limited to) its timing, cost of capital, opportunity costs between the internal versus the external growth.

In some instances it may be quicker to expand into new (geographic) markets through the M&A process rather than through internal development and the newly acquired firm's expertise is used in sales organization and its knowledge of the market. Goodwill

relations are also important so the acquired firm can be a platform for further sales (Hallen and Wiedersheim-Paul, 1982). Furthermore, the full capitalisation of an invention sometimes needs quick access to main markets, and the preference is to acquire market channels by taking over the firm right firms (Marris and Mueller, 1980) rather than the lengthier attempt to grow the market organically. Acquisitions may secure growth without raising competition in an industry with no capacity for extra demand (Gort, 1969 and Wernerfelt, 1984).

It is important to follow customers that internationalise to meet them on their foreign local market. If the customer happens to be another professional organization, this is critical since they demand a complete service, such as technological solutions adapted to local needs (Starbuck, 1965). In a sector where rivals are making acquisitions, the firm must follow the strategy of following competitors in an attempt to prevent rivals from building a dominant market position (Hay and Liu, 1998). Continual growth in saturated markets is secured through the entrance of new markets. Since competitors occupy these markets too, the only entry mode is through an acquisition. As all parties jockey for position the desire for growth is a striking feature of merger activity.

2.3.4 Monopoly

Firms attempt to become market leaders (monopoly gain through abnormal profit) through acquisitions of large competitors. Monopsony gains with lower prices on resources may result due to vertical integration strategy. A firm with market power establishes barriers to entry for competitors, which extends the period of making above normal profit (Hughes, Mueller and Singh, 1980 and Trautwein, 1990). The monopoly position also improves the bargaining position of the firms (Gilbert and Newbery, 1992). There is, however, a limit to growth, especially in form of extant anti-trust legislation and competitors in an industry may react quickly if they perceive their peers is growing too quickly and may pose a threat to their own viability.

Horizontal integration mergers is an increase in market share and market power through diversification that results from mergers and acquisitions; these tend to involve a movement from the competitive nature of the industry towards a monopolistic nature. An increase in market share combinations may significantly impact the combined firm's

market power. Whether market power actually increases depends on the size of the merging firm and the level of competition of the firms in the industry. If the industry is characterised as being competitive then the merger would likely have a small impact on the competitive nature of the industry. If the industry is a monopoly, then the newly merged firm could have a profound impact on the competitive nature of the industry. In between these two extremes are other forms of competition, such as monopolistic competition (many sellers of a somewhat differentiated product) or oligopoly (a few sellers of a differentiated product).

In a competitive industry, sellers in the long run are only able to earn normal returns (not abnormal returns or "economic rent") and firms set price equal to their marginal cost. By market power (monopoly power), through product differentiation, barriers to entry and market share, a company in an industry to set and maintain price above the competitive level and therefore the ability to set prices in excess of marginal costs. The Lerner Index (Lerner, 1934) was developed which measures the magnitude of the difference between price and marginal cost relative to price. Such power may be a powerful motive for it to attempt a takeover process of others in the industry. Simply having a positive difference between price and the marginal cost does not ensure abnormal profits will be made because the company could face fixed costs that might be high enough to generate only normal returns or conceivably, even losses.

The evidence appears to point anecdotally towards both sides whether companies merge to gain market power. Stillman (1983) showed that competitors failed to react when other firms in the same industry announced a combination to create a larger entity. The study by Eckbo (1983) in the manufacturing and mining industry mergers in the USA showed that half were horizontal mergers and he added his research failed to support the notion that firms merge to enjoy an increase in market power. The gains obtained in mergers are not related to increases in market power but are motivated by factors such as efficiency gains. Mergers in the U.S. airline industry of the late 1980's resulted in higher prices on routes served by the merging firms compared with a control group of routes that were not involved in control transactions (Kim and Singal, 1993). The pursuit of market power through horizontal mergers may be one reason why firms merge and pay a premium over market value for rivals. If they can achieve market power, the present value of the post transaction gains may offset the initial deal costs.

Other economic factors such as product differentiation or entry barriers may determine whether the achievement of market power is a long lasting phenomenon.

2.3.5 Diversification

The motive behind the theory of diversification (growing outside a company's current industry category) is to minimise risk and uncertainties in order to minimise fluctuations in revenues (Pfeffer and Salancik, 1978) and to achieve benefits through diversification of asset portfolios. A successful US example of diversification is that of General Electric while a recent Australian failure was that of Email Ltd.

Financial portfolio theory has attempted to quantify some of the risk-reduction benefits that an investor may enjoy through diversification. Furthermore, theories show that for the shareholders it is much better to reach the market portfolio through their investments than through the companies they own (Lewellen, 1971). Volatile income streams make it more difficult to pay regular dividend and creates an unstable environment for long term planning and a company will often pursue diversification outside its own industry when the current level of earnings is insufficient. Furthermore financial markets might take this fall in earnings as a negative sign, prompting predatory behaviour.

Companies diversify to avoid sales and profit instability, to elude unfavourable growth, to avoid adverse competitive shifts, technological obsolescence and to decrease uncertainties associated with their industries and to reduce risk (through vertical acquisitions) (Weston and Mansinghka, 1971). Pitts (1976) offers three reasons for diversification: where the failure of one business area threatens the whole corporation; the diversified company has the opportunity to reallocate scarce resources to the most dynamic areas; and there is a better opportunity to more broadly commercialise technological innovations.

When firms undertake this expansion path into industries that offer better profit maximising opportunities there is no assurance that they will be realised let alone that they will persist for any lengthy period of time. Industries that are profitable now may not be profitable in the future, especially where there are few or non existent barriers to entry (Gort, 1974). Competitive pressures and forces that move industries to have equal

returns are offset by opposing forces, such as industrial development or technological development, that cause industries to have varying rates of return. Those industries that exhibit above average rates of return that do not have imposing barriers to entry will ultimately exhibit declining returns until they reach the cross industry average.

According to classical economic theory, only industries that are difficult to enter will have above average returns and a diversification program to enter more profitable industries may not appear to be successful in the long run. An expanding firm may not be able to enter those industries and may only be able to enter industries with low barriers with the result that corporate objectives and strategies will not be met because of intense competition. Knowing the environment is also important here (Pfeffer and Salancik, 1978) and the acquisition of a unit that knows the rules of the market is preferable since different growth rates exist within the same industry (Salter and Weinhold, 1979).

Diversification provides the coinsurance effect (Gaughan, 2004) when firms with imperfectly correlated earnings combine and derive a combined earnings stream that is less volatile than either of the individual firm's earnings stream. What matters is what gives the highest Net Present Value (NPV). When the firm reaches a satisfactory position within the area of specialisation and the firm has the resources needed for expansion, it might find the opportunities for expanding into new areas more promising than further expansion in its existing areas (Penrose, 1959). The period of the 1960's in the US was termed a conglomerate merger wave of highly diversified corporations.

Corporate finance theory views these acquisitions unfavourably where diversification is the priority (Levy and Sarnat, 1970) because the acquiring company is providing a service to shareholders that they can better accomplish themselves. Diversification motivated mergers have the tendency to stretch the acquiring company's management skills. The ability to successfully manage a firm in one industry does not necessarily infer that it can be done to other businesses, whether in the same or other industries.

Research by Schipper and Thompson (1985) on the US conglomerate merger wave of the 1960's showed the market had a positive reaction to the various announcements of the diverse acquisition program of the 1960's but poor performance followed many of

these acquisitions in subsequent years. One reason was that the market's overt optimism and assessment of the merger announcement did not realistically reflect the performance capabilities of the acquisitions, and ultimately evidence in their poor performance.

Other research confirmed by Ravenscraft and Scherer (1987) has provided insight into corporate finance theory showing that diversified firms are not providing investors a benefit. As is one of the aims of this research, perhaps market timing determines whether conglomerates provide positive returns. Merely being a conglomerate firm does not automatically result in yields higher than normal returns. Perhaps the large-scale divestitures of the 1970's and 1980's resulted because managers realised that the previous strategy did not work (Gaughan, 2004), i.e. that companies could be better managed to achieve objectives if their operations were concentrated in fewer areas.

Further research has shown the reverse may be true, where the returns to shareholders in conglomerate acquisitions are greater than in non-conglomerate acquisitions. Elgers and Clark (1980) examined mergers between 1957-1975, and found that conglomerate mergers provided superior gains relative to non-conglomerate mergers. There were gains for both buyer and seller firms with substantial gains being registered by shareholders of seller firms and moderate gains by buying company shareholders. Wansley, Lane and Ho Yang (1983) confirmed these findings where they found that returns to shareholders were larger in horizontal and vertical integrations than in conglomerate mergers. Gains and losses in merger activity was found by Berger and Ofek (1995) and Comment and Jarrell (1995). Berger and Ofek (1995) found that diversification resulted in a loss of firm value that averaged between 13-15% and that the loss of firm size was not affected by firm size but was less when the diversification occurred within related industries. Alternatively, Comment and Jarrell (1995) found that increased corporate focus or specialisation was consistent with shareholder wealth maximisation and that commonly espoused benefits of diversification, namely economies of scope actually go unrealised and that access to greater internal capital does not appear to affect the diversified firm's propensity to follow external capital. An aside benefit was that diversified firms tended to be less frequent targets of hostile takeovers than their less diversified counterparts.

More recent studies imply that if the evidence of benefits from conglomerates and diversification drawn from earlier years is to be accepted, it is not adequately supported in evidence from the more recent financial performance of such firms. This aspect is noteworthy from the perspective of the reasons and timing of mergers because the above situations would occur at periods in time and for specific reasons, lending weight to the notion of merger wave patterns.

Diversification does not necessarily mean conglomerisation. A company may diversify into areas that are related to the buyer's business. Additionally, there may be more reliable expectations of economies of scale and economies of scope in related diversifications because a buyer may be better able to leverage its current resources and expertise if it stays closer to its current business activities. This partially fits some of the above mentioned research by Wansley, Lane and Ho Yang (1983) who found larger returns in horizontal and vertical integrations than in conglomerate mergers. The track record of related acquisitions appears to be much better than that of unrelated acquisitions. For the period 1975-87 Morck, Shleifer, and Vishny (1990) found that the market did not treat shareholders well in companies that engaged in unrelated acquisitions, while the shareholders in companies that made related acquisitions performed much better. Conversely, Agrawal, Jaffe, and Mandelker (1992) showed opposite results to Morck, Shleifer, and Vishny (1990), where unrelated acquisitions outperformed related acquisitions.

2.3.6 Debt/equity

Debt/equity motives focus on minimising financial costs so that it will result in reduced capital cost and utilization of tax shield. Financial costs may be reduced by acquiring under-performing companies and using these losses as offsets against the acquirer's profits. This is usually a bonus resulting from an acquisition rather than the motive for the acquisition and such benefits flow post acquisition. Not all companies can do this concurrently because there will be different levels of profitability/loss in any industry and for many an acquisition results in an increase in the short-term debt/equity ratio.

The capital market school explains acquisitions as the gain that the company's shareholders get in the form of a higher value of their shares. Financial synergy refers

to the impact of a corporate merger or acquisition on the costs of capital to the acquiring firm or the merged partners. To the extent that financial synergy exists in such corporate combinations (still under ongoing research), it would be expected that the costs of capital should be lowered.

It would be expected that the combination of two firms might reduce the risk if the firms' cash flow streams are not perfectly correlated. If the merger lowers the volatility of the cash flows, suppliers of capital may consider the firm less risky than before the merger. The risk of bankruptcy would be less, given that the prior swings of ups and downs in cash flows would be now more stable and with any swings being of a much smaller magnitude or less likely. This would also imply that there it would be less likely that cash flows would fall so low that a firm might face insolvency.

By sharing capital merged firms can reduce the risk of bankruptcy. Lenders' policies also influence the cost of capital and large companies sometimes pay less for borrowing capital. Furthermore, risk adverse investors may prefer to make loans to large diversified firms rather than to small, specialise firms (Steiner, 1975). Raising the debt rate also creates financial synergy through the exploitation of the tax shield. This strategy is efficient as long as the value from reduced tax is higher than the cost of financial distress (Brearley and Myers, 1988). The new (post merger) company with a lower bankruptcy risk could induce lenders to establish a higher limit of lending. This will exceed the sum of the original limit for the two individual firms and may result in a better exploitation of the tax shield (Lewellen, 1971). Firms, however, can also raise their debt rate by obtaining loans through the market. Acquisitions will only outperform the market solution when there are some unused debt opportunities that the acquiring firm can utilise directly. Also, the acquiring firm does not have to convince lenders of the usefulness of the loan when raising debt through acquisition. The debt/equity factor is not a prime motive for merger wave activity.

Tax motives play a role in financial synergy and according to Gilson, Scholes and Wolfson (1988) there is a relationship between tax gains and mergers and acquisitions where they explain that for a certain small percentage of mergers, tax motives could have played an important role. However, Hayn (1989) revealed that there are potential tax benefits stemming from net operating loss carry forwards. Also, unused tax credits

positively effect announcement period returns of firms engaged in tax free acquisitions, and capital gains and the step up in the acquired assets' basis affect the returns of firms involved in taxable acquisitions.

2.3.7 Undervaluation

Another competing theory to explain why M&A clusters by industry and is concentrated in time is that firms in some industries get systematically mis-valued, some become overvalued while others undervalued. During these periods the overvalued firms are then able to take over the undervalued firms. In Australia, da Silva Rosa, Izan and Shan (2006) found that while takeovers do cluster by industry and in time, the evidence is not consistent with market mis-valuation being a driver. They explain that Australia's regulations on takeovers which compel greater disclosure by the acquiring firms make it more difficult to effect profitable bids that seek to capitalise on undervaluation.

Imperfections in the strategic factor markets create variations in 'the price of the firm' (Barney, 1986) and these imperfections regarding acquisitions emerge from different expectations to the net present value of the assets in the target firm. A firm that counts on a higher value of the utilisation of assets than the market price dictate can obtain a gain from this gap. Conversely, where the buyer is too optimistic and therefore pays an overcharge in relation to the market price (that of hubris, the theory) (Roll, 1986). Furthermore, the winner of an 'auction' of the acquired firm could be exposed to a winner's curse.

If the acquiring company possesses private information and the market does not, the company has a possibility to obtain a target at a lower price than what the market expects (Barney, 1988). Since it all depends on how firms measure assets theoretically they will choose the solution that will give them the highest net present value. Realistically there might be other strategies that might be more important and the firm can decide on acquiring a specific target, then negotiations of the price starts, or raids start at the share market. Then the only thing that can stop the takeover is the price, and it is up to the acquiring firm to decide what the right price would be according to their measurement that relies on private information. Economic disturbance also creates differences in valuation of the target firms because predication of future income streams

and risks are now more uncertain. An example (Gort, 1969), of a common economic shock could be a rapid change in technology and knowledge. Another is a depressed market for shares, where a speculative stress effect sets a general now and here market price that is lower than the real net present value, resulting in an acquisition. Speculation relates to acquisition, but only heavy shifts in expectations will lead to the buying of blocks of shares (Hughes, Mueller and Singh, 1980).

At any given time there are predator companies seeking to acquire undervalued companies (whether industry related or not). For such a motive to have important implications for merger cycles, there would have to be many of these predators in the market, all undertaking takeover activity, with several target companies being available on an ongoing basis. For most industries, this is not the case. Companies try to minimise the risk of competitors becoming aware of their financial difficulties and even if this knowledge becomes available to the market, companies attempt various means to minimise the risk of a takeover. The market knows of predator companies but these tend to be in the minority and therefore the motives for such behaviour are not as pronounced as is believed. In the past, some predator companies have been known to engage in highly publicised deals, usually one-off instances.

2.3.8 Empire Building

Gammelgaard (1999) states that managers have private or personal reasons for their behaviour and make investments, which from an economic perspective may seem irrational, but for the individual can be of high value whereas classical theories focus on managers' own utility and take their point of origin in maximising shareholder value of the shareholders. The empire building theory explains management wanting growth for personal reasons and acquisitions match this situation. Most important is the wage explanation; the salary paid out to managers is a function of the size of the company (Mueller, 1969). Motives like power and prestige are also essential (Ravenscraft and Scherer, 1987) and managers from large companies have an easier way to positions in committees and boards (Pfeffer and Salancik, 1978). Finally managers engage in conglomerate mergers to decrease their employment risk, which is largely undiversifiable.

Roll (1986) proposed the role of the hubris (pride) hypothesis of takeovers, where the acquiring firm undertook acquisitions due to the pride of its management team who believed that they could successfully do this and that the pure economic gains to the acquiring firm are not the sole motive or even the primary motivation in the merger. The hubris hypothesis does not explain all mergers but merely proposed the important human element enters the takeover process when individuals are interacting and negotiating the purchase of a company. Roll was supported by Hayward and Hambrick (1995) where they found that CEO hubris was positively associated with the size of the premiums paid. A major driving force for merger activity can purely the ego of a chief executive. While some managers tend to obtain significant rewards for takeovers others do not.

Other research has shown that the announcement of the acquisition results in the decline in the share price of the acquirer. Dodd (1980) found statistically significant negative returns to the acquirer following the announcement of the planned takeover. Eger (1983) found similar outcomes, while Asquith (1983) did not show any consistent pattern of declining share price following the announcement of the takeover. Research has shown rather that there is more agreement on the positive price effects for target shareholders: these have experienced gains in their wealth following takeovers. Bradley, Desai and Kim (1983) found that tender offers result in gains to the shareholders of the target firms. Gilberto and Varaiya (1989) have shown that bidders (over) pay a premium to obtain target shareholders ownership of the company.

Closely related to the hubris theory for mergers is its relationship to executive compensation and corporate acquisition decisions. Baumol (1959) reasons that managers of companies acquire other companies to increase their size, which, in turn, allows them to receive and enjoy higher compensation and benefits. For companies engaged in acquisitions Khorana and Zenner (1998) found a positive relationship between firm size and executive compensation but not for those that did not. When good acquisitions were separated from bad ones, they found that good acquisitions increased compensation whereas the bad ones did not have a positive effect on compensation. They also found the existence of a negative relationship between bad acquisitions and executive compensation (when an acquisition had failed to achieve its

objectives, the compensation of the managers actually increased), as witnessed by recent Australian history.

Another factor creating incentives to acquisition is free cash flow, cash flows more than required to fund all projects that have a positive net present value discounted at the relevant cost of capital. Though this cash flow belongs to the shareholders it is used for investment and managers grow their firms beyond the optimal size. A solution to this problem is issuing debt in exchange for stock, so contracts force the managers to pay out future cash flows (Jensen, 1986).

There is also the situation where there is no other reason except that the company gets the right offer at the right time and makes the acquisition. Next acquisitions could be routine so that the company always chooses this strategy instead of comparing the specific takeover with other alternatives. Finally acquisitions could be result of using 'rule of thumb' or 'having the right feeling', reasons that rarely belong to the theoretical explanations.

2.3.9 Synergy

Synergy refers to the type of reactions that occur when two or more substances or factors combine to produce a greater effect together than that which the sum of the two operating independently could account for usually expressed as '2+2=5' (Teece, 1987 and Richardson, 1972); an intangible approach to the acquisition process. For a mergers this means the corporate combination to be more profitable than the previous individual firms. Gaughan (1999) described the New Acquisition Value (NAV) as the anticipated existence of synergistic benefits that allows firms to incur the expenses of the acquisition process and still be able to afford to give target shareholders a premium for their shares. The main purpose of this differential efficiency theory is to improve the management in the acquired firm by bringing it up to the same level as in the acquiring firm (Weston, Chung and Hoag, 1990). Asquith, (1983) and Bradley, Desai and Kim (1983) view synergy in a broader sense and include the elimination of inefficient management by installing the more capable management of the acquiring firm. Opening the bottleneck in an organization by transferring new managers or introducing other management strategies creates synergy (Sanchez, 1999).

There are two main types of synergy namely operating synergy and financial synergy. Operating synergy comes in two forms; as revenue enhancements and cost reductions. Revenue enhancements (eg sharing of marketing capabilities) or efficiency gains or operating economies may be derived from horizontal or vertical mergers. Financial synergy refers to the possibility that combining two or more companies into one entity may lower the cost of capital. Revenue enhancing operating synergy may be a much more difficult undertaking than that of cost reduction synergies. Clemente and Greenspan (1998) define this strategy as one where a newly created or strengthened product or service that is formulated by the joining of two distinct attributes of the merger partners and which generates immediate and/or long term revenue growth.

Merger strategists tend to seek opportunities for cost reduction synergies as the main source of operating synergies. These cost reduction synergies may come as a result of economies of scale – a decrease in the per-unit costs that result from an increase in the size or scale of a company's operations (discussed earlier in this chapter). In the manufacturing industry firms tend to operate at a high per unit cost for low levels of output and one means of reducing this high per unit cost could be through a merger or acquisition. This is because the fixed costs of operating their manufacturing facilities are spread out over relatively low levels of output. As the level of output rises, the per-cost unit costs decline. This term is often called the spreading of overhead.

Further gains may be made through the increased specialisation of labour and management and the more efficient use of capital equipment, which might not be possible at lower levels of output. This phenomenon continues for a certain period of time and for a certain range of output, after which per-unit costs may rise as the firm experience diseconomies of scales. Diseconomies of scale may arise as the firm experiences higher costs and other problems associated with co-ordinating a larger scale production operation. Some empirical research supports the assertion that mergers and acquisitions are used to achieve operating economies. Lichtenberg and Siegel (1987) detected improvements in the efficiency of plants that had undergone ownership changes and it was also found that the plants that had performed the worst were the ones that were most likely to experience an ownership change. Since the research supports

both perspectives, it can't conclusively be stated that this is definitely an outcome of a merger transaction.

Economies of scope is the ability of a firm to utilise one set of inputs to provide a broader range of products and services. A good example of scope economies is the banking industry according to Mester (1987), where the economies of scope may be just as important as economies of scale in explaining the occurrence of mergers and acquisitions. The pursuit of economies of scope is one of the factors behind the consolidation of the banking industry that occurred in the fifth wave of U.S. merger activities that started in the early 1990's. One of the reasons for examining the mergers and acquisitions in the U.S. banking industry is that when they merged, they could share inputs to offer a broader range of services, which, as smaller banks they could simply not have the scope to provide. In Australia, legislation prevents the four major banks from merging with each other or taken over by a third party (four pillars policy) but has allowed them to take over other financial institutions.

Some acquisitions occur because it is felt that the acquiring firm's management is better able to manage the affairs of the target firm (improved management hypothesis) and the bidder believes that its management skills are such that the value of the target firm would rise under its control. The bidder then pays a value for the target over what the current share price of the target might be. This may be so in cases of large companies making an offer for much smaller ones and ones that are smaller and growing. Smaller companies, often led by founders and entrepreneurs, may offer a unique product or service but as they grow they reach a critical stage where they can't grow and achieve their objectives because they need much larger distribution networks or enhancement marketing abilities. These weaknesses may be offset by the addition of the managerial skills of a much larger (acquiring) firm.

Since little research has been done into this area it is difficult to determine which mergers are motivated by improved management motives as this is just one of several factors (hard to isolate) in the mix. Trying to achieve economies of scale and scope tends to be the motive behind many merger activities and a driving motive for many companies, with the term 'synergy' espoused as the motivating force for the merger. The reason for this is quite simple because every player in an industry is concurrently

seeking to maximise revenues and minimise costs and where opportunities become available, merger activity (cycles) occur, as summarised in Table 2.1 above.

2.3.10 Social Cost of Increased Competition

Social costs refer to the costs to society that result from increased concentration, i.e. competition that exists after a merger occurs, and the role and influence of government. If the newly created industry structure approximates that of a monopoly, it would have an affect on society since the monopoly would be able to set price. If the newly created industry structure remains competitive, then the need for intervention would be less since the remaining players in the industry would still be attributed as low concentration. What actions governments might take to legislate ant-competitive behaviour may also further influence the reasons and timing of mergers.

2.4 THE DETERMINANTS OF VARIATION OVER TIME IN M&A

Literature has shown that there tend to be various forces that cause individuals or firms to exchange assets among themselves. Golbe and White (1988) offer seven forces that causes M&A activity; unexpected changes in economic circumstances; divergence of opinion; the real cost of capital; the size of the economy; tax laws and a correction factor for the fixed cut-off point problem. The reason they chose these factors was due to the fact that a merger is an act of investment by the purchasing firm and is also an exchange of existing assets (where a purchaser pays cash for the plant, equipment, personnel and goodwill of the existing firm). The forces they describe and test are the ones that affect either the purchase or exchange of existing assets and that mergers are different from investment flows (as defined by GDP accounts).

The industry shock explanation of takeovers is the notion that the competitive equilibrium may be upset by some exogenous shock (for example, deregulation or technological advance). The shock then forces firms to adapt and M&A is one of the channels through which the industry adapts. Harford's (2005) empirical work shows how industry shocks interact with interest rates to prompt clustering of M&A activity by industry and Harford posits that whilst industry shocks may be felt over several years, M&A as a restructuring solution can only take place when the prospective players in the

market accumulate sufficient capital to effect the transaction (i.e. when liquidity is high); liquidity increases in periods when interest rates fall and so that's when a spate of M&A activity is observed. Economic disturbances principally generate discrepancies in valuation (Gort, 1969) of the type needed to produce mergers in two ways. First, they alter randomly the ordering expectations of individuals, with the result that some non-owners move to the right of current owners on the value scale. Second, economic disturbances render the future less predictable, with the result that the variance in valuation increases. Similarly to Golbe and White, Gort offers seven explanatory variables and these are: the merger rate; technical personnel ratio; productivity change; growth; concentration ratio; rate of change in concentration ratio; rate of change in average asset size of the firm; and rate of change in number of firms and proprietors. Like Golbe and White, Gort's dependent variable is the merger rate – the ratio of aggregate number of mergers in the industry over a given time period. There are some similarities between the factors presented by Gort and those by Golbe and White.

Literature on merger waves reveals several motives or forces that cause M&A activity. Post (1994) offers various motives for the occurrence of M&A activity. Taxation can be seen as a cause for the occurrence of merger where firms see changes in taxation as providing a motive for a merger because various tax benefits can be obtained from mergers including inheritance taxes may be avoided by selling a company; interest payments on loans may be tax deductible; accelerated appreciation of old assets is possible with acquisitions, but not if assets are purchased as new; recapitalisation allow taxation benefits; tax-loss carryovers are captured by M&A and payment for new companies by stock-for-stock exchanges may avoid taxes altogether. During a time of economic deregulation, firms may perceive advantages in undertaking M&A activity.

McDougall and Round (1986) has stated that there is some agreement amongst researchers that there are a few predominant motives, which can explain, either singly or together, most takeover activity. They are not all necessarily present in any given takeover, nor associate with any particular effect. Further, these motives can be divided into six main categories, being: accounting, financial and taxation motives; managerial motives; growth motives; risk reduction motives; profitability and efficiency motives; and anti-competitive motives. Some of the motives that Gaughan (1999) offers reinforce the ones that have been alluded to by Post, McDougall and Round. One of the

most common motives that Gaughan cites is that of expansion of firm operations. Another motive is tied to financial factors and another motive is tax. Researchers tend to agree on the motives for mergers, though not necessarily agreeing in every instance what the underlying motives might be of a merger. Many motives will be time invariate and many of these don't appear so clear-cut in real life.

In developing our research questions, the following dependent and independent (determinants) variables have been adopted. These are similar to some of those of Golbe and White and Gort and discussed further in chapter 6 with the related qualitative and quantitative analysis (and resultant findings) conducted in chapter 7.

2.4.1 Dependent Variable.

Merger Rate

The dependent variable is the merger rate, i.e. the number of ASX listed firms in a year that disappeared due to a merger or a takeover. The merger rate can be calculated in either of two ways. Firstly, the number of listed firm disappearance each year divided by the total number of ASX listed firms in each year. Secondly, it can be calculated by the number of listed firm disappearance each year divided by the rate of growth of Australia's Gross Domestic Product (GDP). This data has been obtained from the Reserve Bank of Australia.

2.4.2 Independent Variables

Tobin's q (or Bargains)

In a similar manner to Golbe and White texts define Tobin's q as the ratio of the market value of the company divided by the replacement cost of capital. Using data from the Reserve Bank of Australia (RBA) an approximate estimate of Tobin's q at the aggregate level may be obtained by dividing the Australian All Ordinaries, by the Investment Price Deflator (IDP). For our purposes our numerator in this ratio is the market capitalisation of listed domestic equities and our denominator is the total private business investment.

As per Golbe and White, the lower the ratio of market value to replacement cost (other things being equal), the greater the bargain (of that firm) and hence the greater the likelihood of an acquisition. Merger activity is likely to be greater when the prices of existing firms are low relative to the prices of new assets, since mergers and acquisitions are alternatives to purchases of new assets. Therefore the level of q for the economy should be an important negative influence on the aggregate level of merger and acquisition activity. It should be noted that this negative relationship implies, all things being equal, there should be a negative relationship between mergers and stock/securities prices. A low value of q, this should indicate a bargain and therefore encourage mergers implies (a simultaneous relationship between q and mergers). A high level of mergers (ceteris paribus) should cause q to increase. When q is relatively low (for whatever reason, including a low level of mergers) bargains will appear; this in turn will encourage mergers, which will tend to increase q; and so on.

The Equity Cost of Capital (Real Interest Rates)

This refers to the real cost of capital because this can influence the timing, financing costs and expected profitability of mergers and therefore should have a negative relationship with the volume of transactions. Hence if the equity cost of capital is high, it would be expected that the number of M&A transactions would be low. The data for real interest rates has been obtained from the RBA.

Unexpected Changes in Economic Cycle (Economic Circumstances)

As economic circumstances change unexpectedly, different entrepreneurial skills may become valuable and differential profit opportunities may arise. Further, opportunities for greater (or lesser) economies of scale, economies of scope, or economies of vertical integration may arise. Mergers are one way of achieving the changes in ownership and management that can take advantage of these changed opportunities (Golbe and White, 1988).

Boehm and Summers (1999) explain (with reference to Pagan, 1997) that classical cycles are …'hills and valleys in a plot of the levels of the series…' representing the

general level of economic activity. Growth cycles, on the other hand, are defined as recurring fluctuations in the rate of growth of aggregate activity relative to the long-run trend rate of growth. Classical cycles may be (and usually are) preceded by growth cycles, since activity generally slows before it contracts, but not all growth cycle slowdowns become classical recessions.

Measures of economic activity have been developed. This is done in economic indicator analysis through the construction of a composite coincident index (or coincident index), which is a combination of several times series that one would expect to contain information about the current state of the economy. Some key example of this include industrial production, employment and unemployment, real retail sales, real household income and real Gross Domestic Product (GDP). A composite leading index is constructed from such series as hours worked, changes in producer prices, building approvals, stock prices, changes in profitability and price-cost ratios, which contain information anticipating movements in the coincident index. Finally a lagging index contains series, which habitually reach their turning points later than those in the coincident index. Examples of this are the long-term unemployment rate, level of inventories, labour costs per unit of output, real capital expenditure and interest rates.

For the purposes of this research the measures outlined by Boehm and Summers have been adopted, these are from the coincident index and the composite leading index. From the coincident index the data on real GDP has been used while from the composite leading index changes in company profitability have been used. The information used here will be real GDP and company profitability (the period 1950-2006), being Gross Operating Surplus from the Australian National Accounts (RBA and Australian Bureau of Statistics).

A Correction Factor for the Fixed Cut-off Point Problem (Inflation Rate)

In the presence of inflation, a fixed lower cut-off point for the inclusion of a merger or acquisition into a recorded data series creates an upward bias in that series over time. Therefore any empirical testing should include a correction factor for this upward bias. Inflation may be taken to be a factor or component of the composite leading index in the same manner as described by Boehm and Summers (1999) as changes in producer

prices, price-cost ratios and stock prices. Data for inflation has been obtained from the RBA and the ABS.

Equity Market Movements (Movements in Stock Market)

Another key indicator of the performance of the Australian economy is the level and movements in the stock market. This, as per Boehm and Summers' comments above, contains important information about the current state of the Australian economy. From the perspective of changes in the stock market can be seen to be a component of their composite leading index since changes in the stock market provide information anticipating movements in the coincident index.

Data has been gathered on the level of the Australian stock market (capitalisation on a yearly basis) as well as the movements in the stock market (changes in the level of market capitalisation) on a yearly basis. This data has been obtained from the RBA and the ABS and Australian Stock Exchange (ASX).

The Size of the Economy (Changes in Economic Activity)

A larger economy is likely to have more companies that could merge with each other and therefore have a positive influence on mergers. The data for this independent variable is the rate of growth of GDP (not the yearly GDP level) to provide the movements in the Australian economy over time. This independent variable is a combination of one of the coincident index outlined by Boehm and Summers in that while they refer to the real level of GDP as a key example of this index, we have refined this factor and include it as changes in the rate of growth of GDP. This data has been obtained from the RBA and the ABS.

In a similar manner to the size of the economy, another valuable criterion measure, and independent variable for M&A activity is that of new capital raisings by listed companies on the ASX. The type of capital raised and the total amount of capital available at any given time may provide a reasonable determinant of the amount of M&A activity in the economy. It's conceivable that as more capital has been raised then a greater number of companies could use this to purchase assets (either new assets

or company acquisitions, whether bargains exist or not). This supports the perception that this indicator should be seen as a component of the composite leading index, in a similar manner to stock prices, changes in profitability, etc.

Company Profitability

More profitable companies than others (either in the same industry or different industries) would have opportunities for growth that their less profitable competitors may not have. This profitability provides opportunities for growth which can be achieved through internal or external means, i.e. through merger and acquisition activity. Enhanced profitability provides companies the opportunity to either use their self-generated (internal) funds or raise capital in the open market for further expansion. A growth strategy may be a combination of both of these strategies in order to maximise the amount of capital required for expansion.

For this research the measure of company profitability and specifically the changes in (company) private gross operating surplus as another measure in line with that offered by Boehm and Summers (1999) has been adopted. This independent variable is one of several that comprise Boehm's and Summers' composite leading index. In a similar manner to the other variables, the data periods employed for this indicator cover the period 1950 to 2006.

2.5 CONCLUSION

The study of mergers and acquisitions provides one bridge between the neoclassical theory of the firm (profit maximization) and more recent theories of the firm, namely, the degree of efficacy of the capital (stock) market discipline. With a perfect capital market the neoclassical theory and more recent theories of the firm ought to yield the same predictions in that the level of merger activity would be quite low or non-existent. The differences and possibly the degree to which there is divergence from the perfectly competitive profit maximising market is the degree to which mergers occur.

This chapter has explored the theoretical basis for merger activity and reviewed the reasons for the occurrence of mergers and acquisitions that have been offered such as

growth, economies of scale and scope, controlling sources of supply and distribution, marketing synergies, expected financial benefits and access to capital markets, improved management skills and management pride as well as tax reasons. Mergers and acquisitions occur due to the various forces that cause firms to undertake merger activity such as economic disturbances, prevailing legal and regulatory frameworks and government taxation policies. The possible motives/factors behind merger activity have been reviewed and used in light of Gammelgaard's (1999) categories for merger motives and the implications of each motive for wave/cyclical behaviour.

Further Weston, Mitchell and Mulherin (2004) postulate that merger and acquisition activity represents and reflects modern speculative economic activity that unduly increases the level of risk and erodes the level of equity, resulting in an economy highly vulnerable to economic instability.

CHAPTER 3 MERGERS IN THE USA: 1895-2006

3.1 INTRODUCTION

The concept of merger waves is a recent phenomenon in the world economy and it has been of significance in theoretical write-ups since the advent of the Industrial Revolution of the early 1800's in the UK. It commonly known that the Industrial Revolution started firstly in the UK and quickly spread to Western Europe, the USA, Canada and Australia and then to other economies. To ensure adequate coverage our research is limited to the review of literature in the USA, the UK and Australia; who also provide comprehensive literature and data on merger research.

3.2 LITERATURE ON U.S. M&A WAVES

The majority of research into US M&A waves explains that the U.S. economy has undergone several M&A waves or cycles. The only major difference (due to the timeframe of each author and the period covered) has been whether there have been four or five merger waves since the latter part of the 19th Century. Each review has tried to identify peaks and troughs in the merger waves, their timing and then explored potential reasons for these peaks and troughs and any patterns in this behaviour.

This chapter reviews the major literature regarding the timing and occurrence of merger activity and then examines the reasons that have been offered for the timing and occurrence of merger activity in the US economy. Interspersed throughout the discussion are comments in relation to the US regulatory framework.

3.2.1 U.S. Merger Waves: Timing, Occurrence and Nature

Black (2000) presents international evidence on takeover activity and uses that evidence to argue that the then current takeover wave could fairly be called the first ever international merger wave, as much as it can be called the fifth U.S. merger wave. Factors that contributed to the merger wave and the political implications of this are also discussed. Merger activity seems to come in waves and that the current wave (during

the year 2000) was the fifth wave and is also an international merger wave. As a result of this phenomenon, he adds that the fifth merger wave should be called the last truly U.S. merger wave, let alone even being considered a U.S. merger wave, due to the growing percentage of takeovers that are cross border ones. One reason for the increased amount of takeover activity is the favourable political climate.

Each of the merger waves that have occurred in the U.S. over the past century or more were assigned specific characteristics. The First Wave (1895-1903) witnessed the creation of the great oil, steel, and other trusts, sometimes called the "merging for monopoly" wave. The Second Wave (1920-1929) was a period of consolidation in many industries, sometimes called the "merging for oligopoly" wave. The Third Wave (1960-1973) was the emergence of the conglomerate firms and other diversifying acquisitions, sometimes called the "conglomerate merger" wave. The Fourth Wave (1978-1989) was not really captured in a singly phase, but included large components of hostile takeovers, but-up and refocusing of conglomerate firms, and leveraged buyouts. Black explains these first four waves were in effect U.S. takeover waves even though there was evidence to suggest that there were some cross border mergers but these were only a small percentage of the total. The Fifth Wave of (1993-2000) had a distinct international flavour where many of the deals that were undertaken were either entirely outside the U.S. or the involvement of U.S. companies comprised a much smaller proportion of the deals compared to the past waves. This wave witnessed mergers and acquisitions in the automobile industry, telecommunications industry, airline industry, oil industry and metals (mainly copper and aluminium). The mergers and acquisitions in the banking industry remained largely U.S. domestic due to the highly regulated nature of this industry. One of the major reasons for the explosive growth in European mergers and acquisitions was the formation of the European single currency and formation of the integrated European union.

The first observation by Oster (1999) was that the popularity of mergers appears to vary considerably over time and in the U.S. mergers move in waves. Oster states that there have been several merger waves in recent U.S. history. The first wave occurred around the turn of the 19th and 20th Centuries and was horizontal in nature with many of the large industrial concerns that exist today were formed during this period. The second merger wave occurred in the late 1920s where vertical mergers became more prominent,

and conglomerate mergers also began to appear for the first time. This wave ended with the Great Depression of the 1930s. The third merger wave occurred from about 1955 to about 1970. Mergers of this period were more conglomerate in nature; about 70% of the value of assets acquired in the 1960s were in conglomerate mergers. The fourth merger wave started in the 1980s and involved considerable conglomerate mergers. On the other hand, many of these takeovers involved post merger restructuring, in which an acquisition was followed by substantial sell off of target company division. The last and most recent and fifth merger wave began in the mid 1990s and many of these mergers were horizontal in nature. The table below (reproduced from Oster), shows there was a merger wave period from the early 1980s to the early 1990s.

Table 3.1 Merger Activity in the USA, 1982-1991

Year	Value of US Acquisitions ($b)
1982	55.7
1983	48.9
1984	121.1
1985	141.3
1986	200.7
1987	171.5
1988	232.4
1989	244.1
1990	164.3
1991	98.0

Source: *Mergers and Acquisitions Almanac*, May-June 1992

Weston, Mitchell and Mulherin (2004) state that since wide price fluctuations are likely to be associated with merger and acquisition activity, public policy has been concerned that investors are treated fairly. Legislation and regulations have aimed to carry over to the takeover activity of the recent past the philosophy of the securities acts of the 1930s. This legislation aimed for prompt and full disclosure of relevant information in the effort to achieve a level playing field for all participants and to ensure that everyone in

the market had equal opportunity for the progression annulment of any potential merger activity. Also, in the US, takeover laws are closely interlinked with securities laws.

Three major and several smaller merger waves were identified by Green (1990). Since he was writing during the transition period of what other researchers call the fourth wave (late 1980s to early 1990s) the fifth wave of the mid 1990s had not commenced. Breen's analysis still corroborates the research of others. The first wave was called the monopoly wave and was fuelled by the drive to create the large but short-lived trusts in the 1890s and left high concentration levels in basic industries such as steel, farm machinery and tobacco. The second merger wave was the oligopoly wave during the late 1920s that was responsible for a sharp rise in the share of manufacturing and mining held by the largest 200 corporations. The last major wave was the conglomerate wave that peaked in the late 1960s. Many conglomerate mergers during this wave were predicated on the belief that at least the management skills required by a new acquisition are similar. Breen added that a fourth wave (of hostile takeovers) may be forming, which he termed an agglomeration wave. This was characterised by acquisitions that are not functionally related in any way to the parent and the bust up merger or divestiture was also common.

The primary focus of Steiner's (1975) work was the conglomerate merger wave of the 1960s. This wave spawned several massive and diverse literatures: economic, theoretical, econometric, legal and policy prescriptive. During this period there was the sudden acceleration in the merger rate and the fact that so many of these mergers were conglomerate rather than the more readily understood horizontal or vertical acquisitions. Steiner felt that it would be unwise to treat conglomerate mergers out of context of all mergers, even if it could be done since firstly, the motives that impel firms are substantive things as profits, or power, or capital gains, rather than towards reforms or organization such as conglomerate corporations and secondly, in terms of economic effects, as well as of law, all mergers must be tested by the same standard, regardless of their classification. For this period Steiner uses the data provided by the Federal Trade Commission (FTC) and his review covers the period of the early 1950s to the early 1970s and notes that the data shows a well defined cycle that took off after 1965, crested in 1968 and has ended by 1972; adding what might have been a trend proved to be a cycle.

From his vantage point, Steiner states that while the decline in merger activity had decreased the issue was more interesting to study in 1972 than it was in 1968. He used other data provided by Nelson (1959) who covered American merger movements during the period 1895-1956. While Steiner acknowledging certain data limitations for the 1960s period for long-term comparisons, the merger wave of the late sixties was the capstone of the third great merger movement in American history, the first two covering the periods 1897-1901 and 1925-1930. Steiner adds that there was a steady upward movement in merger activity from 1949 to 1959, which commentators regard this as a wave in itself. Steiner's data is partially reproduced to show the number of acquisitions in Manufacturing and Mining (M&M) and assets acquired ($10m or more).

Table 3.2 Merger Activity 1960-72

Year	Total Recorded	Large* M&M Acquisitions, $m
1960	1345	1729
1961	1724	2356
1962	1667	2448
1963	1479	3148
1964	1797	2728
1965	1893	3845
1966	1746	4171
1967	2384	9091
1968	3932	13297
1969	4542	11353
1970	3089	6346
1971	2633	2544
1972	2113	1749

Source: Federal Trade Commission, Bureau of Economics, *Current Trends in Merger Activity 1970 and 1971*, Statistical Report Number 8 (March 1971) and 10 (May 1972); FTC, *Report on Mergers and Acquisitions* (October 1973).

The decade of the 1990s (period covering 1990-1995) was the focus by Krallinger (1997) where he likened mergers and acquisitions fever the Gold Rush in the 1840s, where some made great returns on their investment, while others lost everything. He also noted the majority of mergers are not truly successful within five years if success is

defined as equalling or exceeding real growth in value of the combined companies when compared to growth in value of competitors in the same industry. A portion of Krallinger's data has been reproduced below to show the movements in M&A activity during this period with respect to the number of mergers and the value of the deals for each year in this period.

Table 3.3 Merger and Acquisition Statistical Review, 1990-95

Year	Net M&A Announcements	Total Dollar Value Offered ($b)
1990	2074	108.2
1991	1877	71.2
1992	2574	96.7
1993	2663	176.4
1994	2997	226.7
1995	3510	356.0

Source: Abstracted from Twenty-Five Year Statistical Review, *Mergerstat Review*, a division of Houlihan Lokey Howard & Zukin

The tremendous popularity of mergers and acquisitions of the 1980s continued through the 1990s virtually unlimited and that mergers and acquisitions in the U.S., during this decade occurred because: the government allowed them through lax enforcement of antitrust laws; they were stimulated by an abundant supply of money from both inside and outside the U.S (including the devaluation of the U.S. dollar in relation to a number of other currencies); they were actually aided in some industries by deregulation (airlines, banks, broadcasting, oil and gas, telecommunications and gas); they were pushed to unreasonable limits globally by financial innovations in debt instruments; and greenmailers, who bought blocks of a company's stock, and stimulated mergers.

In the M&A review period of 1990-1995 Krallinger noted that a major feature of this period (which reinforces his comments) was the composition of the method of payment had changed significantly. Payment by cash had fallen significantly during this period from 40% to 27%; the method of payment by stock had moved from 31% to 37%; a

combination of the two had increased from 28% to 36% and the level of debt financing has remained very low at either 1% or 0%.

The widespread interest in mergers and acquisitions had spawned relatively little effort to place the current wave in a proper historical context or to perform time series analysis of the available merger and acquisition data and Golbe & White (1988 added that the current period (up to 1998) in which they were reviewing was current and last merger wave. They added that ideal time series data on mergers and acquisitions should be comprehensive and consistent and should contain data that covers a long period of time, qualifying their comments that none of the available series meets these criteria and therefore compromises must be made. This is an important concern for all research on mergers and acquisitions because no data for any economy is 100% complete and accurate.

Several sources provided the data used by Golbe and White, being: the Federal Trade Communication (FTC) data (on mergers and acquisitions in the manufacturing and mining sectors of the U.S. economy for the period 1948-1979); from the quarterly periodical Mergers and Acquisitions (M&A) which lists the number of mergers and acquisitions consummated in recent quarters in the U.S. economy. One series of this data starts in 1967 and continues to the present while another series starts from 1972 and continues to the present. Unfortunately the M&A data does not extend as far back as the FTC data. Data was also obtained from the firm W.T. Grimm & Co. on the number of merger and acquisitions announcements in the U.S. economy (available from 1963 to the present). Pre World War II Data mainly comes from the work of Nelson (1959) which only covers the U.S. manufacturing and mining sectors and the cut-offs are not explicit in that Nelson relied on financial reporting during the period covered. For the years 1919-1939 Willard Thorpe compiled a quarterly series on the number of mergers in the manufacturing and mining sectors, a series that was re-produced by Nelson (1959). The Thorpe series was continued by the FTC in 1940 in its broad series and the two series appear to be consistent and compatible.

After constructing a number of time series charts Golbe and White found definite merger waves evidence. For instance, from the broad series used by the FTC, there was a small peak in the mid 1950s, a large peak in the late 1960s and the beginning of

another peak in the mid to late 1970s. When using the descriptor of number of mergers the data shows a small peak in the mid 1950s a large peak in the late 1960s and then the beginning of another peak towards the mid to late 1970s. The use of M&A data clearly depicts the merger and acquisition boom of the 1980s.

Further scrutiny on their annual data on the number of mergers from Nelson, Thorpe, FTC and M&A show four clear and noticeable peaks or waves, which occurred around the turn of the 20th Century, late 1920s, late 1960s and late 1980s. Re-constituted data provided further outcomes. They divided the number of mergers each year by the real GNP value of that year to achieve a relative measure that is the ratio of two flow measures: the annual number of mergers and acquisitions per billion dollars of real GNP. This new time series showed four definite peaks or waves but due to the real deflator, showed the two latest peaks of the late 1960s and the late 1980s at much lower levels. Additional work using other measures such as the Value of Assets divided by GNP showed four definite wave patterns. Golbe and White surmised that for a period of more than 30 years, the literature devoted to time series analysis of mergers and acquisitions had not been large and the analysis on the few variables had not been strong.

Nelson's (1959) research covered the period 1895-1956 through the annual firm disappearance by mergers during this period in the US manufacturing and mining industries. In the late 1950s he was able to identify three merger movements. The first major merger movement occurred as the U.S. entered the 20th Century, the peak of the merger wave being 1898-1902. This movement transformed many industries, formerly characterised by many small and medium sized firms into those in which one or a few very large enterprises occupied leading positions. It laid the foundation for the industrial structure that has characterised most of American industry in the twentieth century. The second large movement occurred during 1926-1930 and reflected to some degree the emergence of new leading industries in the years since the first merger wave. It represented attempts to restore the industrial concentration achieved by the first merger wave, which had become diluted over the years.

The third movement, following World War II differs from the two earlier ones in that it had a lower peak and a wider spread across most of the post war decade. The five years

of its highest activity were 1946, 1947 and 1954, 1955 and 1956. This wave was not such a sharp burst of business re-organization, as were the two previous movements. Both in the absolute volume of merger activity and size relative to the business population, this wave was smaller than the first two. Nor was it clear that it had comparable effects upon industry concentration.

Economists have long noticed that mergers occur in waves (Town, 1992) and that there are short period of very intense merger activity. In this phenomenon, every series is dominated by Himalayan bursts where the number of mergers increase several fold over a single period. Despite the long held belief that mergers display anomalous behaviour, economists have failed to employ statistical techniques capable of uncovering the time series structure that can generate these waves. Since 1895 Town asserts there have been four major and five minor merger movements identified in US history and his evidence is consistent with the proposition that the Tax Reform Act of 1986 was responsible for a short merger wave occurring in 1986. Town poses a more interesting question being what sort of stochastic process is generating this unusual pattern in the M&A data and with the time series data (from the sources enumerated above) covering the period 1895-1989, clearly identifies merger activity peaks at the turn of the 20th Century, the late 1920s, a minor peak just after World War II, a peak in the late 1960s and another peak in the late 1980s. The fifth merger wave of the mid to late 1990s was not considered as this occurred after the completion of his research; however, the research on the previous four merger peaks is consistent with other researchers detailed earlier in this section.

While Weston, Mitchell and Mulherin (2004) rely on some of the research conducted by others previous to themselves (eg. Golbe and White, 1988) to assist with their analysis, they offer comprehensive and important information to this topic. A major assertion was that each merger movement was more or less dominated by a particular type of merger and they uncovered five merger waves and some of the reasons for their occurrence are explained as follows. The period 1895 to 1904 (one of rapid economic expansion) consisted mainly of horizontal mergers, which resulted in high concentration in many industries, including heavy manufacturing. The second merger wave of 1922 to 1929 was one of vertical mergers and also began with an upturn in business activity in 1922 and ended with the 1929 with the beginning of the great depression. The third

period was a period of mega mergers during the 1960s and peaked towards the latter part of this decade. The fourth merger wave covered the period 1981 to 1989 and this one also excited the interest of the general public. The pace of activity during this movement exceeded even the conglomerate activity of the 1960s. This was a confluence of forces that resulted in this merger wave. It was becoming apparent that by 1992 the fifth and strategic merger movement had started.

The period of the 1960s was a period when American industry experienced a wave of conglomerate mergers (as described by several authors above). Keenan and White (1982) examined the number of transactions and provide an interesting analysis of the outcomes of two separate data sources covering the period 1965 to 1978. Table 3.4 below is reproduced from their Table 3-1.

Table 3.4 Overall Merger Activity in the United States

Year	Total Transactions [a]	Total Transactions [b]
1965	1893	2125
1966	1746	2377
1967	2384	2975
1968	3932	4462
1969	4542	6107
1970	3089	5152
1971	2633	4608
1972	2839	4801
1973	2359	4040
1974	1474	2861
1975	1047	2297
1976	1171	2276
1977	1183	2244
1978	1245	2106

Source: Series [a] from the Bureau of Economics, FTC, 1980
Series [b] from W.T. Grimm & Co (data from Joseph M. Sheer, "Divestitures and Spin-Off," MBA thesis, New York University, 1978)

3.2.2 U.S. Merger Waves: Reasons For Occurrence

According to Black (2000) the political and cultural climate for takeovers had significantly changed, resulting in a less regimented and open approach to mergers and acquisitions activity. Several factors explain the 'friendlier' climate for mergers are offered in the table below.

Table 3.5 Summary of Merger Factors and Explanations

Factor	Explanation
Low unemployment	Takeovers can produce unemployment. In the U.S. labour complaints about unemployment were muted and hard to take seriously when the unemployment rate was 4%.
Weak unions and strong job opportunities	A high proportion of the takeovers occurred in the new technology and communications economy, where labour unions are weak and job growth was strong. A new job could be found after a job loss.
Golden parachute and stock options	Many top U.S. managers owned enough stock and stock options to mute any of their resistance to takeovers. Since they will get rich if their company is acquired, their ability to fight a takeover is much weaker.
Breakdown of old anti-takeover coalition	The U.S. anti-takeover coalition of the 1980s consisted of managers and labour, who were both scared of losing their jobs and hence opposed takeovers.
European trends	Though similar, unemployment concerns were much higher in Europe because of their higher unemployment rates than the US. Their labour unions are much stronger, even though they are also weakening.
Hard but not difficult U.S. law, on hostile takeover bids	The lack of legislative or judicial moves towards stronger defences mirrored a lack of public concern about takeovers.
Tolerable taxes on income from capital	The globalisation of capital markets makes it harder for countries to levy heavy taxes on income form capital lest the capital simple moves elsewhere. This phenomenon is affecting tax rates. Taxes on income from capital are dropping in the countries where they have been the highest. This smooths the way for takeovers by reducing their tax costs.
Globalisation.	Recent huge scale takeovers reflect the decades long growth in international trade as a percentage of GDP in almost every country, and the parallel trend towards competition becoming global, not just national. Many mergers were intended to achieve world scale and consolidation.
Low inflation	Inflation rates in the developed world peaked in 1979-81 and have been generally dropping trend since. A major reason for this is that international investors are not hesitant to punish even governments when

Factor	Explanation
	governments undertake high borrowing rates. Since most debt pays interest at a nominal (rather than real) rate, lower inflation rates, which let acquiring companies pay higher prices and to be more patient in waiting for an acquisition's hoped for synergies to emerge. Lower nominal interest rates tend to correlate with higher stock prices.
Connection between the stock market and prosperity	Most of the U.S. population understands that, in general, the connection between the soaring stock market and overall prosperity. They also see the connection between stock market gains and overall prosperity on the one hand, and large government surpluses on the other hand, when only a few years ago large deficits were the norm.
Less fear of concentrated wealth	There does not appear to be the public mistrust of bigness and concentrated wealth that used to exist only a few years ago.
The ascendancy of market economics.	Most people believe that capitalism has triumphed over socialism and that governments cannot macro-manage economies or run businesses. This aspect has fuelled a worldwide privatisation and de-regulation trend. These regulatory changes add fuel to the takeover activity.
Start Up Companies are meant to be bought	Some start-up companies are begun with the hope of growing big. A considerable number of these were started by entrepreneurs who eventually sold out to other bigger players. Recent examples of this are the telecom and internet companies.
The growing importance of time-to-market.	In the high tech industries, time-to-market is critical and so the traditional buy versus build choice is often no choice at all. The only questions are price and whom you buy to fill a hole in your product line.

The rise of mergers and acquisitions in Europe can be, in part, explained by the creation and growth of the European Union and dismantling of trade walls (Oster, 1999). This pace has accelerated in the last couple of decades. Oster also states that the collapse of many Asian economies in 1997-98 appears to have created new opportunities for mergers. The rapid fall in share prices in much of Asia, made many Asian firms look relatively cheap to American buyers. Concurrently, Asian sellers began trying to improve their cash positions by restructuring their operations and began selling off divisions.

Oster also attempts to answer the question what accounts for the fluctuations in merger activity through the following. In the early data, there appears to some tendency for the overall level of merger activity to rise with the level of stock prices. The late 1990s

show this pattern as well. The middle merger waves, however, do not show this parallelism in rising stock prices and global explanations for the timing of mergers are weak. It's possible that mergers occurred due to the factor of a simple random walk process. Oster's conclusion is that none of the traditional theories of motive for mergers seem to help to explain their wave-like quality.

One interesting aspect of the merger wave phenomenon that Green (1990) discusses is the importance of geography in the merger process and reason for occurrence. Inherently the decision to merge has strong spatial implications with the reshaping of corporate space. A firm's location is an attribute to be studied, as are its size, its profitability, or the industry it operates in. The addition of new components to a firm's spatial structure through merger leads to the necessity for adjustments of the structure. This structure is modified by the opening, closing, expansion or contraction of plants and by changes in supply and demand linkages. While the offices and plants of a firm may remain stationary throughout the merger process the underlying power or control structures of the economy is in constant change. Mergers therefore represent an important stationary relocation process that allows the transfer of corporate power from one urban centre to another, causing alteration in corporate space. Mergers provide a means by which small and medium sized companies may create stronger bases for expansion and development. It may also be true therefore, and resulting from the above, that the core, or control points of the economy may grow at the expense of the peripherally located subordinate points. Mergers and acquisitions therefore act as reinforcing agents of this process - a link between acquisition activity and regional development.

The rise in acquisitions of very large companies (with assets over $100 million) was an interesting feature of the work done by Steiner (1975) of this conglomerate merger wave of the 1960s. The median size of acquiring companies was between $29-41 million for every year since 1963, with no marked cycle during the merger boom. Actually the unique characteristics of the merger boom of the 1960s were the repeated acquisitions by a small number of companies that were to become well known in the process. These companies are made up of well-known conglomerates and the oil companies; a continuum in the market transactions for the market for corporate control.

Krallinger (1997) cited a number of reasons for this increased urge to merge in the U.S. during this period. These are because the US is the single largest market in the world and it is difficult, time-consuming, and costly to obtain market share there except by mergers and acquisitions. The US has numerous businesses with special technology and good managers who are capable of efficient production and service at high or at least satisfactory, quality levels. The US economy has many middle market size companies. It rarely restricts significant imports and exports for their target markets. It has few antitrust or regulatory barriers to their investing. It offers a public market for their shares and an established market for financing acquisitions. The US economy frequently provides higher returns on their net investment than are available over time in their native country. America is politically more stable than any other country. The country tends to have predictable, stable currency exchange and offers discounts to certain foreign currencies from time to time.

Golbe and White (1988) firstly explained that a merger or acquisition usually constitutes an act of investment by the purchasing firm or individuals and its also an exchange of existing assets. They proceeded and developed their own determinants of merger and acquisition activity and postulated seven forces that cause individuals or firms to exchange assets among themselves, summarised in the table below.

Table 3.6 Golbe and White's Seven Merger Forces

Force	Explanation
1. Bargains.	Asset exchanges occur when potential purchasers believe that the current prices for the assets are bargains. One indicator of whether a company can be purchased at a bargain price would be a comparison on the company's purchased price (eg. Market value) with the likely replacement cost of the company's assets, that is, Tobin's q. The lower the ratio of market value to replacement cost (other things being equal) the greater the bargain and hence the greater the likelihood that some potential acquisition will occur.
2. Unexpected Changes in Economic Circumstances.	As economic circumstances change unexpectedly, different entrepreneurial skills may become valuable and differential profit opportunities may arise.
3. Divergence of Opinion.	If difference of opinion arise between the buyers and the sellers about future profit prospects then two prospects may arise. The first is that there is a greater likelihood that a relatively optimistic buyer will find a relatively pessimistic seller and a transaction can be completed. Second, there is also a greater

Force	Explanation
	likelihood that a buyer-seller pair that previously would have found a merger worthwhile will find that the buyer has become relatively pessimistic or the seller has become relatively optimistic about its own future profit prospects, and the merger is less likely to be completed.
4. The Real Cost of Capital.	The real cost of capital can influence the timing, finance costs and expected profitability of mergers and acquisitions and hence should have a negative relationship with the volume of these transactions.
5. The Size of the Economy.	A larger economy is likely to have more companies that could merge with each other and hence to have a positive influence on mergers and acquisitions.
6. Tax Laws.	Changes in tax laws can have an impact on the level of mergers and acquisitions over a short to medium term period and alternative tax regimes can make asset exchanges more or less costly and therefore have a steady state consequences for the volume of mergers and acquisitions.
7. A Correction Factor for the Fixed Cut-off Point Problem.	Where inflation is a factor, a fixed lower cut off point for the inclusion of a merger or acquisition into a recorded data series creates an upward bias in that series over time. Any empirical testing of the previous hypothesis should include a correction factor of this upward bias.

Towards the end of his research paper, Town (1992) re-emphasises the lack of an analytical model of merger waves. Since the common belief is that firms acquire other firms for many reasons merger waves are the result of exogenous changes in the environment leading to an increase in potential benefits of certain types of acquisitions. Thus each merger wave should be associated with a specific change(s) in the regulatory, financial, or other relevant environment.

The result of Town's research was that aggregate merger behaviour was well described by a non-linear, Markov switching-regime model. Mergers and acquisitions alternate between two states: a high mean and high variance state and a low mean and low variance state. In other words, a univariate framework merger wave appears to be an endogenous phenomenon. The dating mechanism employed in his evaluation of the four main and five minor merger waves relies on the output of an objective, nonlinear filter.

The reasons offered by town for the occurrence of merger waves is summarised in the following table.

Table 3.7 Summary of Towns' Reasons For Merger Waves

Period	Reason
Beginning of First Merger Wave of 1898	This was simultaneous with the Appeals Court ruling on Addyston Pipe and Steel antitrust case where price fixing was ruled illegal per se. This fact is consistent with the notion that changes in the antitrust environment were responsible for the turn of the century merger movement.
Period After World War II	The US economy shifted resources from military to civilian production and this also required a change or transfer in the ownership of these productive assets.
The Waves of 1925-32 and 1967-69	These coincided with booming economies and stock markets. The 1920s merger wave was typified by mergers for oligopoly and vertical integration. While conglomerate mergers were most common during the late 1960s.
Most Recent Wave of 1986	This lasted for one quarter. The Tax Reform Act of 1986 repealed many of the tax benefits associated with mergers and acquisitions. Hence many companies raced to complete their mergers transactions before the new tax code went into effect. One unique characteristic of the merger wave of the late 1980s was that while the sizes of the transactions during this period were unprecedented, the frequency of these deals was not.

All of the US merger movements have occurred when the economy experiences sustained high rates of growth and coincided with particular developments in business environments Weston, Mitchell & Mulherin, 2004). The two basic antitrust laws were enacted near the end of the 19th Century and the early part of the 20th Century. A third law was added in the mid 1970s. Weston, Mitchell and Mulherin (2004) offer possible reasons for each of these mergers are as follows.

Period 1: The 1895 to 1904 Horizontal Mergers.

During the late 19th Century the US economy experienced a merger boom and the Sherman Act of 1890 was passed at a time of heightened merger activity. It is believed that one decision made by the U.S. Supreme Court (in the Northern Securities case) of 1904 might have contributed to ending this merger wave. In this decision the court established that mergers could be attacked successfully by Section I of the Sherman Act, which prohibited "every combination in the form of trust or otherwise" in restraint of trade. The counter argument was that the merger activity began to downturn in 1901, as some combinations failed to realise their expectations, and decline further by 1902, when the U.S. economy went into recession.

This merger movement accompanied major changes in economic infrastructure and production technologies. It followed the completion of the transcontinental railroad system, the advent of electricity, and major increases in the use of coal. The completion of a rail system linking all its territories and states led to the development of a national economic market. Merger activity with the achievement of economies of scale transformed, to a degree regional firms into national firms. Two other factors motivated the first merger movement. The first was merging for monopoly. Studies conducted at the turn of the 20th Century on mergers partially reinforced this concept. Moody (1904) found that of the 92 large mergers, 78 controlled more than 50% of the market. However Markham (1955), he found that out of five mergers only one resulted in considerable monopolistic control. The second was that professional promoters and underwriters or "producers" of mergers added to the magnitude of the merger wave (Markham, 1955) and (Salter and Weinhold, 1979).

Between the first and second merger waves the Clayton Act of 1914 created the Federal Trade Commission (FTC) with the aim of regulating the behaviour of businesses and two of its sections are important from the regulatory and competitive framework. Since Section 7 made it illegal for a company to acquire the stock of another company if competition could be adversely affected companies made asset acquisitions to avoid this prohibition. The introduction of this Act did not prevent or inhibit the rise of the second merger movement.

Period 2: The 1922 to 1929 Vertical Mergers.

Many business combinations occurred in this period outside the previously consolidated heavy manufacturing industries with the public utilities and banking industries most active. During this period about 60% of the mergers occurred in the still fragmented food processing, chemicals and mining sectors. In most cases the issue of monopoly was not raised and the transformation of a near monopoly to an oligopoly by merging for oligopoly was more frequent. Oligopoly provided a motive for many mergers, but it was limited to no more than a small percentage of the mergers. Many mergers in the 1920s represented product extension mergers and examples of this were IBM, General Foods, and Allied Chemical; market extension mergers in food retailing, department

stores and motion picture theatres; and vertical integration in the mining and metals industries.

The motives for these mergers were major developments in transportation, communication and merchandising. The advent and commercialisation of motor vehicles broke down small local markets be enabling sellers to extend their sales areas and by making consumers more mobile. Mergers in such industries as food processing and chemicals accompanied the rise of automobile transportation just as mergers in heavy industries in the previous merger movement accompanied the rise of railroad transportation. The development of home radios facilitated product differentiation through national brand advertising. By the 1920s mass distribution with low profit margins became a new method of merchandising. Both of these developments caused an increase in the scale of operations and therefore encouraged mergers. Stocking and Mueller (1955) also found that by the 1920s businesses had come to appreciate the advantages of vertical integration. These advantages were related to technological economies such as the shortening of processes or waste elimination motions or the reliability of input supply.

Following the second merger boom and resultant stock market crash of 1929 the Securities Act of 1933 (SA) was established to regulate the sales of securities to the public and provided for the registration of public offerings of securities to establish a record of representations (to minimise the re-occurrence of another stock market crash). All participants involved in preparing the registration statements were subject to legal liability for any misstatement of facts or omissions of vital information. In 1934 the Securities Exchange Act of 1934 (SEA) established the Securities and Exchange Commission (SEC) so as to administer the securities laws and to regulate practices in the purchase and sale of securities. A year after this the Public Utility Holding Company Act of 1935 (PUHCA) was established to correct abuses in the financial and operation of electric and gas public utility holding company systems and to simplify corporate structures and physical integration of the operating properties.

At the end of the decade the Trust Indenture Act of 1939 (TIA) was established which set out the responsibilities of the indenture trustee (usually a commercial bank) and specified requirements to be included in the indenture (bond contract) for the protection

of the bond purchasers. It was not until 1987 that the SEC recommended several amendments to recognize the development of new financial instruments and techniques. In 1940 the Investment Company Act (ICA) regulated publicly owned companies engaged in the business of investing and trading in securities and it was not till 1970 that it was amended to place additional controls on management compensation and sales changes.

Though the above-mentioned legislation was enacted during a time of depression and slow recovery, the fall in merger activity can be attributed to economic circumstances than to legislative changes.

Period 3: The Conglomerate Mergers of the 1960s.

Section 7 of the Clayton Act of 1914 was amended by the Celler-Kefauver Act of 1950 to close the "asset-purchase" loophole and granted the US federal government additional power to declare illegal those mergers that tended to increase concentration. After this the relative importance of horizontal and vertical mergers declined in relation to conglomerate mergers. When this third wave peaked in 1967-68, horizontal and vertical mergers declined to 17% of the total number of mergers. Among the conglomerate types of mergers, product extension mergers increased to 60% and market extension mergers became negligible in number. Pure conglomerates increased steadily to about 23% of all mergers. Merger activity reached its then historically highest level during the three-year period 1966-69, a period of a booming economy, after which it started to slow down.

Most acquirers in this period that were known as conglomerate were small or medium sized companies that adopted a strategy to diversify into business activities outside their traditional areas of operation. The firms that were acquired were also small or medium-sized and were operating in either fragmented industries or on the periphery of major industrial sectors. Weston and Mansinghka (1971) suggested that the conglomerates were diversifying defensively to avoid sales and profit instability, adverse growth developments, adverse competitive shifts, technology obsolescence and increased uncertainties associated with their industries. Many of the later conglomerates had little sound conceptual basis and were a substantial source of sell-offs in later years. Many

writers, such as Shleifer and Vishny (1989) viewed the merger activity of the 1980s as a correction to the strategy of the 1960s diversification.

One of the reasons cited for the downturn in this merger wave was the fact that in 1968, the U.S. Congress began to move against conglomerate firms in the antitrust and tax areas. Congressional hearings were held on 'alarming' increase in the size and power of the big conglomerate firms and these actions adversely affected their stock prices. Further, the Tax Reform Act of 1969 limited the use of convertible debt to finance acquisitions, as, in the past, the use of convertible debt had magnified price-earnings ratios. The prospect of large future capital gains made it possible to sell convertible debt with low coupons, so the conglomerate firms obtained cash inflows from the sale of debt at low after tax costs, which contributed to their growth in Earnings Per Share (EPS) and market prices. The Act also provided that EPS would now have to be calculated on a fully diluted basis, as if the debt had been converted into common stock. The fact that there was a hostile public policy environment depressed the stock prices of conglomerate firms. Concurrently the general stock market (Dow Jones Industrial Average) declined from its peak at 1,000 in 1967 to 631 by mid 1971. All these above mentioned factors brought the conglomerate merger boom to an end.

Following the merger boom of the 1960s the Security Investor Protection Act of 1970 (SIPA) and Hart-Scott-Rodino (HSR) Act of 1976 were enacted. The SIPA established the Securities Investor Protection Corporation (SIPCO), which had the power to supervise the liquidation of bankrupt securities firms and to arrange for payment to their customer. Since inception, this Act has been amended several times. The objective of the HSR Act was to strengthen the powers of the Department of Justice and the FTC by requiring approval before a merger could take place. Before this Act came into place, antitrust actions usually were taken after completion of a transaction. However, by the time a court decision was made the merged firms had usually been in operation for several years, therefore making it difficult to undo what had been done. Soon after this enactment, the US economy experienced another merger boom; again posing the question as to how much of an impact this had on deal making.

Period 4: The Deal Decade, 1981 to 1989.

Starting in mid 1982, the economy and the stock market began to surge upward. International competition was increasing, impacting mature industries such as steel manufacture and automobiles. Conglomerates became more streamlined. New technologies and managerial innovations brought new industries into existence and affected the old. Computers and microwave communications systems impacted the communication and entertainment industries. An important consideration in this merger wave was the ability to undertake transactions that were facilitated by the financial innovations of the 1980s, some known as junk bonds.

This decade witnessed financial buyers who bought segments of diversified firms. Therefore, almost half of the annual acquisitions during the 1980s represented divestitures of selling firms. This was part of the process of unwinding the conglomerates of the 1960s, as firms sought to focus on their core competencies and capabilities. Another method used to unwind diversification was through the process of 'bust-up acquisitions" where corporate buyers would seek firms whose parts as separate entities were worth more than the whole. After the purchase, segments would be divested and the proceeds from the sales of these divestments were often used to reduce the debt incurred in the acquisition of the original 'whole' business. As the sophistication of acquisition strategies increased, so did the sophistication of defensive strategies. The increased use of hostile takeovers financed by debt gave rise to the increased use of defensive measures.

The merger boom of the 1980s witnessed growing reports of insider trading and concern about the general impact of mergers on the economy, and resultantly, government action became more restrictive. A number of well-publicised insider trading cases cast doubt on the integrity and soundness of merger activity. One prominent dealmaker was indicted in 1989 and with the subsequent bankruptcy of one the major player Drexel Burnham the junk bond market was severely wounded. Additionally the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) weakened in the junk bond market further. Since this law required financial institutions to mark their junk bond holdings down to market its effect was to force massive sales of junk bonds (by financial institutions), which further devastated the junk bond market.

With a period of recession and with the first war in Iraq this put a dampener on merger activity. The development of powerful takeover defences, state anti takeover laws, the weakness in the junk bond market, and the economic downturn, all combined to bring the deal decade to an end. Though it was felt these forces would actually reduce future merger activity it proved to be a short-lived belief.

Period 5: Strategic Mergers, 1992-2000.

The Gulf War proved to be only a short-lived phenomenon and economic recovery was strong and the stock market resumed its upward momentum. Other investment banking firms moved into the junk bond market, which recovered to the levels above its peak in 1988. This was a period of strategic mergers, which was underway to bring levels of merger activity higher than ever before. The major forces or reasons for this merger activity are summarily explained in the following table.

Table 3.8 Summary of Major Forces of Strategic Mergers

Force	Explanation
Technology	Through technology the world witnessed the computer and internet explosion, which created new industries and firms, changing the forms and nature of competitive relationships. Microwave systems and fibre optics transformed the telecommunications industry. Acquisitions by firms in all segments of the internet economy were used to augment critical capabilities and to gain economies of scale and scope.
Globalisation	Market globalisation matured in the 1990s and competition came from Europe, North Asia and Southeast Asia as regions continued to move toward common markets. The North American Free Trade Agreement (NAFTA) was signed between the U.S., Canada and Mexico. Just as the trans continental railroads made the U.S. a common market at the end of the 1800s, technological development in transportation and telecommunications helped make the world a common market at the beginning of the 21st Century.
Deregulation	The intensification of competition brought on by technological change and globalisation led to deregulation in major industries. These included financial services, telecommunications, energy (in all its forms), airlines, and trucking. Increased competition forced deregulation, which in turn caused further massive re-organization on industries. Mergers and acquisitions played a major role in the re-adjustment processes necessitated by deregulation.

Force	Explanation
Economic Development	Merger and acquisition activities of all forms that resulted from the above three factors were also facilitated by favourable economic conditions. Stock prices were rising, price/earnings ratios were rising and as interest rate levels were relatively low, and financing was available for mergers and acquisitions.
Payment Method	Many of the big deals (over $500 million) done during this phase were made possible by stock-for-stock transactions. This was different to the 1980s with the high debt transactions and it also placed less time pressure for achieving improvements in cash flows thus allowing longer-term strategies to be executed.
Share Repurchases	Successful firms with superior revenue growth and favourable cost structures used programs of share repurchases to signal their favourable future prospects. The dual factors of strong performance and credible signals of future success produced impressive returns to shareholders.
Stock Options	Rising stock prices made the use of stock options a powerful tool for competing in the managerial labour market. High tech firms (the "New Economy") added stock options as an important component of compensation to attract innovative, experienced executives. Some firms extended the use of stock options as a form of compensation widely throughout the organization. Stock options increased the number of shares outstanding; share repurchases provide a counterbalance.

The last merger wave was much larger than others that preceded it. One measure used to determine the impact of merger and acquisition activity on the economy is the ratio of merger activity to Gross Domestic Product (GDP). Weston, Mitchell and Mulherin (2004) calculated the impact of this ratio over four time segments. During the decade of the 1980s, merger activity represented less than 4% of GDP. For the period 1993-2000, merger activity grew to about 9% of GDP. In 1999 the ratio was 15% of GDP. Beginning in the 1900s this ratio was about 10% of GDP.

Following the latest pronounced merger boom the Sarbanes-Oxley Act of 2002 (SOA) was established partly due to the allegations of massive fraud, insider trading and questionable accounting practices employed by large companies such as Enron, Global Crossing, Tyco and WorldCom. SOA aimed to have a huge impact on corporate governance, financial disclosure, auditing standards, analyst's reports and insider trading and was perceived as the most comprehensive review of the securities laws

since 1933. At this stage it is too early to assess its impact on merger activities and trends.

3.3 OTHER SUPPORTIVE RESEARCH

Other notable literature on US merger waves provides relevant outcomes. In The Modern Theory of Corporate Finance (Smith, ed. 1990), research conducted by Jarrell, Brickley and Netter (1988) examines the empirical evidence of merger waves during the 1980s. Research by Jensen and Ruback examines the costs and benefits and measuring them when a company is engaged in some form of corporate control through merger. Both sets of research concur with the notion of merger waves occurring during specified time periods.

Additionally, research has been conducted on several time periods. Narver (1967) examined conglomerate merger activity during the 1950s to the early 1960s while Ansoff, Brandenburg, Portner and Radosevich (1971) reviewed the acquisition behaviour of US Manufacturing Firms for the period 1946-1965. A review the 1960s evidence of the determinants of conglomerate and predatory acquisitions was conducted by Barber, Palmer and Wallace (1994). White (2002) concentrated on the US during the period of the 1980s and 1990s specifically referring to merger waves that occurred during this time period and provided possible reasons for these trends. The reasons are similar to the ones discussed above. Holmstrom and Kaplan (2001) researched the phenomenon of merger waves in the light of corporate governance issues during the 1980s and 1990s. Andrade, Mitchell and Stafford (2001) attempted to provide new evidence and perspectives on mergers waves since 1962 and attempting to ascertain what other reasons there might be for the occurrence of merger waves through the examination and analysis of the winners and losers in the merger game.

3.4 CONCLUSION

Numerous literature and time series data reinforce the occurrence of a number of US merger waves since 1895. Further, researchers have offered a number of reasons (alternatively referred to as merger forces) for the occurrence of US merger waves. Depending on the data periods employed and analysed and when a particular scholar

wrote, several US merger waves have been identified. Due to this some scholars have identified four US merger waves, while others (more recently) have identified five US merger waves. Additionally, based on their interpretation of the degree or magnitude of the merger wave some scholars identify four merger waves, while others identified five merger waves. Plausible reasons and explanations have been provided for the occurrence of each of these peaks and troughs in merger activity. Many of these reasons support those of Gammelgaard (1999) detailed in Chapter 2 and explored and analysed further through empirical analysis in Chapter 6 and 7 of this thesis.

CHAPTER 4 MERGERS IN THE UK

4.1 INTRODUCTION

The United Kingdom (UK) is a leading world economy similar in size to Germany, France and Italy but its industrial development occurred first. It was in the UK that the Industrial Revolution commenced in the early 1800s and then spread to other parts of the world. Due to it being an open western economy and a leader in industrialisation, the reasons and timing of mergers in the UK economy have been selected through the review of literature and associated time series data.

In the global context, the UK is an interesting mid sized economy Bridgeman (2002) and though similar in size to that of Germany, France and Italy but also different from them in that it has always been a very open economy in terms of trade and international capital flows. Also many multinational businesses are UK based and London has a leading position in the international financial markets. An open economy such as the UK means that a disproportionately large volume of cross border mergers and acquisitions will include UK businesses and vice versa.

The UK provided the vast majority of investment into the separate colonies of Australia till 1901 when Australia became a commonwealth and for the next half century till the mid 20th Century. As a medium sized, but not less insignificant, economy, Australia largely follows the lead of the UK and the US in the development of its modern industrial economy. The review of the evidence of merger waves in the UK is important for comparison and contrast purposes to that of the Australian economy. Though Australia is an independent and mature economy, it still looks to the UK and the US for economic and political leadership. Our review of the evidence for the UK is important from that perspective and will be borne out by the review of the evidence for the reasons and timing of merger wave activity in Australia.

4.2 LITERATURE ON UK M&A WAVES

The sizeable body of literature which deals with M&A activity in the UK discusses this topic from the perspective of European/UK merger activity, Global/UK merger activity

and US/UK merger activity. This may pose tracking and identification difficulties since it was found that there are commentaries on the UK phenomenon but the UK phenomenon was discussed in light of other regional or global perspectives and therefore more review and analysis had to be conducted. In many instances, the issue of UK M&A activity was not discussed in isolation.

The UK studies have been different to that of the US experience in that research into UK mergers has been conducted over smaller time periods and more focused on industry mergers and acquisitions, rather than upon an examination of global economic movements over time. Nevertheless, combining the various research outcomes reveals an interesting outcome, which shows that there have been waves in merger and acquisition activity in the UK in a similar fashion to those of the US.

4.2.1 UK Merger Waves: Timing, Occurrence and Nature

Using a VAR technique and also formulating a Real Business Cycle (RBC) model Ravn (1997) has investigated UK business cycle properties. This model includes both permanent and transitory shocks to technology. While not specifically dealing with the topic of merger and acquisitions wave phenomenon, Ravn makes the interesting comment, which might have a bearing on merger and acquisitions time series. Through some earlier research conducted Blackburn and Ravn (1992), it was shown that many of the key business cycle features for the UK resembleed those documented for the USA by Kydland and Prescott (1990). The results based on this VAR technique imply that there is a high degree of similarity between the business cycle movements of output components in the UK and in the USA, but that the labour market variables behave differently. Then it may also be possible that merger wave occurrence in the UK may also resemble that of the USA.

Through the examination of the period 1965-69 and 1970-74 Cowling, Stoneman, Cubbin, Cable, Hall, Domberger and Dutton (Cowling et al. 1980) claim that merger activity has been quantitatively important and that it has contributed to the increasing concentration of UK industry. Though there were some issues of data non-consistency of the early and late 1960s, the post 1965 Merger Panel statistics showed a dramatic increase in the absolute and relative importance of diversifying mergers between 1965-

69 and 1970-74. It was found that not only did diversifying mergers become absolutely and relatively more numerous in the second sub period (1970-74), but they also became much larger on average. Therefore, in the period 1965-69 the 13% of mergers in the diversified category had a less than proportionate share in the total value of mergers (approximately 7%) as in the earlier periods. In the period 1970-74, however the 24% of mergers that were diversifying accounted for nearly 32% of all mergers by value, and in 1972 the 27% of mergers, which were of this type accounted for 50% of the total gross assets involved.

The number of horizontal mergers also rose, from 382 in 1964-69 to 415 in 1970-74, while the (low) number of vertical mergers remained roughly the same. In the ten-year period ending in the mid 1970s, the role of diversifying mergers had become relatively more important in the UK economy. Their assessment of the literature at that time definitely supported the assumption of at least a 50% and on some estimates a much greater percentage of the change in concentration can be attributed to merger, whether examined in an aggregated or disaggregated format. From the public policy perspective the degree of concentration is important and has a significant role to play in controlling the emergence and impacts of monopoly power in the UK economy.

A counter argument offered was that all gains implicit in mergers will be exhausted by the competitive process for the acquisition of these gains and therefore there is no trade off. Their general comment is that it is difficult to sustain the view that merger is in fact a necessary or sufficient condition for efficiency gain. In some cases efficiency has not improved, in some cases it has declined, in other cases it has improved but no faster than one would have expected in the absence of mergers. Their evidence suggests that there is little to be gained by increase in size but potentially much to be lost. Given this the question of divestiture should be raised.

Part of the work conducted by Cowling et al. (1980) is reproduced in the re-constituted table below from their Table 1.3. The total values of each type of merger (horizontal, vertical and diversified) in UK manufacturing were added to provide a total figure for numbers of mergers and the total value of the transactions on a yearly basis for the period 1954-65.

Table 4.1 Incidence of Merger Type in Manufacturing 1954-65

Year	Number of Quoted Acquisitions	Total Net assets acquired, £M
1954	35	77.0
1955	37	61.8
1956	33	60.5
1957	58	102.6
1958	52	113.6
1959	72	147.6
1960	77	256.8
1961	67	322.8
1962	53	182.5
1963	59	334.6
1964	52	179.5
1965	48	257.1

Source: Utton (1969)

Through the Institute of Economic Affairs (UK) Polanyi (1973) provided interesting statistical appendices on the nature and movements of merger activity in the UK economy from 1954-72 showed the following:

- In using the measure Number of Companies bought the data definitely shows an upward trend in merger activity. When constituted as a chart the characteristics of this chart were that it showed a definite wave pattern in the number of companies bought during this period. Generally, the peaks of the wave appear to be at a higher value that preceding peaks and the value of the troughs also appear to be at a higher value than preceding troughs.
- Similarly, results were obtained from the data for the value of companies bought. Evidently there was a wave phenomenon for the value of companies bought during the period 1954-72. The characteristics of this wave were that successive peaks were higher than preceding ones and successive troughs were also at higher levels than preceding ones. The peaks of both of these waves roughly coincided with the third US merger wave of the late 1960s.
- An examination of the proportion of company funds used for acquisition of subsidiaries during the same period showed a close correlation to the data for the number of companies bought and the value of the companies that were bought during the same period. The proportion of company funds used for the acquisition of subsidiaries peaked in the late 1950s and peaked again at a much higher level in

the late 1960s. Outside of these peaks the data showed the value of the troughs occurring at a higher level than preceding ones for most of this period.

- Data on the movements in employment and numbers of factories in UK manufacturing during the period 1924-68 showed that the number of factories that were categorised as small increased from 1924 to 1930 then fell significantly by 1948 and then fell by a slower margin by 1968. At the same time the number of employees in larger factories remained relatively stable during the period 1924 to 1935, then increased considerably by 1948 and then continued to increase till 1968. During this period the number of employees in small factories fell by a small percentage. During the period 1924 to 1968, the percentage of total employment in large manufacturing companies while it decreased for smaller manufacturing companies. The above indicate that these movements occurred at a time of merger and acquisition activity in the UK economy, i.e. closely corresponding to the merger wave of the late 1960s.
- Data relevant to the US experience closely correlates to that of the UK. The review of the assets acquired by merger of the 200 largest manufacturing companies in the US during the period 1949-1968 had remained relatively stable for most of the period from 1949 but showed a pronounced increase from 1965.

Factors issues and trends in cross border mergers, acquisitions and strategic alliances during the decade of the 1990s was examined by the Organisation for Economic Co-operation and Development's (OECD, 2001). The value of cross-border M&A worldwide increased more than five-fold during the period 1990-99, from USD 153 billion in 1990 to USD 792 billion in 1999 and this period closely paralleled the fifth merger wave of the US and the UK and explained how the momentum increased during the latter part of that decade. The pace of growth slowed in 1999, but these M&A were still worth 36% more than in 1998 and more than twice as much as in 1997. Countries that traditionally viewed cross-border M&A unfavourably were becoming more open to take-overs by foreign investors, cross-border M&A are still concentrated in a few countries (mainly the US, the UK, and Germany).

The UK is significantly involved in M&A is witnessed to and inferred by some of the OECD (2001) statistics. Of the top 20 cross-border M&A for 1998-2000, UK

companies completed 9 (or 55%) of these cross-border deals. Further investigation shows that out of the total value of deals of USD 676 billion, the UK portion represented USD 437 billion or 65% of the value of the deals. The largest M&A deal ever was the takeover of Mannesmann AG (Germany) by Vodafone AirTouch PLC (UK) valued at USD 202.8 billion in 2000. The three largest cross border deals were undertaken by UK companies taking over German and US companies. Evidently UK companies were at the forefront of M&A activity on a global scale and that during the fifth US and UK wave of M&A, UK companies played a dominant and leading role. It is quite apparent that there was a major merger movement in the UK economy during this period which equated with the US fifth merger wave and just as importantly, companies in the UK were a major driver of merger activity for the UK economy, for Europe, the US and other parts of the world.

During the 1990s, European countries represented almost 60% of the value of world outward M&A (USD 1,576 billion out of USD 2,641 billion). Most European outward M&As (European M&A purchases) involved European and North American companies, which accounted for 49% and 41% respectively. In the second half of the decade, European (with leading UK) companies acquired more Asian and Latin American companies in their desire to strengthen their positions in these fast growing regions.

The research by Cartwright and Cooper (1996) cover the ten year period (1984-1994/Q3) which has been described as one of the most intense M&A periods in the UK and world economic history and development due to the volume and value of transactions. Their data is reproduced as Table 4.2, which evidences the boom M&A period of the late 1980s.

Table 4.2 Acquisitions and Mergers by Industrial and Commercial Companies Within the UK From 1984 to 1994

Year	No of companies acquired	Total expenditure (£m)
1984	568	5474
1985	474	7090
1986	842	15367
1987	1528	16539
1988	1499	22839
1989	1337	27250
1990	779	8329
1991	506	10434
1992	432	5941
1993	526	7063
1994/Q3	521	6481

Source: Central Statistical Office: London

A gigantic merger wave had gripped the world economy during the 1990s and that between 1990 and 1998 the value of worldwide mergers and acquisitions rose nearly five-fold (Singh and Dhumale, 1999). One of the most important and the largest merger movements in the UK and the US occurred a hundred years ago, during the 1890s. Evidence suggests that the merger boom of the 1990s, taking into account the effects of factors such as the growth in the size of the economy and the rate of inflation may have been the biggest ever recorded in the US. Such observations makes it clearly evident that researchers have seen similar M&A activity between the UK and the US, which adds evidence to the earlier claim that merger waves have been similar in the UK and the US economies over the past 100 plus years (i.e. since 1895). Another outcome of the merger wave of the late 1990s was the increased concentration in a wide range of industries including aerospace, defence equipment, power equipment, home machinery, automobile and automobile components, pharmaceuticals, soft drinks, snack foods, chemical fertilizers, retailing, accountancy and financial services.

Pryor (2001) adds interesting observations on the US and worldwide merger and acquisition activity during the 1990s and briefly compares it to earlier US merger waves. Inbound M&A activity is also examined through the total volume of mergers and acquisitions, the size of the transactions, industry sector transactions and the geographical distribution of buyers and targets. The geographical distribution of the recorded value of mergers provides another perspective of the merger boom in the UK

during the decade of the 1990s and also places this in the context of other major industrial nations, Africa, Asia and Oceania. This geographical distribution of the recorded value of mergers was undertaken over a time period of 1985 to 1999, in effect, what is commonly termed as the fourth and fifth merger wave.

Of all the major industrial economies after the US, the data is quite emphatic that the UK economy was the second largest player in terms of UK companies being either targets by or acquirers of other companies. From the perspective of targets or acquirers, the UK companies represented percentages of 2-3 times greater than the nearest 'rivals' Canada, France, Germany or Italy.

Pryor concludes his analysis of the geographical distribution of the recorded value of mergers by stating that the last decade and a half of the twentieth century witnessed an important consolidation of the world capitalist system. The work by Pryor is important in that it confirms the evidence that the UK economy has experienced merger booms (and at similar times to that of the US economy) of 1898-1905, the late 1960s/early 1970s, the late 1980s and the mid to late 1990s.

Modelling aggregate M&A activity is an important issue in economics according to Higson, Holly and Platis (2001). While mergers come in waves that appear to be correlated with share price levels, little is known about the causes of merger waves and about the econometric properties underlying aggregate merger series. Previous attempts to explain aggregate merger activity in terms of other aggregate or economy-wide variables have produced weak and conflicting results due to systematic and well documented biases in existing merger series. Their 2001 paper used a specially constructed UK merger series (entire UK quoted population from 1953-1998 complete with no cut-off bias) that is free from this sort of bias and applied and evaluated different specifications of a Markov-switching (MS) regime, using specially developed specification tests.

An overview is provided of some of the recent findings and the testing employed to determine whether mergers occur in waves and some of the potential reasons behind this occurrence. The literature on the aggregate merger process contains a plethora of univariate models; however, the research by Town (1992) and Linn and Zhu (1997)

demonstrate that the merger process can be efficiently described using a non-linear, two-state Markov-Switching (MS) model (Hamilton, 1989). Hamilton (1989) adds that a discrete two-state Markov-Switching process that allows for regime switching behaviour to be generated endogenously, provides an effective framework for detecting causes of regime changes or transitions between normal merger activity and merger waves. The key elements in these models are the simultaneous presence of two processes at a point in time and the (discrete) probabilistic choice between them.

Though the papers by Town (1992) and Linn and Zhu (1997) represent a significant step, important questions remain open. The level and form of the autoregressive processes is not tested formally in these papers, but is assumed a priori (i.e. already there). Higson et al. (2001) do not test competing models within this class or assess the appropriateness of the MS specification itself and admit that they do not know how robust the conclusions are to the data biases described above.

For the UK they found:

- The time series of aggregate merger activity follows a wave pattern and is mean-reverting, i.e. stationary.
- The MS framework is an appropriate way to capture the aggregate merger process, but the two state autoregressive model (MS(2)-AR(p)) used by the earlier studies is an over-parameterisation with respect to half of the series examined. All of the series tested, however, were adequately described by one of the three alternative MS specifications.
- Aggregate numbers of takeovers seemed to display smooth transitions and relatively persistent levels, whereas values seem to be subject to violent transitions and volatile levels. This is consistent with mergers and acquisitions that have a randomly sized distribution, with a large merger having a significantly larger effect on total value than the integer increments in the number series.

The formal identification of mergers wave dates, provided strong evidence for the wave pattern in all aggregate merger series. The merger waves for the UK economy closely approximated or correlated to the merger waves in the US of the late 1960s and early 1970s, the merger wave of the late 1980s and the merger wave of the mid/late 1990s. In effect these UK merger waves correlate with the US third, fourth and fifth merger

waves. This research, however, does not examine the reasons for the timing of these UK mergers waves.

To ascertain whether there were merger waves in the US and the UK using quarterly data covering the last thirty years Gartner and Halbheer (2004; Gartner and Halbheer, 2006; Gartner and Halbheer, 2008) employed a Markovian switching model allowing for shifts between high and low levels of merger activity. For the US there was only one transition in regime, from the low activity to high activity in the mid 1990s being in contrast to the general notion of literature of the much discussed merger wave of the 1980s. In contrast to the US merger waves in the UK exhibited multiple waves.

In 2003 alone there were 7,983 transactions involving US targets disclosing a purchase price of $504.6 billion, which amounted to 5% of US GDP. Their paper follows the majority of previous studies, such as Town (1992) and Linn and Zhu (1997), in using the number of M&A transactions as the measure of historical M&A activity. The UK merger series, covering 1969:I-2003:IV from data published by the Office for National Statistics on a quarterly basis, being publicly announced mergers and acquisitions involving UK companies only. Unlike the US data (1973:I-2003:IV), there was no explicit cut-off bias relating to the value of the transaction, but the deal had to gain de jure control of the acquired company (i.e. controlling interest exceeding 50% of the acquired firm's equity).

While US M&A activity was relatively flat for most of the period up to the mid 1990s it accelerated to peak levels in 1999 and 2000 after which it tapered off before showing the beginnings of another upward trend in 2003. At the beginning of this data range, the M&A activity tapers off from high levels in the late 1960s and early 1970s. In comparison, during this time period of the UK M&A activity there were definite peaks and troughs. A peak occurred during the early 1970s, then fell to lower and stable levels until the late 1990s at which time peaks occurred around 1987-1989, after which it fell again to lower stable levels.

The authors suggest the presence of two distinct sates of merger activity, high and low and employ the Markov regime-switching model that was originally proposed by Hamilton (1989). This approach treats both the sequence of observations and the

sequence of states as (interdependent) random variables, specifies a model which jointly generates the two sequences, and then estimates the model using the observes series while treating the sequence of states as 'missing data'. 'Merger waves' as they understood and modelled them need not display a highly regular periodic pattern. The first order Markov specification implies that the process governing the states displays very little memory. This is in contrast to the alternative notion of M&A activity following a largely predetermined sine-like pattern with regularly spaced peaks. The opening premise is that merger activity follows some sort of mean reverting autoregressive process with the assumption that both the mean and the variance of this process are time-varying and dependent on the states.

The UK time series is a more general validation of their proposed Markov switching merger model and the wave hypothesis in particular. The researchers developed a Probability graph of being in High merger activity state and a Log graph of Merger Series. The Probability plot shows strong evidence that the UK has witnessed two distinct merger waves between 1969 and 2003. The first wave appears to have lasted from 1971:I through to 1973:IV. Due to the inferential issues of the earlier data, it could not be precisely dated for the beginning of the first wave. The inference in fact leaves open to some extent whether the UK started off in a high or low activity state in 1969. However, the data makes it clear that the first wave ended in 1973:IV. The second wave in turn is reliably estimated to have started in 1986:III and ended in 1989:IV. The Probability charts and the Log charts both show UK merger peaks during these two periods.

Their results show little evidence for such a link between the US and the UK merger wave experience; around the time of the great US merger wave following the mid 1990s, or around the time of the second UK merger wave in the late 1980s. The US might have experienced a high state of activity directly prior to 1973, which would have coincided with the first UK merger wave. They conclude that the occurrence of merger waves in the US and in the UK appear to be largely independent. While there does not appear to be any relationship between the US and the UK merger waves of the past thirty years, the UK appeared to experience two merger waves during that period, one in the early 1970s and the other in the late 1980s. The good fit of the model to the UK

data further reinforces the general impression that Markovian parameter switching models provide a good description of aggregate merger series.

Oster (1999) provides additional information on the topic of UK merger waves. Though the focus is US M&A, there is ample citation to indicate that the UK economy has experienced merger waves, adding that merger waves are by no means unique to the United States. A large increase in merger activity occurred in Europe from the mid 1950s to 1970. Indeed, it has been argued that a substantial portion of the increase in British industrial concentration in the 1960s was due to merger activity. In the late 1970s, merger activity again increased. As in the US, mergers in Europe in the 1980s were heavily conglomerate in nature. Examples include L. M. Ericsson's, (Swedish telecommunications) acquisition of Data-Saab and Facit and Hanson Trust, (British conglomerate), that diversified into battery manufacture, footwear, retailing, and food manufacturing during the decade between 1975 and 1985 to increase its sales over sixfold. Many of the European mergers have occurred across country boundaries, adding a new dimension to the ability of mergers to expand the bounds of a firm. Mergers in the 1990s in Europe, again parallel with the US, have reverted to more horizontal firm. In 1997, the UK led European countries in deal worth, with France and Germany following.

Though Oster has provided a brief outline of merger developments in the UK and Europe, the analysis is not comprehensive and only is the briefest description of some of the events that occurred during the above-mentioned periods. From the perspective of merger waves, though, Oster adds another small piece in the puzzle on the subject of UK merger waves.

Competition policy in a number of selected countries and not the occurrence of merger waves or cycles in the economy is the focus of Motta (2004). This work is overtly theoretical in nature rather than an examination of the statistical occurrence of M&A activity in any nominated economy. As with the other countries under discussion, Motta, in referring to the UK, does not actually cite data about the occurrence (let alone the potential) of merger wave patterns in the UK economy but provides a brief history

of competition policy in the UK through several legislative milestones in the 20th Century[1].

Chiplin and Wright (1987) explain that in the mid 1980s the UK press was replete with phrases such as 'Merger Mania', "Merger Mayhem' and 'Bid Fever' as a number of large British companies became the subject of takeover bids. In fact, merger waves are not new to the UK and a pattern of mergers has been evidence in UK manufacturing since 1900, with pronounced peaks in the 1920s, the late 1960s and early 1970s. The evidence indicates that there have been cycles in merger activity in British industry since the beginning of the twentieth century.

In charts (citing Hannah, 1983) the authors' assertion bears apparent relevance. There appeared to be evident peaks in the merger of UK manufacturing during the years 1900, 1922, 1930, 1938, and 1966-74. For four of the five peaks in this period, each peak was larger than the previous peak, with the only exception being the year 1938. The value of the troughs in this chart exhibits a pattern whereby the value of the succeeding troughs appears to be at a higher value than the preceding ones. The value of mergers in UK manufacturing during 1900-1986 shows peaks in the value of mergers in 1900, 1921, 1928, 1962, 1969, 1972 and 1986. In this instance however, the pattern of ever-larger peaks is not as pronounced. The peaks of 1928 and 1972 were lower than the peaks preceding them. There was no pattern to the value of the troughs either with some troughs much lower than others and some troughs higher than others. There were definite wave patterns in merger activity for UK manufacturing with an upward trend.

When the time series data includes other industrial and commercial acquisitions, excluding financial companies, since 1969, the picture is somewhat altered and the authors acknowledge this. During the period 1969-1986:III, the number of acquisitions in the UK appeared to infer a weak wave like pattern; this showed a high trough in the

[1] From the viewpoint of competition policy, Motta discusses the theoretical aspects of market power and welfare; market definitions; collusion and horizontal agreements; horizontal mergers; vertical mergers; and abusive economic practices.

early 1970s, followed by a peak in the mid 1970s, then many years of low troughs to the mid 1980s when the pattern showed signs of progressing or rising to another peak.
This time series data by Chiplin and Wright (1987) has been reproduced (in modified form) in Table 4.3.

Table 4.3 Acquisitions 1969 to 1985 and 1986 (to 3rd Quarter)

Year	No of acquired independent industrial companies	Value of acquired independent industrial companies, £m
1969	742	961
1970	608	954
1971	620	745
1972	931	2337
1973	951	1057
1974	367	459
1975	200	221
1976	242	348
1977	372	730
1978	441	977
1979	414	1438
1980	368	1265
1981	327	882
1982	296	1373
1983	302	1783
1984	396	4253
1985	339	6281
1986/Q3	349	10000

Source: Business Monitor Q M7 (various issues)

The Organization for Economic Cooperation and Development's report (OECD, 1974) was not so much a statistical analysis of merger trends in the UK but rather an overview of the M&A theoretical, policy and market reform perspectives. It reported that by 1970, the share of manufacturing net output held by the largest 100 firms had risen to 50 per cent compared with 26 per cent in 1953, and 16 per cent in 1909. At least in the post war period, the greater part of this increase has been due to increased market concentration.

The OECD also discussed the role of government in the monitoring and approval of mergers and acquisitions in a similar explanation as offered by Chiplin and Wright (1987). A proviso was added that while a large number of mergers were considered by the Department of Prices and Consumer Protection, only a few of these were referred to

the Monopolies Commission. Since assurances were received from the firms involved as to their future behaviour with respect to public interest concerns, the Commission observed that conglomerate mergers were less likely to have anti-competitive effects than horizontal or vertical mergers and that it was, therefore, just as important to assess their effects on efficiency as on competition. It recommended that more complete financial information should be provided by firms undertaking mergers and that the Board of Trade should collect and publish more statistical and general information, especially about the extent and form of any diversification involved.

In citing Steuer (1973) the OECD found that highly concentrated industries also had a high degree of concentration of foreign ownership and that in terms of absolute size, enterprises that engaged in international mergers were large.

During the (short duration) 8-year period 1965-1972, the Mergers Panel considered a number of merger proposals and there was an indication that there were peaks and troughs in merger proposals and that the level of troughs in the cycle appear to be higher as the time period progresses. The number of companies acquired by a foreign investor also exhibited a wave like pattern and therefore the percentage total of these two sets of data also shows a relative wave pattern. This brief time period and the activities therein also align themselves with other research, which confirm the occurrence of a merger wave during the late 1960s and early 1970s. The evidence of US and other country data also show they experienced merger waves and this is partly reflected in the number of foreign acquirers of UK companies (Table 4.4 below). The data indicates troughs in merger activity during the periods 1965, 1966 and1970 and peaks in merger activity during the years 1967-69 and 1971-72. The pattern also appears to be similar in the number of overseas companies that acquired UK companies.

Table 4.4 Analysis of Mergers Considered By UK Mergers Panel

Year	1965	1966	1967	1968	1969	1970	1971	1972	Total
Total	41	58	91	128	120	79	107	112	736
No of overseas acquirers	3	6	9	11	15	10	17	9	80
% Of Total	7	10	10	9	12	13	16	8	11

Source: OECD (1974), Mergers and Competition Policy.

The comment about the period of the late 1960s and early 1970s showing a majority of horizontal mergers is shown in Table 4.5.

Table 4.5 Foreign Direct Investment Mergers Analysed By Type of Integration 1965-72

Type	Number	Per cent
Horizontal	67	84
Vertical	3	4
Diversified	10	12
Total	**80**	**100**

Source: OECD (1974), Mergers and Competition Policy.

The analysis provided by this short time frame strongly indicates that there was a merger wave, which occurred in the UK economy during the period from the late 1960s to the early 1970s, both in terms of local M&A activity and foreign M&A activity into the UK economy.

Weston, Mitchell and Mulherin (2004), though focusing on the US provide some additional information on the state of UK merger activity. They refer to McGowan (1971) who compared merger activity in four countries: the United States, United Kingdom, Australia and France across 20 industries during the period 1950-64. In results that were similar to recent studies from the US, McGowan (1971:238-240) found that merger activity clustered significantly in particular industries during the sample period. There were strong inter-country similarities in the industries with above-average merger activity and the interpretation of the results reflected the view that mergers are an adaptive response to changes in technology and market conditions.

From a general sense and in citing some recent (at that time of 1989 and 1990) financial announcements Cartwright and Cooper (1996) state that in the 1980s, M&A became a worldwide growth industry and that they will continue into the future. Their commentary is interspersed with international and UK merger activity phenomenon. Further confirmation of several merger wave occurrences in the UK were provided through their analysis of trends, patterns and motives. In the UK, the first wave was in the 1920s, the second in the 1960s, the third in the early 1970s, and fourth and the most sustained wave occurred in the 1980s, with the level of activity beginning to fall in the early 1990s. Even though it had fallen, the level of activity continued at a sufficiently

high level that it was no longer appropriate to award it the temporary status of a wave but rather to recognise both M&A and strategic alliances as potentially permanent features of organisational evolution in an increasingly competitive and global market economy.

The authors add that merger mania has not just been confined to the UK but had occurred on a global scale. With reference to cross border deals during 1984-1994:II, there was a boom phenomenon. While the number of M&A deals fell slightly from 1991 to 1993, the value of the deals grew significantly. The mid 1990s was a period when others considered it the mid point of the fifth merger wave. While the USA and the UK have traditionally been the major players in the merger game, they still remain popular targets for investment but recent political and economic events in Russia and China have also made these two countries major targets for foreign investment. In the period between 1984 and 1989, there was a nine-fold increase in the number of cross border acquisitions within Western Europe.

Part of the work by Nelson (1959) is devoted to the comparison of the early US and UK mergers movements. Nelson claims that the US and the UK have experienced almost simultaneous early merger waves. In neither country was there evidence of a merger movement of major proportions before the last decade and one half of the 19th Century. This similarity prompts a look at developments in the UK as clues to causes of US merger movements and is a departure from other literature in that Nelson attributes the UK as the causal factor for US merger waves, something other researchers have not; rather several treating UK merger movements as piecemeal and 'of lesser importance' than US merger movements. According to Nelson the data on the British merger movements were much less detailed, and probably less reliable, than those for the US. Through the review of Macrosty (1907) Nelson claims that Macrosty focussed attention on only the more important mergers, and it was uncertain whether these were fully reported.

Nelson provides a time pattern of mergers in the two countries explaining that both Britain and the US experienced bursts of merger activity at the turn of the 20th Century, preceded in each case by a smaller flurry of merger activity about ten years earlier. In both countries, the consolidation (or amalgamation) was apparently the major form of

merger activity throughout this period. The data used by Nelson (1959) and that of Conant (1901) showed similarities in magnitude and in the timing of the peaks and troughs of merger activity during the period 1875-1904. The data obtained from Macrosty clearly indicates that the level of UK mergers was much lower than that of the US, but the timing of the peaks and troughs were similar in nature to the US pattern.

An important piece of literature is the work of Singh (1971) (covering the period 1948-60) who specifically focused on the UK experience but from a two-pronged approach. One is in reference to the theory of the firm, how takeovers and the stock market operate and the purposes and scope of the study and the other is the examination of mergers and takeovers in UK manufacturing during the period 1948-60. Another compared the characteristics of taken over and non taken over firms while the final portion examined stock market discipline and the theory of the firm. Singh cites Moon (1968) with respect to the complexity of data analysis and how many companies may have been omitted from his research, as they were unquoted manufacturing companies and other smaller concerns, which run into thousands. Several comments from Singh on the theory of the firm and merger movements from Singh were discussed previously in Chapter 2.

From the perspective of merger movements, since the middle 1950s a wave of take-overs historically unprecedented in its scope and its effects, had swept through British industry. Merger waves have occurred in British industry and that this particular take-over movement had been far larger than those which occurred at the turn of the century and in the early 1920s, the major earlier amalgamation movements to have left an imprint on UK industry. In effect Singh acknowledged three merger wave periods in UK industry: the early 1900s, the early 1920s, and the period 1954-60. The steel industry was excluded from his research since it was nationalised at the beginning of the period under review. It then went through a process of denationalisation and reorganisation which made it unsuitable for comparison with the above-mentioned other industries.

Singh's detailed analysis covered the following industries: food, clothing and footwear, drink, electrical engineering and non-electrical engineering. Of the 2,126 firms engaged in manufacturing industry (excluding steel) that were quoted on the UK stock exchanges

in 1954, more than 400 had been acquired by 1960. Of the 100+ largest firms in 1954 in the five industry groups in manufacturing, 10 were taken over during the next 6 years. The number of unquoted manufacturing companies and other smaller concerns acquired in the same periods ran into thousands. He had the foresight to add that the merger movement was far from having run its course. Singh's analysis of M&A broadly covered the following two areas, summarised in Table 4.6.

Table 4.6 Singh's Major Areas of M&A Analysis

Analysis Factor	Explanation
The significance of Quoted companies in Manufacturing	The significance of choosing only companies quoted on the stock exchanges was due to the fact that the average size of a quoted firm in manufacturing (measured in terms of the book value of net assets) was six times that of an unquoted firm, and thirteen times that of a non-exempt private firm. Data from the UK Board of Trade and Central Statistical Office showed the disproportionate significance of quoted public companies in manufacturing. In 1958 quoted public companies accounted for 81% of gross trading profits of all companies in the manufacturing industry as a whole, the proportion ranging from 57% in the clothing and footwear industry to 79% in the food, drink and tobacco and 98% in chemicals and allied trades. By confining his analysis of take-overs and mergers in manufacturing, he isolated for consideration those firms which account for the bulk of profits and assets, and which are typically much larger than other types of firms in this sector of the economy.
The incidence of births and deaths	Over the period 1948-60, the incidence of births and deaths of companies occurred at much the same rate; the total number of quoted firms in manufacturing (excluding steel) was almost the same, namely 1,854 in 1960 compared to 1,844 in 1948. During the sub period of 1954-60 the picture is acutely different. The incidence of deaths was 22.2% compared to the incidence of births at 10.7%, so that of the 2126 firms existing in 1954 only 1,854 lasted until 1960. Another interesting point is that most of the deaths and acquisitions recorded for the period 1948-60 occurred in the sub period 1954-60. This suggests that over the latter time period, a quoted manufacturing firm had a nearly 1 in 4 chance of disappearing from the list and a nearly 1 in 5 chance of being acquired. This represents an unprecedented incidence of disappearance in the UK economy, which reinforces the notion of a significant merger wave.

Singh further acknowledges that there have been and are significant merger movements in UK industry because he adds that the annual death rate during the years 1954-60 was nearly four times the rate recorded for the immediately preceding period 1949-53, and nearly one and half times that for the period around the turn of this century, during which the most important earlier amalgamation movement occurred in the UK.

4.2.2 UK Merger Waves: Reasons For Occurrence

The driving forces cited by the OECD (2001) as leading to this trend of increasing M&A activity during the past decade of the 1990s to early 2000s are summarised as follows: economic recessions or booms can also affect the level of M&A and alliance activity and their focus; technological change encourages both cross-border M&A and strategic alliances; liberalisation and privatisation policies and regulatory reform influence cross-border unions by opening up opportunities and increasing the availability of targets for M&A and alliance partners; industry characteristics, such as growth prospects, market structure and competition, have a strong influence on cross-border M&A and alliances; and M&A activities may have ripple effects, forcing competitors and smaller companies into defensive mergers.

European acquisitions by European firms focused on services (eg. Telecommunications, insurance, commercial banks) and high technology industries (eg. Chemicals, drugs), although the sectoral distribution of European M&A transactions changed over the decade of the 1990s. These also applied specifically to the UK experience as these were the industries that UK companies were involved in during this M&A boom period. The top ten industries accounted for 58% of the value of European acquisitions by European firms.

Table 4.7 Reasons for European Acquisitions

Reason	Explanation
Excess capacity	Excess capacity in banking services in Europe and in the automobile industry worldwide were major factors driving M&A activities and concentration in these industries in Europe.
Telecommunications sector	The telecommunications sector is an important driver for European M&A. The first round of consolidation in this sector was driven by the need to increase scale to compete with American providers, by the importance of reaching new regions and exploiting Europe's large mobile markets (eg. Italy) as a result of EU telecommunications deregulation, by the fact that former state run monopolies were forced to create value be embracing international investors and by the knock on effect of large scale merger deals that forces smaller companies into defensive mergers.
Financial service industry	Europe's financial service industry was also restructuring. Following the introduction of the Euro, governments across the continent sought to create national banking champions through domestic consolidation.

In the first half of the 1990s, most large scale European acquisition in Europe were in insurance, food, transportation equipment, electronic and electrical equipment. In the second half of this decade, European firms turned more towards telecommunications, insurance, chemicals, drugs and commercial banks, led by UK companies. Such M&A occurred due to several reasons, as explained in Table 4.7.

The merger boom of the 1990s was not entirely an exogenous or autonomous event (Singh and Dhumale, 1999). It was in part caused by liberalisation and globalisation, closer integration of world markets through finance and trade, and the creation of the European single market, among other factors. Firms were jockeying for strategic advantages in the new environment through mergers, acquisitions, and other kinds of tie-ups. However, once some large takeovers occurred in a particular industry, this created an oligopolistic disequilibrium in the sense that the market shares of leading firms are disturbed. Consequently, other giants were obliged to follow in order to maintain their share in the world market. The evidence suggests many mergers in this wave were defensive, but that does not stop their overall effect in a number of cases from being welfare reducing to potential reduction in competition. Most of the mergers of the 1990s in Europe were within industry boundaries, albeit often across geographic boundaries (Oster, 1999). The developments of the European political and economic integration appeared to facilitate this process

There does not appear to be anything unusual about the amount of merger activity in the period of the mid 1980s (Chiplin and Wright, 1987). However, there were a number of differences with the earlier periods. First, the average size of acquisition has been much larger in real terms since 1984 than it was in the early 1970s. Measured at 1962 prices, the average size of acquisition rose from under £1 million in 1972 to over £2 million in 1985 and to almost £4 million in the first three quarters of 1986. Secondly, in 1985 and 1986, it was a common occurrence for hostile bids to be made for large companies where the unwilling target had also sometimes been the subject of more than one bid; though the mere occurrence of large bids, of themselves does not create a merger wave, as there have been large bids even during periods which have been described as lulls (troughs) in merger activity.

During this period the acquisition of independent firms accounted for the major proportion of transfers of ownership, both by number and value throughout this period. The impact of large acquisitions during this period on the number of independent companies in the UK has been significant for industry concentration. Of the tope 200 companies, ranked by profitability in 1971-72, around 45 ceased to be independent companies by 1984. Between 1982 and 1986, 137 of the top 1,000 quoted companies in the UK in terms of market value in 1982 were acquired or had merged with other companies, indicating the extent to which large companies have been vulnerable to takeovers. This type of feature is also true of earlier merger waves. Another important reasons has been the perceived strategic motive for large companies to take over other large companies.

Chiplin and Wright (1987) offer further explanations on the nature and motives for mergers on and in the UK economy. Firstly, an acquisition is generally viewed as part of the process of growth of the firm, but also as a means of rationalising the structure of declining industries. Growth can be achieved either through investment in additional new or second hand plant and equipment by the firm (internal growth) or by the acquisition of existing going concerns (external growth). In citing Penrose (1959) the authors explain that a firm will choose between internal and external growth according to which is the most profitable. Therefore, the activity of buying or selling a company is no different from any other transaction.

As with any exchange, the distribution of the gains depends on the state of competition in the market for acquisitions. From this flow the motives for mergers under the generic umbrella of a company seeking growth. The source of gain may be achieved from a number of means: efficient use the assets; technological change to obtain technological economies of scale and scope across a wide spectrum of industries; financial gains so that the financial performance and stability of the new enterprise is improved; information asymmetries could mean that the bidder has information about the target firm obtained through specific company research not available to other market participants and hence not reflected in the current market price of the shares and increased market power, enabling a rise in price relative to cost.

Whatever the motive for acquisition, the transaction takes place within the market for corporate control, which is generally taken to be the right to determine the management of corporate resources. The discipline imposed by the market for corporate control is seen my many as a crucial aspect of the operations of a private enterprise or free (non government controlled) economy. The threat of a takeover, rather than the actual event is seen as the motivating force and existing management is presumed to take steps, by increasing efficiency and profitability to minimise the threat become a reality.

It was during Chiplin and Wright's period of study that a number of developments in UK merger policy occurred. The provision to examine mergers, as part of competition policy, was first introduced in the 1965 Monopolies and Mergers Act and was continued with the subsequent 1973 Fair Trading Act. Only the Secretary of State may actually make a reference, and to do so mergers must satisfy one of two criteria; namely a market share test (fixed at 25%) and an assets test (threshold was raised to £30 million in July 1984).

Other important considerations were highlighted under the discussion of merger policy and policy approaches available to government. Firstly, the pro-merger approach whereby the government (through various means) actively encourages mergers; secondly, the trade-off approach in which the government takes a neutral stance; thirdly, the competitive-structure approach where all mergers having an adverse effect on the competitive structure are prohibited irrespective of any possible efficiency gains; and fourthly, the anti-merger approach where the government bans all mergers involving companies falling outside certain criteria.

However, the four alternatives outlined above miss one important aspect in the competition framework and the role of merger policy in that competition is a dynamic process and not a matter of static equilibrium. Mergers may be seen to be a crucial part of the competitive process and there is always apparent contradiction in merger policy, i.e. any action to restrict merger activity because of possible effects on market power in product markets must make the market for corporate control less competitive.

As pointed out by Utton (2000) and Motta (2004) other notable market influencing developments that have occurred in UK legislation since 1973 have been the

Competition Act (1980), and the Competition Act (1998), which aligned the UK legislation with that of the European Union. Other codifying Acts were the Resale Prices Act (1976) and the Restrictive Trade Practices Acts (1976) and (1977). Further, the 'Tebbit guidelines' of 1984 (though a statement of policy than a change in the law) are cited by Scott, Hviid and Lyons (2006) as the single most important staging post in the transition to a competition-based test and had a significant impact on M&A activity and continue to form the basis of UK policy on referrals to the Competition Commission (formerly the MMC).

Weston, Mitchell and Mulherin (2004) add that industries and firms in countries throughout the world have experienced the pressures of the increased intensity of competitive forces. Some have argued that relaxed government policies in the early 1980s stimulated and caused the M&A wave in the United States. However, anti-merger laws and regulations were clearly increased in the UK in the 1980s, yet they too experienced a merger boom. Also, the policies of the EU have tightened anti-merger regulations since the 1980s and the EU has also experienced a boom in merger activity. Nevertheless, M&A activity increased in the UK and in all of Europe in the face of tighter legal restraints. This may suggest that M&A activity is determined mainly by underlying economic and financial forces.

An enabling climate contributed to the phenomenon of merger waves (Cartwright & Cooper, 1996) and the reasons are summarised in Table 4.8.

Table 4.8 Climactic Contributions to M&A

Climactic Reason	Explanation
Changing Market Conditions	During the 1980s and 1990s, many organizations had found themselves facing rapidly changing market conditions and new and often unexpected global markets had opened up at that time. One of these was the establishment of the Single European Market in 1992. These conditions stimulated mergers, acquisitions and joint venture activities as the need to respond quickly meant that strategic acquisitions and alliances had been the only expedient growth option available. Strategic acquisitions and alliances also provided a convenient means of eliminating competition and controlling markets.
Increased Availability of Capital	The availability of capital and interest rates affected the level of M&A activity. During the 1980s and the 1990s, there was substantial borrowing capacity and low worldwide interest rates.
More Companies for Sale	In recent years several factors have led to an increasing pool of companies that are available for sale and with an increasing number of buyers. Firstly, as the successful entrepreneurs of the post-war years reached retirement age, an increasing number of companies have come

Climactic Reason	Explanation
	into the market, either because they have grown so large to the extent that they cannot continue as family businesses or because there is no natural successor within the family or no one in the family is interested in continuing a tradition set up by the founder of the business. Secondly, the 1980s was a decade of considerable change. Many organizations that failed to respond to recognise the need to change lost market share or competitive edge and were acquired. Many small businesses were severely affected by the high interest rates of 1989-91 and this crippled their cash flows. Finally, social, political and economic changes in Europe generated a considerable number of partners that were willing to merge or to be taken over, especially those from the recently liberated Eastern European countries, which needed massive injections of capital to be able to transform into dynamic modern enterprises.
Easing of Regulations	The decade of the 1980s was one of the enterprise and risk takers with the UK government adopting a minimal intervention policy in corporate affairs. The Mergers and Monopolies Commission was considered by many managers to lack any effective power to actually prevent the mega mergers of this decade and in any event, was only consulted in the case of these mega mergers and not the others that occurred.
The Need to Share Risk	Where industries are capital intensive and in areas where the cost of research and new product development is exorbitant for one enterprise, organizations have invariably combined their skills with others in response to the need to share the risk and cost of technology.
The Existence of Complex Indivisible Problems	Many organizations face situations where their problems may be too big for them to resolve individually. These are usually of a technological nature that are usually without precedent and are considered bigger than one organization to be able to resolve. Due to this organizations have felt that it would be prudent and commercially astute to combine their skills and expertise with others, either permanently (merger or acquisition) or temporarily (strategic alliance).

Merger motives are considered to be rational financial and strategic alliances that are made in the best interests of the organizations concerned and therefore for their shareholders. While the literature on M&A tends to delineate between financial or value-maximising motives and managerial or non-value-maximising motives, in reality, the two are very closely aligned. Mergers are considered to be initiated by financial or value-maximising motives when the main objective is to increase the wealth of shareholders and financial synergy through economies of scale, economies of scope, transfer of knowledge and increased control. Managerial or non-value-maximising motives relate to mergers which occur primarily for other strategic reasons, such as to increase market share, management prestige, reduce uncertainty and risk and restore market confidence or maybe even as a takeover defence or a means of protecting profits from taxation. There may also be unrecognised psychological motives behind a merger

decision, which may not be so readily apparent as several time periods after the event occurred.

Through the study of US and UK mergers by Nelson (1959) provided the following reasons:

- Merger movements in the US tended to occur when the growth of the general economy, especially the growth of industries of high merger activity, was characterised by acceleration rather than retardation.
- The annual percentage rate of growth in industrial production between the US and the UK throughout the period 1870-1925 shows that British industrial growth was substantially lower than that of the US.
- In both countries, the three overlapping decades 1885-95, 1890-1900, and 1895-1905 were characterised by increasing rates of industrial growth. It was not until well after the merger movements in both countries that retardation was resumed.
- The level of acceleration and retardation of industrial growth in various industrial sectors of the British economy exhibit lack of any uniformity in that some sectors showed growth while others did not appear to do so.
- The industrial distribution of UK merger activity also showed that disappearances during the period 1887-1906 varied among industrial sectors. More companies disappeared in the textile industry than in the chemicals and mineral extraction industries and firm disappearance was much lower in the tobacco and liquor and beer industries than others.
- The level of concentration in the UK transportation sector was different to that of the US. The patterns of transportation growth between the two countries was also quite different. By 1900, the British railway network had long been completed, while that of the US was only reaching full development. The levels and rate of growth also differed since the US had considerably greater landmass to extend than did Britain. The development of the UK railway was not a cause for the need of firms to merge during this period.
- The role of tariffs appears to have taken different courses in the two countries. British industry had operated under a policy of free trade for decades and continued to do so through the period of high merger activity. The US had long been

operating under a policy of protection, enhanced in the late 1800s by a series of almost uninterrupted tariff increases from 1883 to 1897. It was not until 1913 that a reduction in tariffs was enacted. This evidence points to the observation that merger activity occurred in a similar manner between the two countries albeit to a much lesser extent in raw number terms in the UK.

In addition to the reasons mentioned above, Nelson provides a couple of specifically detailed causes/reasons for mergers.

1. Mergers and the UK Capital Market and Relationship to Merger Movements

An examination was conducted to ascertain the reasons and timing for mergers and merger waves in the UK economy with respect to the capital market and its relationship to merger waves. No series could be found on the volume of trading on the organisations British securities exchanges, or on other magnitudes relating to their ability to handle the large securities issues accompanying the wave of amalgamations at the end of the 19th Century. On the other hand, Nelson points several historical reasons why the British capital market had attained maturity well before the US. This was because Britain had a head start in general industrial growth, with the necessary development of financial institutions for gathering and allocating capital. Britain exported large amounts of capital to the US in the middle and late 19th Century and this reflected an organised system of marshalling capital. Britain was also the financial centre of a vast empire and the country nurtured the growth of financial systems well beyond what was needed for purely domestic purposes. The UK capital market was in a position at the end of the 19th Century to support a large merger wave. It is pointed out that the early developments of the British capital market tends to rule it out as an immediate cause of the merger movement, and in this way the UK merger movement differs from that of the US.

An examination of the relationship between mergers and stock prices indicates that British merger activity responded in a positive manner to capital market conditions. The number of firms disappearing annually was correlated into amalgamations with the securities quotation index and industrial production index for the 19-year period of high British merger activity of 1886-1904 and compared to US quarterly data during the

period 1895-1904. The correlation coefficients indicated that British merger activity was slightly more responsive to changes in stock prices than to changes in industrial production. However, since the correlation between stock prices and industrial production is very high, the separate effect of these two variables could not be demonstrated as clearly for the UK as it was for the US. Generally, the UK experience was similar to that of the US, and Nelson's findings tend to support the hypothesis that the capital market played an important part in the early merger movement in this country.

2. UK Antitrust Legislation and Relationship to Merger Movements

The major developments in English law bearing on the freedom and size of corporations was the granting of limited liability to ordinary trading and manufacturing companies by act of Parliament, effectively abolishing many of the regulatory provisions of earlier corporation laws.

The English Limited Liability Act was passed in 1855, and repealed and further liberalised in the Joint Stock Companies Act of 1856. These laws were followed almost immediately by a large increase in the number of incorporations, from 966 unlimited liability companies in 1844-55 to 2,479 limited liability companies in 1856-62. There was an unbroken increase in incorporations from the 1860s into the 1930s, where the data ends. Nelson also points out that the forty-year lag between the Acts of 1855-56 and the turn of the 20th Century merger movements does not provide the concrete evidence these Acts caused the merger wave. There were further major liberalisations of the law that would drastically ease the regulation of corporations.

From 1856 till the early 1890s (shortly before the UK merger wave) there were important qualitative changes in the use of limited liability charters. In the years immediately following the 1855-56 Acts, high par value shares were commonly issued, partially paid up, and with promises not to call for the remainder of the subscription. These arrangements, usually only with a few investors, largely continued with the unlimited liability partnership organization that had been the traditional make up of British business. In the 1880s the more common form of limited liability share arrangements was low par value, fully paid up, and many investors. The investor's

liability was truly limited to the amount of the original investment and ownership was more fully divorced from control.

According to Weston, Mitchell and Mulherin (2004), the Monopolies and Mergers Act of 1965 created the Monopolies and Mergers Commission (MMC) (which subsequently in 1999 changed its name to the Competition Commission). From the perspective of British corporate law experience, the evidence is not sufficient to state that changes to laws were directly responsible for all of UK merger activity, even though there is some indication that there were relationships.

Comprehensive analysis was provided by Singh (1971) on the reasons and causes of deaths of firms during the period 1948-60 and 1954-60. The distinction between acquisitions and mergers is purely a legal one. When company A acquires over 50 percent of the equity of company B, B is then considered as having been acquired by A. A merger however, between A and B is deemed to occur when the two companies amalgamate to form a new legal entity, say company C. Therefore the distinction between acquisition and merger is important because the implications of the amalgamation involves the creation of a new legal entity in place of two or more existing ones. This is an arbitrary distinction from an economic perspective, since the choice of the legal form has little to do with broader economic considerations.

From the context of studying actual numbers, the statistics is pronounced (Singh, 1971) because in the case of company A being taken over by company B, only one company (A) is regarding as dying whereas if A and B merger, both are considered to die or disappear, although both cannot be regarded as having been forced out of existence by a more successful or bigger company. Generally the literature considers this problem by regarding the smaller of the two companies involved in a merger as being essentially an acquisition of the larger, which has its merits. Singh's main points are summarised in Table 4.9. Though Singh's research focused on a relatively brief period of time, he does show that there was a merger wave in UK manufacturing industry during the period of the late 1950s as well as referring to the specific merger movements at the start of the 20th Century, as well as the one in the 1920s. The merger waves of the late 1960s, the late 1980s or the late 1990s occurred after the completion of his research.

Table 4.9 Singh's Births and Deaths of Companies

Disappearance	Reason
Major cause of death	Acquisitions were by far the most frequent cause of death in each industry in both periods (1948-60 and 1954-60). There appeared to be a merger wave in the sub period 1954-60, where acquisitions accounted for over 75% of the death of firms (compared to 9.5 % caused by liquidations). The two most important reasons for this disappearance were first, the decrease in the incidence of liquidation for quoted companies had to a large extent been the result of the much greater stability in the aggregate economic activity in the post war period than before it and second, with the significant growth and dispersal of share ownership takeover of one firm by another through the acquisition of shares had become much more feasible than previously.
Industrial concentration	For all industries combined, of the 488 acquisitions and mergers in the period 1948-60, 290 involved amalgamations within the same industry group, hence increasing the level of concentration in that industry. Apart from the absence in the UK of anti trust laws, which would have undoubtedly prohibited many of the previously occurring M&A activities, there had also been a British government attitude of benevolent approval towards M&A, if not positive government encouragement, of the merger movement since the middle 1950s. Successive governments (on both sides of the political spectrum) have viewed mergers as important instruments in rationalising British industry, and reorganising it along more efficient lines, and hence ultimately more internationally competitive. It has also been suggested that not only was there a large increase in the number of take-overs in the period 1959-60 relative to the period 1955-58, but that there was also probably a qualitative change in the kind of company taken over.
Size of the firm and death of the firm	There was a complex but broadly speaking inverse relationship between size and probability of acquisition. For example, among the large firms, the probability of acquisition declined sharply with an increase in firm size. In effect, there was a distinct non-linearity in the relationship between the firm size and probability of acquisition. Up to a certain level of firm size, and in particular for the small and medium-sized firms, the probability of acquisition for the typical firm remains much the same or declines relatively moderately with an increase in size. However, even for larger firms, the probability of acquisition is appreciably smaller and declines monotonically and much more sharply with an increase in firm size. Although the figures for the individual industries are inevitably more heterogeneous, since the number of firms involved in the various size-classes are fewer, they reveal an essentially similar pattern in most of the industries.

4.2.3 Other Supportive Literature

In various parts of this chapter reference has been made to merger trends, data and statistical analysis performed by researchers and where this has been integral to the theme of the research it has been cited. Examples of this type of approach have been on the work of Chiplin and Wright (1987) in which, for example, the journal *British Business* (1986) was quoted from statistical data from Macrosty (1907) and others.

Other supportive research, though not fully utilised is briefly outlined at this point. As discussed under Section 4.2.1, Motta (2004) rather than providing M&A data for the UK has reviewed trends and developments in competition policy in the UK. Additionally, however, the majority of this research is a treatise on competition policy and its ramifications with a focus on European Union competition policy and how the legislative reforms of 1998 in the UK aligned the new UK competition policy as designed by the Competition Act 1998 with the European Unions'. Moon (1968) is cited by Singh (1971), in Singh's outline of the parameters for his research, the complexity of data analysis and how many companies may have been omitted (potentially thousands) from his research, as they were unquoted manufacturing companies and other smaller concerns.

4.3 CONCLUSION

Literature on the UK economy strongly indicates that there have been five merger waves in UK industry since the latter part of the 19th Century. These major and minor waves occurred around the early 1900's, the mid to late 1920s, the mid to late 1950s, the late 1960s and early 1970s, the late 1980s, the late 1990s to the early 2000s. Previous scholars have also provided ample data and its review and presented strong evidence of periodic merger wave activity (peak and troughs) in the UK. It was also revealed in this chapter that the UK possessed unique economic and political developments, which gave rise to the reasons and causes for merger waves in its economy.

Some of the important outcomes from this chapter are that the UK was the first country to industrialise and has maintained a relatively open economy throughout its industrial development. In this capacity it played a leading role in the development of its industrial concentration (through merger activity) as well as influencing (through its role as a major economy in Europe and the world) the cross border merger activity in the European Union. This chapter has also shown that scholars have identified the UK capital market and anti-trust legislation has played an important role in UK merger movements. The outcomes from this chapter are discussed and tested further through the testing of propositions by empirical analysis in Chapters 7.

CHAPTER 5 THE AUSTRALIAN LITERATURE

5.1 INTRODUCTION

Australia is a relatively young industrialised country similar in size to the US but with a population of only 20 million mainly located across the eastern states and another main south west coast population. Australia's industrial base has been concentrated in a few major centres mainly across the eastern states, where the bulk of its economic activity occurs. Considerable mining and exploration occurs in the northwest.

Australia's industrial development occurred over the past 200 years along a piecemeal process. Six separate colonies (Western Australia, South Australia, Victoria, Tasmania, New South Wales and Queensland) that previously directly reported to Great Britain united formed the Commonwealth of Australia in 1901, with other self-governing territories that comprise the rest of the commonwealth. Prior to federation each state and territory developed at its own pace. There was cooperation and there was competition as to who could attract the most viable forms (and amounts) of capital from the UK. Prior to World War II the UK was the major source of capital; afterwards it was the US. More recently, Australia has attracted foreign capital from a variety of sources such as Japan, Germany, France, Taiwan, as well as the US and the UK. Through economic development (combined with M&A activity), Australia has several world leading enterprises.

Several important works on Australian M&A activity have been published during the past 50 years and the empirical research is limited to the period since the end of World War II. The experience of Australia research into M&A is one of less rigour than the US; for instance, the Australian Stock Exchange has been keeping various levels of records on the reasons for firm disappearance since 1926. However, through considerable effort, information has been obtained to allow sufficient research into Australian merger wave phenomenon.

5.2 LITERATURE ON AUSTRALIAN M&A WAVES

The extent of the research and that preceding it that has been undertaken on M&A, while useful, appear to be patchwork in nature (BIE, 1990) and include the period 1946-1959 of Bushnell (1961), the period 1959-1970 by Stewart (1977); the period 1972-1985 by Bishop, Dodd and Officer (1987); the period 1960-1985 by Treasury (1986); and period studies covering 1946-1986 by the Bureau of Industry Economics (BIE, 1990). The analysis conducted by the BIE also included long time series data and data covering the period 1974-1986 by The Reserve Bank of Australia and the period 1983-1988 from the former National Companies and Securities Commission (NCSC). According to the BIE, MacDougall and Round (1986) also undertook a study of mergers but no data on trends on M&A activity were included. The BIE stated further that the RBA survey may indicate that takeovers of private companies could account for half the total number of takeovers, without research conducted to test the veracity of this claim.

While it seems the period since World War II has been 'covered' through M&A research, in fact the Australian studies under discussion used different criteria for measuring M&A activity, resulting in patchwork outcomes rather than a comprehensive study on mergers.

5.2.1 Australian Merger Wave Literature: Timing, Occurrence and Nature

The Australian literature revealed there have been four main types in which merger data has been researched. These are firstly explained and then summarised in the Table 5.1 below. The first method has been one of individual merger study employed by Bushnell (1961), Doctoroff (1972), Stewart (1977), Bishop, Dodd and Officer (1987) and Brailsford and Knights (1998) which involved the collation of data on the basis of individual mergers aggregated over a time period. This data was obtained from various sources including Sydney and Melbourne Stock Exchanges and their publications, *Financial Review* newspaper, *Jobson's Investment Digest*, questionnaires mailed to individual companies on the Sydney Stock Exchange takeover list and Corporate Advisor. This method also covered incidence, spread, methods and industry

concentration in relation to merger activity. The work of Doctoroff (1972) was not a separate study but the analysis of the same data employed by Bushnell (1961).
The OECD (1984) employed the second method which was that of data obtained from the Trade Practices Commission on mergers granted and not granted by it during the period in question. This work by the OECD was brief as it was a compilation and summary of merger activity across a number of member countries in the developed world. The OECD was the only organization to utilise this method of data collection and analysis.

The third method used by Treasury (1986) and was obtained from the Sydney Stock Exchange Annual Reports and from the Australian Graduate School of Management. This data was collected and analysed on takeover bids of listed companies. Treasury (1986) was the only organization to use this method of data collection and analysis.

Finally, the fourth method in data collection was of the examination of companies delisted from the ASX due to their takeover by a listed or unlisted company. McCarthy (1973) used this method but the data was restricted to the Sydney Stock Exchange. The Bureau of Industry Economics (1990) generated a series of company disappearances due to takeovers relying on the data from the ASX listing obtained from STATEX. The BIE went further in its research by comparing the outcomes of its data sets with those of Bushnell, Stewart, the Reserve Bank and NCSC to augment its own collection.

Further literature provide data and some examine mergers from a different perspective. Wickramanayake (1994) provides an empirical analysis (without any data) on takeover activity and share market indices in Australia using annual returns for the period 1950-1986 and 1960-1985 to investigate how the share market reacts to takeover activity. Modelling was undertaken on the relationship between takeovers and the All Ordinaries Index and the All Ordinaries Accumulation Index. Though not specifically an examination of merger trends and their reasons, this research provides interesting outcomes. Brakman, Garretsen and Van Marrewijk (2005) examine the reasons and timing of mergers from the cross border perspective during the period 1987-2001. Their first claim is an efficiency motive (efficiency gains arise because takeovers increase synergy between firms that increase economies of scale or scope) and the second is a

strategic motive (M&A might change the market structure and as such have an impact on firm profits, which might even be reduced to zero). They further cite Salant et al. (1983) in which merger initially increases industry concentration and thereby industry profits. However, in a Cournot setting, competitors react by increasing output, which harms the firms involved in the merger and the final result is that the merger has not effect whatsoever.

Considerable literature accentuates the complexity of the subject and several different methods of analysing mergers have been conducted with different time periods selected upon which the research has been conducted. For an appreciation of the understanding of this topic, these variations in methods and data sets make it difficult to compare and contrast the previous research. Hence this research has overcome this issue by the adoption of one method of data collation and analysis and extension of the topic into the reasons and motives for mergers and explanation of the wave phenomenon. The four methods previously employed in M&A research are summarised below.

Table 5.1 Summary and Analysis of M&A Data Sources

Data Source	**Data Period**	**Author**	**Limitations of Data**
Main sources of data were the Sydney and Melbourne Stock Exchanges and their publications. Additional information was obtained from company reports and prospectuses, the Victorian Company Registrar's Office, the *Australian Financial Review*, and other newspapers. The data assembled by Bushnell was on the basis of individual mergers aggregated on a yearly basis for the period under review. It covered incidence, spread, methods and industry distribution.	1947 to 1959	Bushnell 1961	This study is based on public sources (larger mergers and public companies) and little data on proprietary companies and unincorporated firms was available, mergers for those firms was only found when a public company was also involved. Since a substantial part of Australian business is conducted by proprietary companies, (including many large firms), this omission could be important. Even for public companies the data was incomplete as there was almost no information available on public companies not listed on any ASX. Also public companies do not always reveal take-overs of proprietary companies and unincorporated firms, especially when the target is small. The data was biased in favour of mergers that took place in the most recent years covered by the study. While Bushnell's work is considered as one of the foremost in Australian M&A research the time period under examination was very brief, with implications for analysis and outcomes.
Same data sources as Bushnell.	1947 to 1959	Doctoroff 1972 citing Bushnell 1961	Same limitation issues as those applicable to Bushnell since Doctoroff relied upon Bushnell's data for his commentary and did not undertake his own research. Doctoroff's work was not the collection, collation and analysis of sourced data but the use of Bushnell's data for his analysis of M&A activity.
Companies on list of Sydney Stock Exchange and removed after takeover.	1965 to 1972	McCarthy 1973	This research specifically focused on the industrial and mining sector of the Sydney Stock Exchange; other exchanges and other sectors of the economy were not included; as a result the numbers are relatively small. Private and unlisted companies

Data Source	Data Period	Author	Limitations of Data
This data comprises ASX listed companies that were delisted due to their takeover by a listed or unlisted company.			were not included, therefore a considerable portion of the M&A population was excluded. One aspect was the level of control by overseas corporations and the implications on government policy. Since listed companies and removal were detailed for the period and a merger rate could have been developed from the data used in Appendix 1 of this paper but was not done so and interesting results could have been obtained.
Primary source of the data was from Australian Financial Review. Data was also sourced from Jobson's Investment Digest and the Sydney Stock Exchange Gazette. The research was based on the review of individual mergers obtained from the above-mentioned sources.	1960 to 1970	Stewart 1977	Though detailed quantitative data was obtained, only those mergers that represented the disappearance of an independent decision-making enterprise were included, and any purchases of assets, sections or divisions of a company were excluded. Another limitation was the brief period under review. Longer time periods or additional of research could have been undertaken ten years after the first. This research confirmed the notion that merger activity declined from the early to mid 1960s and only commenced an upswing from the mid 1960s onwards, reflected in the mining boom; so a potential issue is whether the research followed the boom or the research identified this boom
Mergers considered by the Trade Practices Commission. The research was based on data from the TPC on the mergers granted and not granted by it during the period.	1974 to 1977	OECD 1984	This covered a very brief time period. The number of merger authorisations applications lodged annually fell considerably after the 1977 amendment to the Trade Practices Act. The data covered mergers granted and not granted as well as sub categories according to merger type.
For the period 1959/60 to 1971/72, data was obtained from the Sydney Stock Exchange Annual Report 1972; for the period 1972/73 onwards data was sourced from the Australian Graduate School of Management. The data used in this study was takeover bids of listed companies obtained from the sources detailed above.	1959/60 to 1984/85	Treasury 1986	Different data sources creates problems in interpretation and integration into one continuous data set; reinforced by the fact that a large percentage of the merger population was excluded as the data only covered listed companies. Since the earlier period only includes data from the Sydney Stock Exchange, a sizeable number of other companies on other Australian Stock Exchanges would have been excluded from the analysis. And the composition of the AGSM data is not provided as well as the composition of the data for the earlier period. The information for years 1971 to 1974 excluded listed companies with debentures and loan capital only. This is insufficient explanation and this omission and also raises further questions in relation to other data characteristics.
The Centre for Independent Studies (CIS) Takeover Database provided the data. This was derived from a large set of takeover offers (individual merger study) irrespective of outcome. This database was compiled from: the Sydney Stock Exchange publication *Current Offers* (which listed all offers for ordinary shares of listed firms); back issues of the *Australian Financial Review* and other newspapers and periodicals; and a questionnaire mailed to individual companies on the Sydney Stock Exchange takeover list for whom data elements had been found.	1972 to 1985	Bishop, Dodd & Officer 1987	The authors acknowledge what was difficult to obtain were the outcomes of the offer and the date at which that outcome was publicly known and therefore, some estimates had to be made. The sample included offers of listed target firms as well as offers by listed bidders for unlisted target firms. Therefore some transactions were included where the bidder or the target firm were not listed. The use of three different data sources may create issues interpretation and in integration. The period of analysis covered thirteen years and not fourteen years as the final year was only half a year of data. Though somewhat longer than other research periods it is a relatively short research period of time.

Data Source	Data Period	Author	Limitations of Data
The BIE generated a data series of company disappearances due to takeover. This series was based on Stock Exchange data showing delisted public companies and removed from ASX listing (STATEX, 1987). The BIE de-listings were also compared with other sources: it relied on the data sets compiled by Bushnell, Stewart, Reserve Bank, Treasury and the NCSC to augments its own data set creation.	1946 to 1986	Bureau of Industry Economics 1990	By bringing together the results of a number of studies that used proxies to provide an indication of trends and adding other data where possible, the BIE generated its own data stream and established a comprehensively broad picture of merger activity in Australia from 1946 to 1986 through company disappearances due to takeover activity. The main (and patchwork) studies that the BIE referred to were Bushnell (1961), Stewart (1977), Bishop, Dodd and Officer (1987), Treasury (1986), Reserve Bank (1974-1986), and NCSC (1988). A study of mergers was undertaken by McDougall and Round (1986) but the BIE stated no data on trends in merger activity were included. The BIE measure is narrower than those of Bushnell, Stewart and the Reserve Bank as it includes only publicly listed companies (only part of the merger universe). The BIE concurs with the issues of using different data sets, their characteristics, analysis and outcomes, a common limitation in all of the data sets created or compiled by the various studies. The BIE also suggests further comprehensive long-term analysis of mergers in Australia to overcome the patchwork approach to date.
For 1981-1992 data was obtained from the Australian Stock Exchange. For 1974-1985 data was obtained from the Centre of Independent Studies (and used by Bishop, Dodd and Officer 1987). Finally, data was obtained from Corporate Advisor, a commercial organization that maintained a database on Australian takeover activity	1981 to 1992	Brailsford & Knights 1998	Differently sourced data sets possess compatibility issues. Twelve years is a relatively brief period of time to examine merger waves. Only successful takeovers were examined, which infers that a large number of potential takeovers were not considered. Each takeover record was matched against the IBIS database using company names; takeovers were eliminated if neither the bidder nor target resulted in a match. The process reduced the sample and firms were excluded if there was a lack of associated financial data. The period of the 1980s was already defined as a merger decade. The results may already confirm what was already widely accepted about this period in merger activity.
Data was obtained from the Australian Stock Exchange, Reserve Bank of Australia, Australian Bureau of Statistics, research publications, ASX annual reports, The Melbourne Institute, UK Office of National Statistics and Federal Trade Commission. Companies that were delisted from the ASX due to merger/takeover were considered; a merger rate was determined by analysing delisted companies as a ratio of total ASX listings. Several variables on the merger rate were examined (data obtained from the RBA and ABS and Melbourne Institute) as well as UK and US influence on Australian merger cycle.	1949 to 2007	Thesis Author 2008	The data was not in one continuous stream and had to be collated from different sources; and this applied to the Australian, UK and US data. Data from the Melbourne Institute for Australian business cycles was only available from 1960-2006, limiting the analysis between the business cycle and the merger rate from 1960 onwards, instead of from 1949 onwards. ASX data was available from 1929 till June 1999 in hard copy and significant amounts of time and effort were required in collating, reviewing and finally analysing the data to obtain one continuous data stream from 1949 to 2007. Once the ASX ceased publishing its delisted book, data was obtained from the ASX journal, Shares magazine, ASX annual reports, Delisted.com, and other publications so as to fill in the gaps and ensure consistency of the data. This was a monumental task. This may also be considered a narrow measure of M&A activity as it includes only publicly listed companies (only part of the merger universe).

This table is a compilation of the different types of research and different time periods each researcher conducted on Australian mergers since the Second World War. The author's research method and data sets have been included in this table to provide explanation and to differentiate it from the preceding research. Besides the data period the table succinctly explains the data sources and how each researcher conducted their analysis on merger activity. The limitations of the data have also been explained. This incorporates comments on the limitations from the previous researchers and comments added by the author.

Previous researchers provide some outcomes on merger reasons, motives and waves. Bushnell (1961) provides some explanation for the reasons and timing of Australian mergers. One being that of monopoly rewards of reduced competition but this is a secondary reason and there are many other reasons (at the time of the 1950s). The reasons offered by Bushnell are: personal income tax reduction of the owners of business through a merger transaction; reduction in private company tax through listing on the stock exchange; the reduction of potential death duties and estate taxes by the owners of shares; obtaining needed qualified managers through an acquisition or merger; the ease or difficulty in obtaining new funds affects the occurrence of mergers; similarly the carry forward of losses for tax purposes; the opportunity for economies of large scale operations; the opportunity for operation spread to other states and markets; diversification and empire building; vertical integration; acquisition of facilities for expansion; and the opportunities provided to reduce competition through an acquisition.

Bushnell adds that though Australia had the Australian Industries Preservation Act of 1906 (similar to the US Sherman Act of 1890), it was severely restricted in interpretation in 1910 and the Act fell into disuse; and that not one case had ever been brought to the courts. There were other important outcomes of Bushnell's work in that differences were clarified between the Australian and US economies with respect to merger activity. Firstly, the smaller Australian economy could not support nearly as many firms as the US and secondly Australia did not experience the ruthless profit making tactics that prevailed in the US in the 19th Century. Unlike the UK Australia had developed one form of monopolistic control, being the establishment of Commonwealth owned businesses as competitors. The Melbourne Stock Exchange in

1956 also circulated to listed companies an outline of procedures for takeover bids, thereby providing some level of reporting and guidance to the market.

Doctoroff (1972) had used Bushnell's data concluding that Australian mergers have grown and that the critical period in Bushnell's period was 1947-59 because the number of mergers grew rapidly and larger enterprises began to be involved in mergers. Mergers affected all industries during this period and especially the manufacturing sector, and that the reason for the growth of this sector was due to the incidence of merger activity. Other factors that played a role were the establishment of tariffs to protect Australian industry and the activities of managers involved in the merger game. During this time conglomerate mergers also occurred to include concentric and speculative mergers. This period of Australian merger activity was similar to that of the UK and the USA.

Closely following the work of Doctoroff was that of McCarthy (1973), who approached merger activity from the perspective of the level of control of Australian companies by overseas companies. During the period 1965-1972 companies that were taken over by other listed companies showed an increasing trend, however the incidence of takeovers by unlisted companies showed a strong increase in the last three years of the study, indicating an importance in Australia of unlisted foreign controlled subsidiaries. The increased level of merger activity in the UK and the USA during the late 1960s was also reflected in increased Australian merger activity as this was also driven by foreign predators of Australian companies.

Further study on Australian company mergers covering the period 1960-70 was conducted by Stewart (1977). One of the findings of this work was that peaks and trough in merger activity showed a close relationship with general business conditions prevailing at that time. However there were large differences in some quarters, explained by the fact that there was the disappearance of a few but very large companies. During this period also, the average value of firms taken over by foreign companies remained constant but the average purchase price paid in domestic mergers doubled. And this occurred during a period when the wholesale price index rose by about 10 percent. During the early part of this period the tightening of financial

conditions (and credit squeeze) and tax policy played a role in the level of mergers that occurred. Firstly the credit squeeze reduced the net present value of firms and increased the incentive of foreign firms to acquire them. Secondly the tax policy left subsidiaries of foreign firms in a better position in relation to their Australian counterparts, to maximise their profit retention. Another factor in the equation was the rising tide of Australian nationalism, which may have deterred some foreign takeovers bidders.

Stewart's work is important as it provides some relevant information on the characteristics of mergers during that decade. Market extension types of mergers declined steadily in importance both for international and domestic mergers. During this period foreign companies gained a foothold in the Australian market in the early 1960s and then consolidated through acquisitions. The level of horizontal mergers declined during this period while the level of vertical mergers increased among international mergers as did product extension types of mergers. Finally, unrelated mergers also increased during the early part of the period. The merger movement was most active during the latter part of this decade and coincided with the late 1960s merger boom associated with the mining boom and considerable foreign involvement in merger activity. Stewart also reviewed the type of financing employed in the merger transactions and the development of the Australian capital market.

The main outcome of the OECD (1984) three year Australian merger research period 1974-77 was the 1977 legislative changes through the amendments to the Trade Practices Act (TPA) and the resultant fall in the number of annual merger authorisations subsequent to these changes. This research lent credibility to the view that legislative changes can have an impact on merger activity.

The Department of Treasury (1986) reviewed general economic issues associated with company takeovers and was written at a time when the federal government was about to enact significant changes to taxation and foreign exchange controls. Treasury's timeframe was 1959/60 to 1984/85. Through its analysis of takeover bids as a proportion of listed companies, there was evidence of peak merger activity in 1971/72, 1972/73, 1979/80 and 1980/81 and in 1983/84 and 1984/85. Evidence shows that takeovers were more numerous in the 1970s and 1980s than in the decade of the 1960s.

While there was no clear pattern in the historical data, there is a general wave trend, with peaks and troughs in takeover bids.

Through their review of the period 1972-85 Bishop, Dodd and Officer's (1987) work (closely following that of McDougall and Round, 1986) focused on whether takeovers actually add wealth to the combined entities and to the shareholders of bidder and target firms and finally, what the implications might be for competition policy and industry concentration. Bishop et al. (1987) emphasise that legislation governing takeovers had increased significantly over the prior twenty years and the discussions leading to amendments to the Trade Practices Act. Rather, their first major objective was to establish a comprehensive database of takeover activity in Australia and secondly, to use this database to analyse the effects of takeovers on shareholders. Though there's no mention of wave activity (and reasons) an examination of their data shows merger wave peaks in the early 1970s, late 1970s and mid 1980s; with troughs in the mid 1970s, and early 1980s

The BIE (1990) collated its own ASX data from publicly listed firm disappearance covering the period 1946-1987. It also collated data from other sources and reviewed those from Bushnell (1961) and Stewart (1977) though it also analysed data from Treasury (1986), Reserve Bank (1974-86) and NCSC (1986) and Bishop et al. (1987). The BIE also referred to the McDougall and Round (1986) merger study but added that no data trends in merger activity were included in that one. The BIE observed that takeover activity rose in the 1950s until it reached a peak in 1959, after which it declined in the early 1960s reaching a trough in 1965. From this time onwards there was an increasing incidence of merger activity till the peak of 1971 (after a minor downturn in 1969). After 1971 the incidence of merger activity declined to a trough in 1974, where it remained at similar low levels for the next one-two years after it began increasing achieving a peak in 1980. There was a slight downturn in 1982 after which merger activity continued to increase till 1986. These peaks in Australian merger activity coincided with those of the UK and the USA of the late 1950s, early 1970s and late 1980s.

Differences arose in the values of merger activity between the BIE data sets with the data sets of research due to the different types of measures that were employed to determine merger activity. Though the overall patterns were similar, there were major differences between the BIE and Bushnell because Bushnell included public and private company mergers. The trends and values between the BIE and Stewart were mainly similar since similar measures were used. In an overall sense the BIE revealed the trend in merger activity in Australia over the past four decades was an irregular wave effect. The peaks tended to coincide with generally acknowledged speculative surges (1969, 1972, 1980-81 and mid 1980s). It added that the peak of the late 1980s differed from earlier peaks because the historical trend was noticeably upward and previous peaks had characteristics dissimilar to those, which were now apparent.

The peaks of 1959-60 and to a lesser extent of 1969-72 had a greater focus on private companies, which tend to be smaller than public companies. The earlier activity was financed by the pure exchange of equity to a much greater extent than in the recent period of the 1980s. Both of these characteristics were consistent with the concept of non-hostile absorption (the proprietors of the target company maintained some equity in the new operation). The BIE felt that the merger activity of the late 1980s now seemed to be performing a different function and was better characterised by the accumulation of outright control of the target. Targets had become larger and cash payment was now the dominant form of exchange, consistently taking up over 80 percent of all transactions during the early and mid 1980s.

Merger activity covering the period 1981-1992 was researched by Brailsford and Knights (1998), who used publicly available data from the Australian Stock Exchange, data from the Centre of Independent Studies, and from Corporate Advisor, a commercial organization that maintained a database on Australian takeover activity. The main criterion for inclusion of a merger was that it be a successful one, not just a bid. Their data showed incidences of merger peaks in 1988 and 1989, with troughs in 1985 (minor) and 1992. The outcomes of their research also revealed that: there appeared to be no significant differences in post takeover activity performance between good and bad takeover bidders; generally, firms appeared to engage in horizontal takeovers where their share of the market for their core business was enhanced through

the acquisition of competitors; and firms attempted to enhance performance by returning to core activities and reducing the level of internal diversification.

The method used in this research (and explained further in Chapter 6) was one that partially comprised the (fourth) method adopted by the BIE but with considerably further scope. Data was obtained from several sources (ASX, Reserve Bank, ABS, ASX annual reports, the Melbourne Institute of Applied Economics and Social Research, federal government reports, Australians Historical Statistics, UK office of National Statistics and the US Federal Trade Commission. Firstly data was sourced from the ASX on the companies that were delisted due to mergers or takeovers. This data was manipulated from commentary style into numeric. Data included total ASX listings in order to calculate a merger rate (de-listings as a ratio of total ASX listings). Further data was collected, manipulated and comprehensively analysed from the above-mentioned sources on interest rates, inflation rate, company valuation (to calculate Tobin's q), stock market capitalisation and company gross operating surplus. Further analysis was conducted in comparison of Australian merger activity with the UK and US in order to determine any relationship and causal factors. The data sets that were collated for Australian statistics covered the period 1949 to 2007 with the exception of Australian business cycle data which was only available covering the period 1960-2006. The data for the UK was collated for the period 1950 to 2007 and for the US for the period 1950 to 2006 (latest available at the time of conclusion of the research).

5.2.2 Australian Merger Waves: Reasons For Occurrence

An argument commonly put forward in favour of allowing large merger proposals is that the merged firm will achieve economies of scale not feasible in the absence of the merger Neal (2002). Anti trust authorities the world over have found this argument extremely difficult to assess. Neal’s counter argument to the opposite rests on the tool of Data Envelopment Analysis (DEA) which can be used to assess whether a firm is currently producing efficiently relative to other firms in the same industry and whether the firm is operating under increasing, constant or decreasing returns to scale. The argument is that if the largest firms in the industry are found to be operating with decreasing returns to scale, then it is unlikely that creating a larger firm through merger

will lead to economies of scale. Neal pointed out this reason is fallible and one that is missed by the anti trust authorities radar.

Reasons are offered by Brailsford and Knights (1998) for the occurrence of merger activities but do not address the timing from the perspective of the reasons for merger waves or their lack. They state that the traditional welfare theory of takeovers focuses on the concept of synergy, where two companies combine through a corporate acquisition are worth more than the sum of the previous independent parts. Reasons offered for the synergies include economies of scale, economies of vertical integration, complementary resources, tax shields, effective use of free cash flow and improved efficiencies. Further, the market for corporate control is seen to be efficient and incentives exist for managers to seek control of poorly performing firms. In citing Jensen and Ruback (1983) they argue that takeovers act as an external control mechanism that limits managerial actions from departing from value maximisation of shareholder wealth, so the constant threat of a takeover stimulates an efficient use of corporate resources.

Another view is that mergers occur due to market failure. There are supposedly many instances of market failure, which reduce the effectiveness of the market for corporate control. Asymmetric information between the market and management means that the market is not always in a position to judge managerial effort and performance. Agency costs also create circumstances in which projects that enhance shareholder wealth are not always optimal.

Early empirical evidence generally supports the notion of the creation of synergies and that target shareholders receive a control premium in the vicinity of 15-30 percent. The works of several researchers is cited as evidence of this, both from the U.S. and Australia. In total the net gain from takeover activity has been shown to be positive. With reference to the Australian experience, the net gains from takeover activity between 1972-85 have been estimated at approximately $7.2 billion by Bishop, Dodd and Officer. In the U.S. the estimated gain has been around $162 billion during the period 1981-86.

There is a consistent lack of support (from limited Australian or US evidence) for large positive returns to bidders and various hypotheses have been offered for these results. The first is from Schipper and Thompson (1985) who argue that some bidders are well known for their acquisition activity. The market incorporates the expectation of future profitable takeovers in share prices at an early stage of the acquisition program so that subsequent takeovers merely confirm prior expectations. Hence, in a large sample, the relative impact of the few cases of significant positive abnormal returns is diluted. The second is that bidders are typically much large than their targets, an equal split of any dollar gain will realise relatively small abnormal returns to bidders. In an aggregated sample, the effect on bidder share prices will be minimal. They further cite Asquith, Bruner and Mullins (1983), in which they found that the size of the target firm is positively related to the abnormal return of the bidder such that a large target induces a large bidder abnormal return, thereby supporting this hypothesis. The third one is that in general, the level of bidder abnormal returns has declined over time (citing Jarrell and Poulson, 1989), and this may be due to increased competition in the market for corporate control but does not explain why negative abnormal returns are sometimes observed.

The authors also refer to other studies that have traced bidder performance after the takeover (up to five years) has found consistent negative long run post acquisition performance, including samples of only successful bidders. Various explanations including capital structure effects, relative size of the target and shifts in risk have generally proven incapable of fully explaining this finding. In effect, the reasons for the initial desire to merge or takeover are not necessarily translated into reality after the acquisition has occurred. Generally, the evidence from the capital market fails to consistently show the presence of positive normal returns to bidding companies. The authors refer to Bishop, Dodd and Officer (1987) who reported that 40 percent of all bidders, and 36 percent of successful bidders in Australia, suffer negative abnormal returns in the six months surrounding the takeover announcement. These bidder firms are claimed to be embarking on acquisitions where small or zero synergistic benefits are expected. Some of explanations offered for this include managerial motives that are typically inconsistent with shareholder wealth maximisation (agency theory issues).

Though one of the main reasons offered for takeover activity is to increase shareholder value, the evidence tends to cast doubt on the general claim that takeovers are beneficial to bidding firms. Other instances (Berkovitch and Narayanan, 1993) show that wealth loss has occurred.

Of the considerable volume of literature on the reasons for takeovers Wickramanayake (1994) the usual reasons given by management for takeovers are to expand operations, achieve economies of large scale and meeting competition more effectively. The motivations for takeovers include economic, managerial, judicial and institutional conditions and can be divided loosely into interrelated environmental factors (i) internal to the firm and (ii) external to the firm. There is also interrelation between the factors to the point where it may be difficult to differentiate between them and Wickramanayake refers to the research of others who addressed both the internal and external forces on the possible reasons for mergers.

One such internal force theory has been offered by Gort (1969) who argued that takeover activity tends to increase in periods of rising stock market because of differential expectations between insiders and outsiders. From the opposite view it is proposed, in accordance with news of managerial theorists, managers of companies offering takeover bids pursue the objective of growth maximisation through increased sales and asset growth (Mueller, 1980).

From the perspective of external force theories the author refers to Reid (1968) who loosely argued that favourable stock market conditions will increase takeover activity while at times of stock market decline there will be less takeover activity. However, the author points out that there is no unanimity on the positive relationship between takeover activity and stock market performance. Weston's (1961) views are that takeover activity may in fact increase during times of recession and declining business activity when increasing pressure is brought on firms to achieve cost reductions. Additionally, Lev (1992) argued that depressed share market conditions with undervalued shares in an environment of increasing numbers of business failures provide prime opportunities for increased takeover activity.

After examining 1,442 takeover bids between 1972 and 1985 Bishop et al. (1987) found that acquiring firms normally time their bids to coincide with a period of above-market performance by the companies' shares. They also provide empirical evidence supporting a positive relationship between takeover activity and stock market performance. For the period 1946-1986 Easton (1994) used annual data as obtained from the Bureau of Industry Economics (1990) to examine whether Australian takeovers happened in waves. As Easton found that there was a significant positive relationship between annual changes in number of takeovers and annual share return (percentage) as measured from the Australian All Ordinaries Index, it was concluded that takeover waves exist in Australia. Overall there is adequate Australian evidence to support the hypothesis that takeover activity and stock market performance are positively related. (Easton acknowledges, at the time of writing in 1994, that the United States experienced four takeover waves; being the late 1890s, 1920s, 1960s and 1980s).

According to Wickramanayake there did not appear to be any evidence at the time of his study, which required the investigator to test time series properties of the data to be used in econometric modelling. He added that the more recent work by Easton had not examined the time series properties of the variables used in the regression model. He also added that none of the previous studies on Australian takeover activity had subjected their econometric models to a wide variety of diagnostic tests to verify the robustness of their results in line with the emerging trend in econometric modelling. Another important comment, and appropriately made is that the study by Easton used annual data over an extended post World War II sample period in comparison to other Australian studies which have used narrow time periods. To achieve the objectives of the research Wickramanayake uses the econometric procedures of ordinary least squares (OLS), vector auto regression (VAR), Durbin-Watson (DW) test and Lagrange Multiplier (LM1).

The outcomes presented in the paper are that the findings in this study relating to share market performance in the context of takeover activity are consistent with those postulated by Gort (1969) and Mueller (1980) for Belgium and Germany supporting the view that a rising share market exerts a positive influence on takeover activity on the lines indicated by Reid (1968). The dissenting views of Weston (1961) and Lev (1992)

have not been supported. The econometric results achieved by Wickramanayake are broadly supportive of those given in the recent Australian studies by Bishop et al. (1987), Argus and Finn (1991) and Easton (1994). The conclusion of the matter is that when the Australian share market is bullish (or rising) this appears to be one positive reason for an increasing rate of mergers.

Fels and Walker (1994) offer little approach to the issue of Australian merger wave occurrence as the topic is examined from a regulatory perspective rather than an economic analysis perspective. The main comment and one that sets the tone for this paper is that merger provisions of Sections 50 and 50A, of the Trade Practices Act 1974 are the only sections which directly affect the structure of markets. The authors acknowledge that mergers and acquisitions generally occur because firms consider they are likely to lead to an increase in profits as compared with the pre-merger situation. Economic models of pricing and production generally predict that increased levels of market concentration tend to raise prices and reduce allocative efficiency, hence the elimination of competition remains an important motive for mergers and acquisitions.

Most merger motives derive from expected efficiency gains and/or cost savings. The horizontal merging of similar businesses can generate economies of scale in production, distribution, purchasing, marketing, and in the cost of capital. Economies of scope may arise from joining complementary products. Vertical mergers may generate transaction cost saving. The replacement of old managers and old practices may eliminate x-inefficiency. The merging of complementary research and development facilities may generate increased dynamic efficiency. Mergers may be conglomerate where businesses have little or no connection with one another. Mergers may also be motivated by tax minimisation or by empire building. None of these motives and effects normally raise competition concerns and increased efficiency will benefit the economy. However, the realisation of these benefits simultaneously result in a less competitive market structure; for example, achieving economies of scale through increase concentration or reducing transaction costs through a vertical merger where one or both parties have horizontal market power.

Fels and Walker further add that acquisitions often result in significant changes to the management of a company and this has a direct impact on the efficiency of the particular target. The threat of takeover has a potentially much broader positive effect on corporate managers because the active market for corporate control can ensure that management acts to maximise shareholder wealth through responding to market demand and efficiently managing the firm's resources. Providing markets are competitive merger activity will also maximise allocation and cost efficiency. However, the most likely source of superior management is another firm operating in the same market. Again, this raises another potential issue for merger policy.

Merger regulation may have an important effect on the reasons and the timing of merger occurrence as well as the structure and efficiency of the economy. From the perspective of government, prohibiting all mergers, which may reduce competition to any extent would be likely to involve high regulatory costs and would place severe restrictions on the operation of the market for corporate control.

Merger waves are very much positively correlated with increases in share process and price-earnings ratios and with the overall business cycle in general (Brakman et al. 2005). When one follows the standard M&A motives, like the efficiency argument, it is difficult to explain the occurrence of M&A according to synchronicity. In citing Gugler, Mueller and Yurtoglu (2004) Brackman found that merger waves can be understood if one acknowledges that M&As do not boost efficiency and therefore to not increase shareholders' wealth, but rather find that M&A waves are best looked upon as the result of overvalued shares and managerial discretion.

With reference to the USA and restricting their sample to firms that are publicly traded, Andrade et al. (2001) is also referred to who showed that with each merger wave the value of the M&A deals (as measured by firms' market capitalisation) increases strongly. Merger waves in Europe appear to follow those in the USA with a short lag, and until the most recent (completed) merger wave, the number and value of M&A deals during these waves fell short compared to those in the USA. However, during the fifth merger wave, European firms engaged in a number of mega M&A with the cross-border takeover of Mannesmann (Germany) by Vodafone (UK) for US$172 billion in

2000 as to date being the largest European M&A. The authors acknowledge it does not shed much more information as to the motives for the M&As, hence offering their own model for the explanation of cross-border M&As. They also show that there have been two clear waves for all industry sectors combined, mainly around the period 1990-91 and 1999-2001 and the peaks of merger activity occur around 1990 and 2000. There were also industry sector peaks, (at the end of 2004 for the Chemicals and Allied Products industry sector and around 1995-96 for the Food and Kindred Products sector).

They also derived the Balassa index, a measure to assess merger activity and waves within countries and sectors. With the data on cross-border M&A it was found that Australia, France and the Netherlands were less active in the cross-border M&A takeover game than were the USA and the UK. There was also significant difference between the UK and the USA. It was also found that that past history of M&As also determine current M&A. This indicates that waves indeed are a fundamental characteristic of M&As. This paper distinguishes waves between sector wave effects and total wave effects, for different time periods, namely the previous year and the previous two years. Brakman et al. (2005) summarised their conclusions as follows. Firstly, Australia, France and the Netherlands, other things being equal, are less active in the M&A takeover game than the UK and the USA. Secondly, M&A are undertaken by 'strong' firms, that is firms active in sectors with a revealed comparative advantage as measured by the Balassa index in accordance with Hypothesis 2. Thirdly, waves play an important role in the M&A takeover game, in accordance with Hypothesis 1. Sector-waves with a (positive) two-year horizon and total-waves with a (positive) one-year horizon and a (negative) two-year horizon. The authors conclude that while their work was mainly theoretical, it led to two testable hypotheses. First, acquiring firms tend to be efficient and therefore operate in sectors that have a revealed comparative advantage as measured by the Balassa index. Second, M&A come in waves as given takeover generally makes the next takeover more attractive. The data supports these hypotheses.

Bushnell is cited by Stewart (1977), who rated the tax structure as probably the single most important cause for mergers. While tax factors have continued to play an important role in merger activity during the 1960s a far more important reason for mergers in many industries was the so-called proliferation effect of mergers; as some

firms, especially multinationals, took over leading local companies for cost and competitive advantages, invariably the smaller remaining independent firms were compelled to resort to mergers for defensive reasons. The owners of many of these smaller firms, fearing a war of attrition, took advantage of avoiding risks by capitalising future profits in the form of tax free capital gains by selling out before a situation emerged where their bargaining power would have been seriously eroded. Most of these firms disappeared into mergers, did so with partners closely related to their existing operations. About 75 percent of domestic and foreign takeovers were of the broad horizontal type.

Further insights were offered by Treasury (1986) on the behaviour of Australian takeover activity during the period 1959-60 to 1984-85. The higher number of bids in the 1970s and 1980s probably reflected factors such as less buoyant economic conditions in these years than in the 1960s and especially the relative decline in the manufacturing sector in this period; hence increasing the attractiveness of takeovers relative to new investment. In more recent years the increased dynamism of the financial sector may also have facilitated takeovers. It would not be surprising if the incidence of takeovers followed a cyclical pattern related to general economic conditions and there is some indication of that in the figures used. The perception of increased activity may also reflect the scale of, and publicity surrounding, some particularly large recent takeovers. Treasury effectively infers a period of merger wave activity.

Treasury acknowledged the literature identified a wide range of advantages, which firms might seek to obtain from successful takeovers: integration of production processes with resulting economies of scale; economies in administration, marketing, finance, R&D and other such activities; rationalisation of the use of assets and the spreading of fixed costs; economies through acquisition of supplying firms; introduction of new technology know-how, products or designs (or application of them to other activities of the acquired firm); utilisation of more sophisticated management techniques; replacement of inefficient managers; increased returns or reduction of risk through diversification; increase returns through reduced competition; and taxation advantages. Except for the last two points, they offer financial benefits to the promoters and also

represent gains in efficiency for the economy as a whole. From the firm perspective though, the reasons appear to fall into the two general categories of improvements in economies of scale and scope. Though general reasons are offered why firms might engage in takeover activity, Treasury does not offer any specific attributes from the above list to a part of or all of the takeover period of 1959-60 to 1984-85.

Treasury also offers some general counterarguments whereby some writers argue that takeovers are undertaken mainly in pursuit of non-financial objectives (greater prestige, power or convenience for managers in enlarged enterprises). The two sets of objectives are not necessarily mutually exclusive: in the normal course managers might be expected to seek personal advancement by successfully pursuing the financial interests of their firms. Managerial objectives are of interest only if they are pursued in conflict with the interests of the firms, or at least in ways which fail to benefit the firm (agency theory). Treasury uses McDougall and Round (1986) (discussed below), as an explanation for the possible reasons for takeover activity concluding with an examination of some of the implications of M&A activity: the effects on competition, taxation aspects, firm gearing, diversion of funds from productive investment, and external account issues and concludes with regulatory issues.

Takeovers arise from diverse backgrounds, for many economic, financial and other reasons, so there is not, and is never likely to be, one general theory of corporate takeovers (McDougall and Round, 1986). It is difficult to predict the timing and extent of takeover activity in any given environment, and to predict the financial and competitive effects of such activity; a complex and diverse situation. Hence though difficult to assign specific reasons and specific timing for specific M&A occurrences, it's a worthwhile exercise. They offer the following (and enunciated in other literature) takeover motives: accounting, financial and taxation motives; managerial motives; growth motives; risk reduction motives; profitability and efficiency motives; anti-competitive motives; and deterrent from other takeovers. The effects of takeovers are offered but not the reasons and timing of their occurrence.

McDougall and Round highlighted a number of important issues: firstly, the growth rate of the merged firms was significantly greater after takeovers than their components

were before; secondly, the growth rate of the matched (comparison) firms also increased after the takeovers (which is consistent with the matched firms receiving some stimulus from the threat of takeover); and thirdly shareholders in target firms gained significantly from the takeovers, with much of the gain occurring prior to takeovers (attributed to market anticipation of takeovers and premiums paid in the prices in takeover offers).

Post–takeover returns to shareholder in acquiring firms were less than those in the matched firms, from which they concluded that shareholders in acquiring firms did not gain from takeovers. This appeared to be at odds with the share market experience of specialist takeover firms, which were excluded from the sample Also, no attempt was made to measure the net gains or losses of all shareholders (both in target and acquiring firms) involved in takeovers over the period of analysis, although the study did note the results of other studies (both in Australia and overseas) that takeovers appear to create excess returns to the shareholders of participating companies and that there is a remarkable consistency in these results.

Their study tested only two possible motives (being economies of scale and risk reduction) with inconclusive findings. Economies of scale were not significant on the grounds that the results showed the acquiring firms were larger than their targets. However, this tended to go against accepted empirical research and was also illogical since the gains from economies of scale may be most pronounced when a small firm combines with a larger one.

Explanations for the reasons and timing of mergers in Australia during the period 1946-56 are provided by Bushnell (1961) from a general sense with valid reasons offered why mergers occurred and for each specific reason attempted to explain how this fit in with the merger in that period. According to Bushnell the first reason for merger occurrence for most economists is the monopoly rewards of reducing competition. However, monopoly advantages have been secondary in post-war Australia to the influence of taxation and ownership patterns on the one hand and the very rapid expansion and development of the economy on the other.

Most merger reasons are complex and most of those reviewed were caused by the interaction of several factors. Twelve reasons for mergers are discussed at length and these can be divided into three categories: those that primarily affect sellers (five), buyers (five), and both fairly equally (two). However, reasons, which initially influence only one group often, have a complementary effect on the other. The twelve reasons and explanations for mergers during this period of 1946-56 are summarised in Table 5.2.

Table 5.2 Bushnell's Reasons and Explanation For Mergers

Reasons for Mergers	Explanation
Personal Income Tax	Sometimes mergers enable business owners to avoid paying personal income tax while achieving other objectives. Due to the high level of personal income taxes in Australia tax free capital gains caused many mergers; the best way to avoid the risk of loss was to sell to another firm.
Private Company Tax	In addition to the company tax rate there was also a special tax on the undistributed earnings of closely held companies throughout the post-war period. The most common method of avoiding the tax was to gain Stock Exchange listing and some ownership spread. In some cases the best way to avoid the tax was to sell to another company and not pay the undistributed profits tax.
Death Duties and Estate Taxes	Estate and inheritance taxes were very important where the market for shares in most companies was limited. Both the states and the Commonwealth levied a tax on estates. The rates of death, probate, or succession duties, as the tax was termed in various states, were different for each state and owners adopted different alternatives to avoid these taxes, which resulted in mergers.
The Shortage of Qualified Managers	During the period after the war and during the fifties, all over the world there was a shortage of qualified men to staff management teams and especially acute in Australia. One way companies acquired this expertise was through mergers
The Difficulties in Obtaining New Funds	Obtaining access to funds for expansion is important in a competitive situation and provides competitive advantage. This then could potentially lead to merger activity. During virtually the entire period long-term funds were scarce in Australia. Raising new funds on the Stock Exchanges was limited by different factors at various times: capital issue controls and access to the market (1946-49 and 1951); the ability to get on the buoyant market quickly (1950); past standing in the market (1952-54); the ability to pay the high rate of return demanded by investors (1955-56).
The Carry-Forward of Losses for Tax Purposes	Due to the prosperous business conditions the period 1946-56, few companies consistently suffered losses under the tax calculation of profit. In 1952, many companies suffered a temporary setback with a recession, but were able to offset these losses against their own subsequent profits.
The Economies of Large-Scale Operations	Big business affects buyers and sellers in merger transactions. A merger may obtain economies of scaled in production, management and other overheads, and marketing. Most mergers offered potential economies of scale in at least one of these aspects of the acquiring firm's operations.
Spread of Operations to Other States and Markets	During 1946-56 many companies expand from one capital city and state into interstates and other markets. The advantages of interstate merger were usually greater than those of an acquisition in the same market for three reasons: a large new market was realised; some acquired fixed assets were useful; and a larger potential market was obtained yet the costs of entry were avoided.
Diversification and Empire Building	Economies in overhead costs, diversification, employment of liquid funds, and empire building were the main factors driving mergers. Most lateral mergers involved firms in the same industry.
Vertical Integration	During the booming post-war period a number of firms eagerly took over suppliers of scarce materials or components to guarantee themselves access to scarce supply. Firms also took over others in the distribution and handling to ensure sales were not affected. In many respects vertical mergers limit competition more than lateral mergers.
Acquisition of Facilities For	It was cheaper during this period to buy an existing firm and adapt and expand its facilities than to build an entirely new establishment, even aside from the advantages of acquiring

Reasons for Mergers	Explanation
Expansion	the market of the company taken over. Mergers were also mainly made to overcome difficulties in recruiting staff.
Reduction of Competition	One of the main reasons cited for mergers is the desire to lessen competition in the industry concerned. Bushnell found that this was the case for less than 10 % of the 673 mergers examined. Attempts to limit competition are different from attempts to gain a competitive advantage.

Source: Bushnell (1961)

The broad objective of the BIE (1990) study was to provide an analysis of the impact of mergers on economic efficiency in Australia. It also examined the costs and benefits to the Australian economy in three industries in which mergers occurred in the 1980s, being: two mergers in the Roof Tile Industry; a merger in the Pastry Products Industry; and a merger in the Automotive Battery Industry.

The emphasis of the BIE study was on the impact of horizontal mergers, (between firms selling closely related products in the same geographic market). The project arose out of concerns that merger activity in recent years up to the end of the 1980s was having a detrimental impact on the Australian economy; and a potential for conflict between industry policy and competition policy.

Table 5.3 BIE Reasons and Explanation For Mergers

Reasons for Mergers	Explanation
More efficient production methods	Gains from more efficient production methods can arise in a number of ways. The most obvious efficiency gains from the merger process are economies of scale. Economies of scale can be the result of specialisation (greater output can allow both labour and machinery to be allocated to more specialised and less complex tasks, thereby increasing productivity); physical laws (in some industries, for example, those involving storage, an increase in the size of the plant will increase volume more than proportionately which allows the unit costs of storage to fall; reserve capacity. (larger size means fewer reserves of machinery, labour, raw materials and outputs are needed to meet unexpected variations in production).
Greater firm size	Greater firm size may enhance the viability of introducing more technologically advanced plant and equipment because design and set-up costs can be apportioned between a larger output. This allows the firm to become more proficient with new technology before competitors and therefore have lower unit costs by being further down the 'learning curve', i.e. ahead of its competitors.
Research & development	Research and development and other investment activity may also become viable if the greater size of the merged firm increases its ability to absorb the risk and cost of long-term projects. Also, if the merger reduces competition, the merged firm can be more confident of capturing the full financial benefit of any successful innovation.
Increased output	Increased output can lead to lower unit costs in administration, promotion, distribution, and product development. This can occur through the elimination of duplication, specialisation of tasks, and spreading of fixed costs, such as advertising, over a larger level of output.
Market power	There may also be benefits if an increase in the market power of the merged firm gives it a countervailing effect that offsets the market power of suppliers, customers, or other competitors.
Improved managerial skills	Efficiency can also be improved by installing a better management team, which can exploit existing resources more productively or sell under utilised assets. These improved skills can be specific to particularly gifted 'super managers' or management teams, which will

Reasons for Mergers	Explanation
	make a merger work even in the absence of any fundamental advantages from economies of scale of size.
Failing firms	Mergers may also result in enhanced management of resources if the alternative is a disruptive dislocation of production facilities resulting from bankruptcy of the target firm. If this is the case, the merger will not reduce competition in the industry. These failures seem most likely in industries with falling demand and excess production capacity.
Dynamic effects	Mergers can also be a catalyst for greater dynamism and efficiency. As merges are a formal process of change of control they provide the framework with which more detailed changes can take place. Changes that might be difficult in a stable organization may be easier when the environment is already in a state of flux.
Benefits extending beyond the firm	Mergers may not also provide benefits to the firm in question, but the merger may also provide demonstration effects of benefits, which other firms can adopt. Better management practices and production efficiencies can be observed by other firms or learnt through the hiring of staff with the required knowledge. It's possible that benefits can flow beyond the activities of the merged firms.

Source: BIE (1990)

Though the BIE did not focus on the examination of whether mergers occur in waves and what the potential reasons and timings of these waves might be, the information provides some relevance and insight into the issue, which this research seeks to examine. It didn't examine specific causes and effects of merger but offered some insights into the potential benefits (Table 5.3) of merger activity (without assigning these benefits to any specific merger transaction outside of the case studies presented in the paper).

5.3 2006: THE RISE OF PRIVATE EQUITY

Considerable attention was drawn to the private equity market in Australia in 2006 due to several major Australian business 'icons' that were engaged in private equity funding as well as the perceived impact on national business and commercial icons ('selling of the national assets') because the major equity acquirers were overseas investors seeking to purchase or gain operational control of major Australian corporations. The role and influence of private equity grew in 2006/2007, which is the tail end of the data sets gathered and analysed for this thesis and is outside the scope of our study. However, since private equity is an important consideration in merger activity its discussion is included for completeness.

Private equity (venture capital) is investment capital outside of public capital markets. It's a broad term that refers to any type of equity investment in an asset in which the equity is not freely tradable on a public stock market. While private equity can be

raised from a variety of sources (friends, family members and business helpers), the more visible (and measurable avenue) is the private equity market where funds are channelled to businesses – typically in new or fast-growing unlisted companies, or companies which may be in financial difficulty with potential restructuring – by fund managers. Passive institutional investors may invest in private equity funds, which are in turn used by private equity firms for investment in target companies. Private equity investment categories include leveraged buyout, venture capital, growth capital, angel investing, mezzanine capital and others. Private equity funds typically seek to control the management of their target, and also bring in new management teams that focus on making the company more valuable.

Private equity funding includes start-up financing to develop the firm's products; expansion financing for additional funds to manufacture and sell products commercially; turn-around financing for a company in financial difficulty; and management buy-out (MBO) financing, where a business is purchased by its management team with the assistance of a private equity fund. Private equity financing features include businesses tapping the private equity market often do not have sufficient collateral or a track record of profits to obtain bank financing; private equity fund investors reduce the information asymmetries that may exist between investors and borrowers, thereby lowering the cost of capital for small companies; the investment horizon for a private equity investor is usually between 5-10 years; and exits are usually achieved by listing on the stock exchange, usually through an initial public offering (IPO), or by the write-off or investment sale.

5.3.1 Why Companies Use Private Equity Funding

The private equity market attracts small companies with limited access to internal funds or bank loans (insufficient collateral and/or no track record of profits to support bank borrowings or debt raisings). Share market listing may appear glamorous, there are also impediments such as listing costs, legal and accounting costs involved in the provision of semi-annual public financial statements, annual auditing, and complying with the ASX's continuous disclosure requirements.

Also the liquidity of the stocks of large listed companies tends to be considerably higher than that of smaller listed companies, which may result in more expensive capital raisings for small business. This may discourage small firms from seeking listing, and encourages small companies to delist and seek private equity funding instead. In the past the ASX had established a second board for these types of smaller companies, but this has not been as popular as the main board listing. The lack of liquidity for small companies may reflect the relative importance of institutional investors who tend to focus on the large listed corporations.

Though private equity funding has received adverse publicity, in reality companies can gain from the expertise that private equity funds bring to the management of fast growing start-ups and the restructuring of poorly performing companies. Private equity funds do not tend to take a controlling stake but are typically represented on the board of the investee company, providing management advice, overview and specific performance targets. The demand for private equity funding has also risen as the number of management buy-outs has increased. These involve the sale of the subsidiaries of industrial conglomerates, or public-to–private transactions. A notable example in early 2007 was the case of the utility company Alinta Gas. Finally, investors have been attracted to private equity by the prospect of high returns (though more volatile), as well as potential diversification benefits.

5.3.2 Size of Worldwide Industry

After reaching a peak in 2000, private equity investments and funds raised fell in the next couple of years due to the slowdown of the global economy and decline in equity markets, especially in the technology sector. Nearly $135 billion of private equity was invested globally in 2005, up 20 percent on 2004 due to a rise in buyouts as market confidence and trading conditions improved from the recessionary period of the early part of the decade. In 2005, North America accounted for 40 percent of global private equity investments (down from 68% in 2000) and 52 percent of funds raised (down from 69% in 2000). Europe's share of private equity investments increased from 17 percent in 2000 to 43 percent in 2005 and funds raised increased from 17 percent in 2000 to 38 percent in 2005. Asia Pacific's region's share of investments increased from

6 percent to 11 percent during the same period while its share of funds raised remained unchanged at around 8 percent. Australia's share is relatively small.

Prominent (among many) US private equity firms are: Kohlberg Kravis Roberts & Co, Bain Capital, Madison Dearborn, Harvest Partners, Warburg Pincus, Castle Creek Capital, Pacific Equity Partners, Merrill Lynch Global Private Equity, Allco Equity Partners and Newbridge Capital. European based firms include Apax Partners, BC Partners, Bridgepoint Capital, Candover, Cinven, CVC Capital Partners, Permira, Terra Firma Capital Partners and 3i. Australian firms include Macquarie Bank, Challenger Financial Services, The Myer Family Company, AMP Capital Investors, ANZ Capital, Archer Capital, CHAMP Private Equity and Crescent Capital Partners. Numerous high profile Australian companies targeted by private equity for takeover or have been taken over include Coles Group, Qantas, Alinta, Promina, Uncle Tobys, Myer, Patrick, Oamps, Excel, Sydney Futures Exhange (SFE), Cleanaway Australia and New Zealand, Industrial Services Australia and Rinker Group. The financial press has focused mainly on the highly publicly profiled ones who have targeted Australian icons like Qantas.

Though private equity became a sensitive and emotive commercial issue in 2006, it has several decades of history. The most previously notable reputation of the private equity market was the concern of the perceived slash and burn capitalism in the 1980s where several major US corporations were taken over, carved up and sold, such as RJR Nabisco. In *Barbarians at the Gate* Burroughs and Helyar (2003) described private equity market operators as barbarians whose sole motivation was slash and burn capitalism, i.e. buying productive companies and carving them up for sale in order to maximise profits for themselves and at the expense of other stakeholders, especially the employees of the acquired companies.

In 2006, the private equity market in Australia accounted for approximately 18 percent of M&A, an increase from 8 percent in 2005 and 3 percent in the prior two years (2004 and 2003). Thomson Financial and Australian Private Equity and Venture Capital Association Ltd (2006) revealed the industry raised $4.092 billion in fiscal 2006 similar to the $4.142 billion raised in 2005 but higher than the amount raised in fiscal 2002, 2003 and 2004 combined. Worldwide, the amounts invested were $2,253 billion in

fiscal 2006, the largest amount since the slow down caused by the burst technology bubble of 2001. According to Thomson Reuters (2008) the value of Australian private equity rose significantly to $10.757 billion in fiscal 2007 after which it fell to $6.308 billion in fiscal 2008, before the impact of the worldwide financial crisis in that year.

The RBA (2006) November monetary statement reported that top end leveraged buyout activity by private equity firms had leapt to $13 billion in 2006, compared to an average $1.5 billion in the previous five years. The RBA's Connolly and Tan (2002) stated that the Australian private equity market had grown strongly in recent years, driven by demand for funding from small companies and restructuring conglomerates, and a rising supply of funds from institutional investors. The RBA stated that the market for private equity remained small compared to other corporate financing sources such as the Australian Stock Exchange (ASX) and bank lending; it potentially plays an important role in improving the overall efficiency of business financing, by providing a source of funding for smaller and riskier companies which may have difficulty in raising funds in other capital markets.

5.3.3 Size and Structure of the Market

In the June 2002 bulletin, the most recent review of the Australian private equity market was conducted by Connolly and Tan (2002). Data of more recent years was sourced from other publications being media releases. Though this information for 2001 may be somewhat dated, it does provide some interesting reporting on the state of play, summarised in Table 5.4 below.

Table 5.4 Private Equity Investments 2000/01

	Number of Investment	Total Value, $m	Average Size, $m
Start-up	241	352	1.5
Expansion	261	712	2.7
Turnaround	9	23	2.6
Buy-outs	16	220	13.8
Other	14	74	5.3
Total	541	1381	2.6

Source: Table reproduced from RBA Bulletin, June 2002
The Private Equity Market in Australia

The RBA refers to the ABS who estimated that $5.7 billion was committed to the private equity market at the end of June 2001, of which $3.7 billion was drawn down. Gross inflows amounted to $900 million in that fiscal year. Private equity investment in 2000/01 was concentrated in the information and communication technology (ICT) and service industries. This had been offset by a decline in the share of investment in manufacturing and mining industries. The share of private equity investment in health care (including bio-sciences) and services had increased slightly.

Since the burst of the technology bubble of 2001, the mix of investment by private equity has changed considerably. In 2005 and 2006 private equity mainly sought Australian corporations engaged in services (Qantas, Myer, Promina, Oamps, Patrick, Excel, Sydney Futures Exchange and Cleanaway), as well as mining (Rinker). There was a conspicuous absence of private equity investment in manufacturing, even though there had been M&A activity in manufacturing and mining during the past five years (involving BHP Billiton, Email, Electrolux, Smorgon Steel).

Though showing strong growth in recent years Australian private equity remains a small player on the world scene. As a share of GDP, Australia's private equity market is much smaller than the North American and the UK markets. Largely, prior to the IT bubble burst, this reflected the sizeable private equity investments around the turn of the decade in technology related firms in North America and the UK. The Australian private equity market is still much younger than these comparable markets, which were very active in the late 1980s, especially in MBOs. Compared to other countries, a large amount of private equity in Australia was related to the financing for expansion of existing businesses.

5.3.4 Recent Australian Trends and Issues in Private Equity

Stevens (2007) informed the government and market that international financial markets remained remarkably supportive of growth and long-term interest rates were not far above their 50-year lows of a few years ago, even though short-term rates had risen in most countries. Share prices had been rising steadily, appetite for risk was strong and volatility in prices for financial instruments had been remarkably subdued. These trends

in financial pricing could reflect a genuine decline in some dimensions of underlying risk. Over the past 15 years variability in economic activity and inflation and interest rates, had clearly diminished in a number of countries, including that of Australia. This prolonged period of attractive, steady returns on equity investment and low cost of long-term debt funding had set the stage for a return of the higher leverage in the corporate sector. Stevens added that this was most prominent in the rise of M&A activity and the re-emergence of leveraged buy-outs around the world. After the well-known excesses of the 1980s corporate leverage had been unusually low and in some cases has been manageable but needed monitoring.

Private equity had risen to an extent that government regulators and policy makers monitored it closely and that the rise in M&A activity in 2007 had been driven in largely due to the growth of private equity, through leveraged buy-outs around the world. During 2006, part of the strength in the Australian share market had been due to M&A activity. Although the value of the deals finalised in 2006 was similar to 2005, deals pending lifted the level of activity to roughly double that witnessed in 2005. The value of M&A activity in 2006 was equivalent to about 10 percent of the capitalisation of the Australian share market.

The value (including both the debt and equity funding) of domestic LBOs that have been completed or had been recommended company boards rose sharply to $27 billion in 2006, compared to an annual average of $1.5 billion over the previous half decade. The December 2006 quarter completed or pending LBOs amounting to $19 billion and would remain strong into the future, with private equity firms reported to be preparing bids for several large listed companies. The surge in LBO activity in Australia and overseas was largely driven by the low cost of debt relative to returns on equity and strong inflows into private equity funds, largely from superannuation funds, and a favourable economic outlook had also contributed to the increase in LBO activity, showing it to be the main driver for the surge in M&A activity in 2006.

Since a LBO results in an increase in the company's debt-to-equity ratio this may make the company more vulnerable to rising interest rates or deterioration in economic conditions. Till early 2007, the impact on the broader economy had been limited, as

only a small proportion of the Australian corporate sector has been acquired through LBOs. This could change if the current surge in LBO activity (and corporate leverage) continues for some time, and could become a longer-term risk to macroeconomic stability.

The rise in private equity in M&A deals has raised alarm bells for some to the extent that Khadem (2007) reported that a number of academics and senior government officials and policy makers expressed concern about its rapid rise and potential economic affects if the economy was not able to sustain this type of activity or the ramifications on these organizations if there was an economic downturn. With the worldwide financial and resultant economic crisis arising in September 2008, these warning were providential. Another, but relatively minor, factor supporting share prices has been strong debt-financed demand for Australian equities from retail investors.

5.4 CONCLUSION

This chapter has reviewed the literature on the timing, occurrence and nature of Australian merger waves and found that since Australia is a relatively young economy, the body of literature is not as extensive as that of the UK and the USA. Though some data has been publicly available since the mid 1920s scholarly undertakings only begin with Bushnell (1961). Several pieces of important scholarly work have been undertaken since 1961 to explain Australian merger activity, including that of its timing and nature. The review of the literature has also provided valuable information on the nature of the research methods that was conducted and in particular how each scholar sourced and utilised the data in their analysis of mergers. The inclusion of these factors allowed for the explanation and differentiation of the author's research method and data sets from previous Australian research, thereby adding value to this topic. An important learning is that though Australia is a young economy literature and data support the finding of the occurrence of merger waves. Similarly with the data from the UK and USA, the Australian data is empirically examined in Chapter 7.

The Australian literature has shown the Australian economy has experienced merger peaks and troughs since 1950 and that there were different reasons and explanations for

the occurrence of these peaks and troughs with different reasons motivating mergers at different time periods. Though Fels and Walker (1994) approach the issue from a regulatory perspective, their comments reinforce those of other scholars in their explanations for the reasons and timing of merger activity. The final section of this chapter discusses the rise and importance of private equity in Australian merger activity. Though this phenomenon gained considerable public attention in 2006/2007, it arose at the end of our data sets and is therefore outside the scope of this thesis; however its discussion has been included for completeness.

CHAPTER 6 MERGER REASONS, VARIABLES AND KEY MERGER TRENDS

As noted in Chapter 1 there are four key empirical questions to be addressed in this thesis, being: what the main quantitative facts are about merger & acquisition wave trends in Australia; whether there are fluctuations in merger activity related to business cycles of the Australian economy; what the main determinants are of the cyclical variability of mergers & acquisitions activity in Australia; and whether and how the timing of M&A in Australia relate to the USA and UK.

From these four questions the structure of the analysis is conducted through the literature review and descriptive analysis. Initially a comprehensive review of the literature was conducted to ascertain the economic theory on mergers, the motives for merger activity and the determinants of variation over time in merger activity. The literature review encompassed the review of literature on reasons and timing of merger waves in the USA, UK and Australia with the additional perspective of what occurred in these economies over time, i.e. the descriptive analysis of merger activity in each of the economies under analysis.

Once the literature review and descriptive analysis was completed, merger reasons, variables and key merger trends were examined. The dependent variable merger rate was constructed from the sourced data and the independent variables were selected from the literature review (as enumerated by several scholars) and succinctly discussed by Gammelgaard (1999). The data sets for each of the independent variables were obtained from previous research and manipulated (as in the case of Boehm and Summers, 1999) or numerous data sets were obtained and then constructed to provide each of the independent variables (as per the definitions obtained from the literature review) for subsequent empirical analysis.

This chapter focuses on the examination of merger reasons, variable and key merger trends. The empirical analysis is undertaken in this and Chapter 7. This chapter provides answers to the first of these questions – the main facts about mergers in Australia and merger trends and also provides the foundation for addressing the other

three questions in Chapter 7 by analysing the link between the reasons for mergers and cyclical variability and defining and documenting the variables to be used in the empirical analysis.

This business economic research uses archival research strategy (Saunders, Lewis & Thornhill, 2007) where secondary data was obtained from several sources as the principal source of data collection. Once the data was collected it was interpreted and analysed. After this the reasons for merger cycles have been analysed within the literature theories and concepts in answering the research questions for this thesis.

6.1 QUANTITATIVE FACTS AND KEY TRENDS IN MERGERS AND ACQUISITIONS IN AUSTRALIA

To address the issue whether the quantitative data provides evidence of trends in merger wave activity in Australia the number of mergers was examined by a review of the merger rate.

Statistical information on Australian De-list codes is provided in Table 6.1 below. For the period 1949-2007 (cut off time period ending before the impact of the Global Financial Crisis) this table details the number of companies that had been delisted due to code M (being a merger or a takeover); the number of companies that had a delist code N (being a name change) and a separate data stream of the rest of the companies that had been delisted due to the compilation of the rest of the delist codes (all the other delist codes A-Z (A, B, C, D, F, G, L, P, R, S, T, X and Z) have been aggregated to arrive at this total figure being the delist code, i.e. three separate de-list code categories Mergers (M), Name Changes (N) and Other Delistings (A-Z).

Table 6.1 Summary Statistical Data on Australian De-list Codes

Year	Code M	Code N	Other Codes (A-Z)	Total	Total ASX Listing
1949	10	3	24	37	735
1950	11	7	21	39	748
1951	20	9	17	46	760
1952	13	8	11	32	771
1953	15	9	15	39	781

Year	Code M	Code N	Other Codes (A-Z)	Total	Total ASX Listing
1954	21	8	22	51	790
1955	34	9	15	58	799
1956	33	10	26	69	807
1957	32	12	16	60	814
1958	48	19	9	76	821
1959	87	21	16	124	827
1960	97	12	23	132	833
1961	72	13	12	97	858
1962	45	11	11	67	881
1963	41	15	13	69	931
1964	37	13	12	62	934
1965	28	8	13	49	948
1966	35	15	10	60	936
1967	39	18	8	65	925
1968	42	33	10	85	910
1969	63	28	7	98	950
1970	59	59	6	124	1043
1971	60	37	9	106	1136
1972	86	45	24	155	1551
1973	60	54	19	133	1456
1974	34	48	40	122	1385
1975	32	31	49	112	1343
1976	50	30	33	113	1252
1977	55	25	22	102	1189
1978	50	28	27	105	1127
1979	55	32	15	102	1054
1980	54	45	14	113	1025
1981	41	*42*	8	91	1002
1982	39	30	20	89	963
1983	36	46	12	94	922
1984	38	60	12	110	933
1985	36	69	15	120	989
1986	35	91	15	141	1075
1987	32	127	27	186	1320
1988	98	91	35	224	1447
1989	114	72	137	323	1379
1990	58	65	198	321	1254
1991	45	61	168	274	1096
1992	26	52	185	263	1116
1993	25	56	56	137	1067
1994	15	77	30	122	1163
1995	32	67	33	132	1186

Year	Code M	Code N	Other Codes (A-Z)	Total	Total ASX Listing
1996	45	73	24	142	1184
1997	39	76	35	150	1198
1998	31	77	26	134	1227
1999	34	131	21	186	1226
2000	34	223	18	275	1334
2001	41	133	34	208	1421
2002	23	153	54	230	1424
2003	28	116	29	173	1425
2004	15	133	29	177	1530
2005	37	119	26	182	1774
2006	58	127	41	226	1930
2007	70	128	42	240	2089
Total	2543	3210	1899	7652	

Source: Estimates of author based on analysis of ASX data obtained for individual company data provided from different sources and at different times. These were: ASX Delisted Book covering data 1929 to June 1999; Australian Stock Exchange Annual Reports for 1960, 1961 and 1962; Shares Magazine covering data July 1999 to December 2004; ASX website for data covering 2005 to 2007; Delisted.com for data gaps for some of the monthly data in the period 2006 and 2007.

De-list Codes M, N and A-Z

Delist code M is the focus of this research as it refers to the level of mergers, acquisitions and takeovers of publicly listed companies on the ASX; it covers all forms of M&A activity. The use of the de-list code M (numerator) divided by the number of companies listed on the ASX (denominator), derived the merger rate. For the remainder of this paper, the term merger will be used to signify code M delisting.

Delist code N has shown considerable movement over long time periods. Some of the reasons that were provided for code N were not clear and could have referred to a takeover or a merger of an entity or entities. This research has not examined delistings purely due to name changes and any other de-list reasons and this could be a potential bias in the findings. A name change can refer to a name change due to a decision of the company to change its name due to growth; the company might have been successful in entering new markets, becoming a publicly listed company whereas previously it may

have been a private company; a change of name occurs because the company has been successful in diversifying it product base and wants its name to more closely reflect its new product range. For the remainder of this paper the term Name Change is used to signify ASX code N delisting.

Companies also undergo name changes when they merge or become the target of an acquirer. This type of reason was not always clear, and to potentially minimise loss of analysis of relevant data, this thesis has also examined and researched the movements in code N in the overall context of merger movements; i.e. when a name change has occurred due to a merger or takeover, this incident was captured as code M because it is a major de-list code in its own right. It may also include companies that have undergone a merger and as a result of the merger or acquisition and there has been a resultant name change to reflect the new company that has been formed. While a de-list code N may infer a merger, it does not specifically refer to a merger. Table 6.1 indicates a greater frequency of name changes than merger activity.

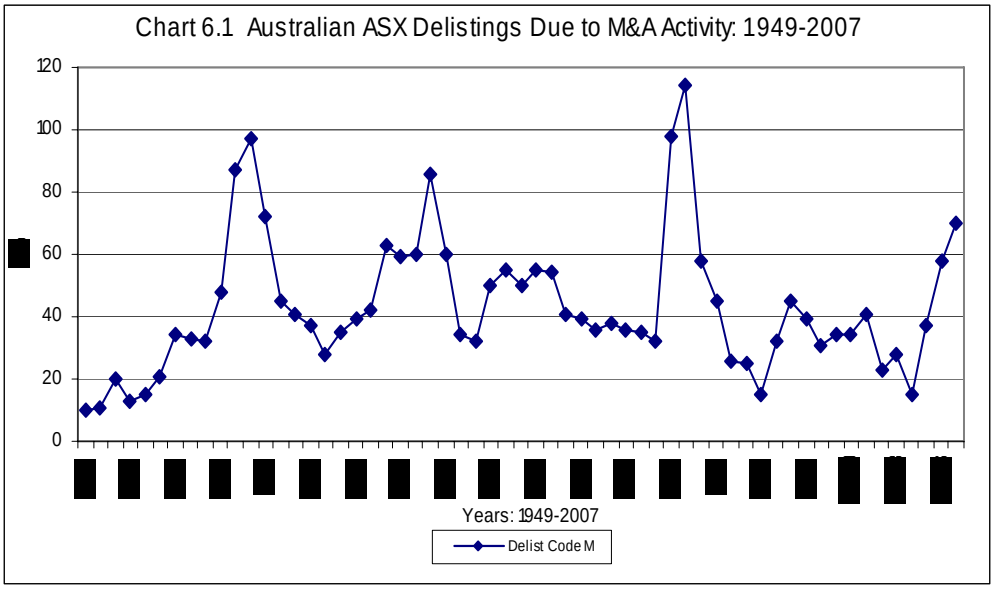
While the original ASX data set covers the period 1926-2006, the data covering the period 1950-2007 also reveals several other reasons for delisting which are detailed in Appendix 1. The scope of the thesis does not cover the examination of the other causes and reasons why firms disappeared from the ASX and therefore, these other delist codes (detailed in Appendices 1 and 2) were not subject to review and analysis.

A unique feature of the above categories merger and name change is that they exhibit movements in every year of the research period, showing that mergers and name changes are ongoing economic events. However, since the other de-list codes are taken as a unit, there are repeated instances in the individual data sets with no activity for several of these codes for a number of years (either in succession or sporadically). In total mergers constitute 32% of ASX delistings during the period 1949-2007; while name changes comprise 40% and code other delistings comprises 28%.

6.1.1 Analysis of De-list Codes

Analysis of Mergers

From the above time series the following chart at Chart 6.1 was created depicting movements in mergers during the research period in question.



An examination of mergers indicates that there were definite peaks and troughs in M&A activity in the Australian economy. Peaks appeared in the Australian economy during the late 1950s, late 1960s to early 1970s and late 1980s and again in the mid 2000s and troughs in the mid 1960s, mid 1970s, mid 1980s, mid 1990s and early 2000s.

Throughout the incidences of (and some pronounced peaks and some pronounced troughs) the general long term trend over time is that the incidence in the number of mergers has been increasing at a very low level.

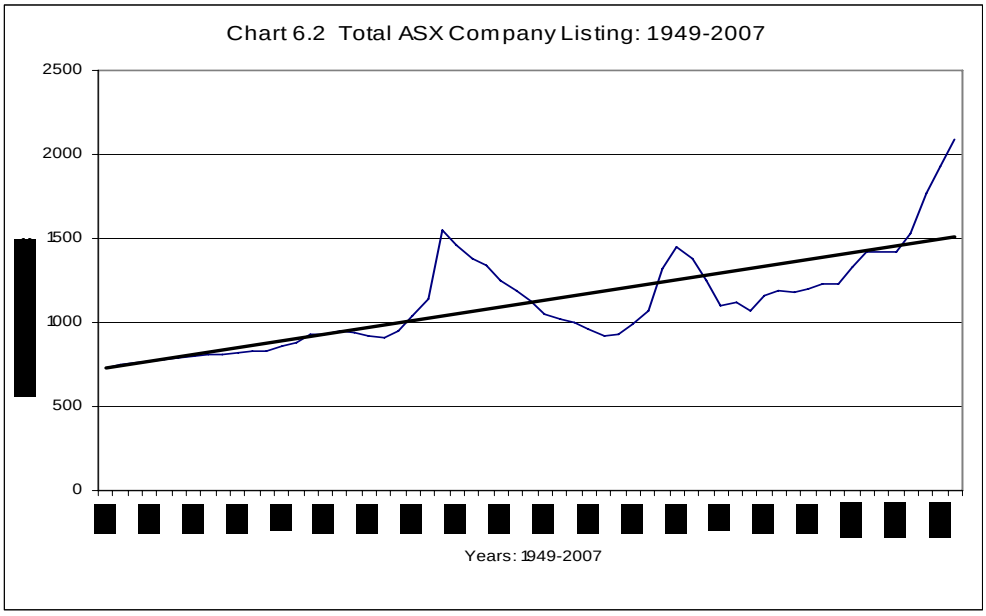
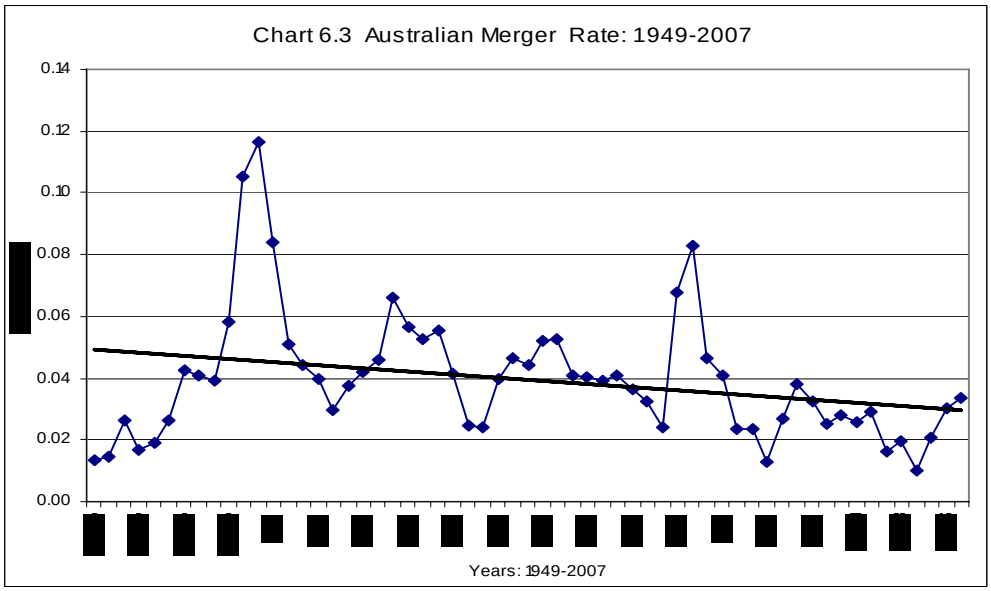


Chart 6.2 shows (historically) there has been an increasing incidence of companies listed on the ASX, with the following characteristics: the total number of listings peaked in the early 1970s (possibly due to the mining boom), in the late 1980s (a time of stock market and economic boom) and finally in the mid 2000s (another time of stock market boom and economic boom). There were also periods of troughs in the total number of listing in mid 1980s, and early 1990s, which both witnessed periods of economic recession. Overall there was a strong positive trend in the incidence of total company listings over time.

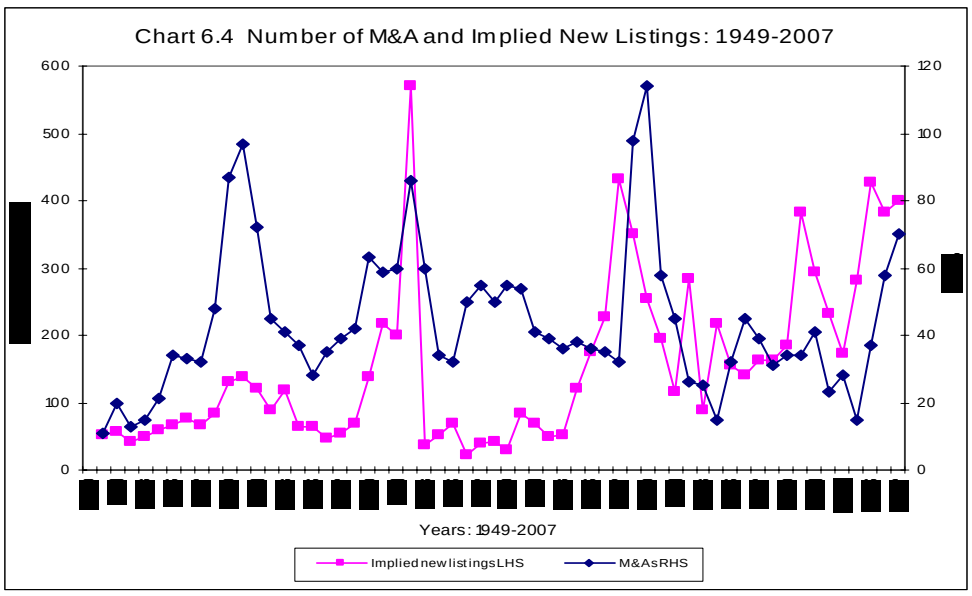
A merger rate was calculated from the data (Table 6.1) and is provided at Chart 6.3.



Since it includes two variables to describe overall movements, the merger rate was constructed as a better measure to explain the reasons and timing of merger activity in the Australian economy. The inclusion of the number of listed companies on the ASX allows the discussion of what merger activity was occurring within the overall parameters of the population of the ASX.

During 1949-2007 there were peaks and troughs in the merger rate but it was a decreasing trend. The number of mergers on an annual basis has been increasing gradually, but the number of companies listed on the ASX has been increasing at a greater rate than firm disappearance due to mergers, shown by the linear representation and by the general decline in the trend as in Figure 6.3. During this period the merger rate has decreased from 0.05 to 0.03, with peaks evident in the late 1950s (significant one), late 1960s (minor), late 1970s (minor) and late 1980s (major). The troughs in the merger rate were in the mid 1960s, mid 1970s, mid 1980s, mid 1990s and mid 2000s. Overall the depths of the troughs have become deeper over time. Over time the number of merger delisted companies did not increase fast enough to offset the increase in new ASX listings, resulting in this negative trend. During boom times, more companies were added to the ASX than those that disappeared due to merger activity.

Implied new ASX listings were derived from the current year's listing less the previous year's listing as Chart 6.4 below.



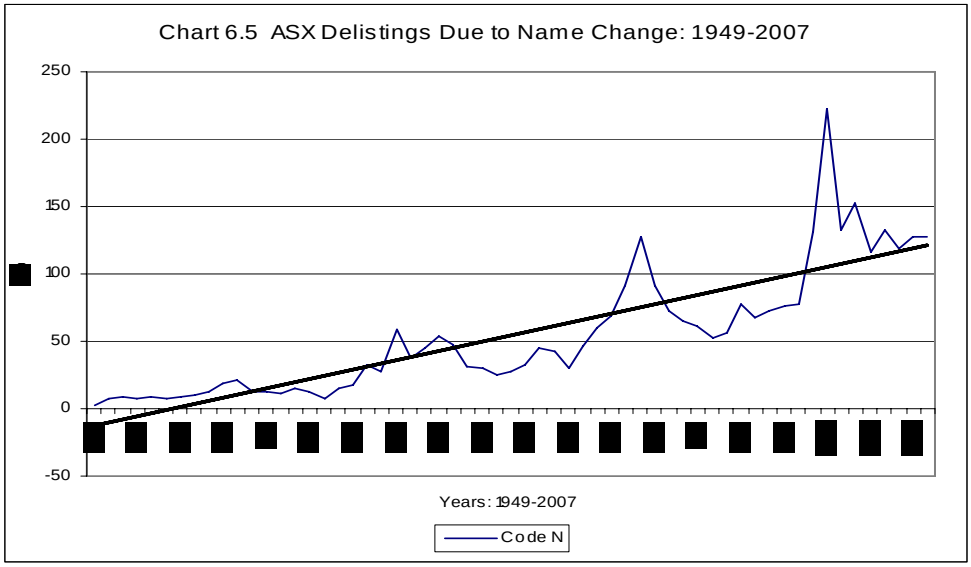
The trend of ASX implied new listings appears to show some correspondence to the merger data and is relatively steep in certain periods as well as generally being on a positively increasing trend. In the mining boom of the late 1960s to early 1970s the apparent new listings exhibited significant increase and except for this economic phenomenon, the number of new implied listings was relatively stable at around 50-100 per year for the period 1950 to the mid 1980s. It again increased substantially in the late 1980s due to the economic boom period after which it fell again and only grew to substantially similar previous highs in the late 1990s and early 2000s. The troughs (lows) in implied new listing from the period 1990 onwards were not as pronounced as from the 1950s to the mid 1980s.

It is also in the mid 1990s (time of recession) mergers and implied new listings were low. During the five decades there were only three instances in which mergers and the implied new listings occurred at similar times: the early 1970s, the late 1980s and the mid 2000s. During these boom periods, many new companies were listed on the ASX but also many companies disappeared through mergers. At times of economic recession or contraction in the economy the incidence of mergers and implied new listings coincided in the mid 1960s, mid 1970s and mid 1990s. Every recession or contraction doesn't infer similarities between mergers and implied new listings as there were other periods of time where they did not coincide, such as the late 1970s were a time of economic contraction but there was a mini spike in the number of mergers but a trough in implied new listings.

Potential issues highlighted at this stage are of the cyclical factor in the denominator (total ASX company listings) that may be masking the true nature of the merger rate because the data on total ASX company listings has a cyclical attribute and this attribute will affect any discussions on the merger rate. There is also the need to scale the data on the number of mergers; and for the Australian analysis, we have used the merger rate but not for the US and the UK analysis. These present future research opportunities.

Analysis of Name Changes

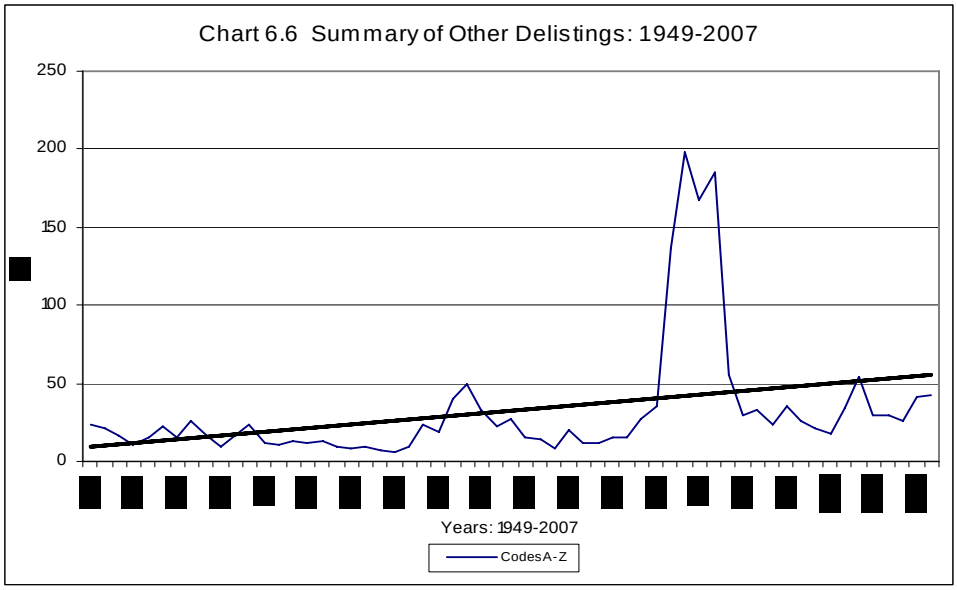
As shown in Chart 6.5 since 1949 the incidence of name changes has been steadily increasing in the rate of growth and with major spikes in 1988 and late 2001. Other years there have witnessed minor spikes.



The incidence of name change remained relatively stable from 1949 to the end of the 1960s, after which it began to exhibit major movements with resultant noticeable peaks and troughs and a couple of major spikes. The two highest peaks in name change activity occurred in the mid to late 1980s and early 2000s, which were also shown to be periods of heightened merger activity. These could be related and in fact some name changes were the result of merger activity but the data capture was as a name change. Alternatively there have been merger peaks but no parallel occurrences of name changes.

Other Delistings

The other delistings (other codes A-Z) were aggregated and represented in Chart 6.6.



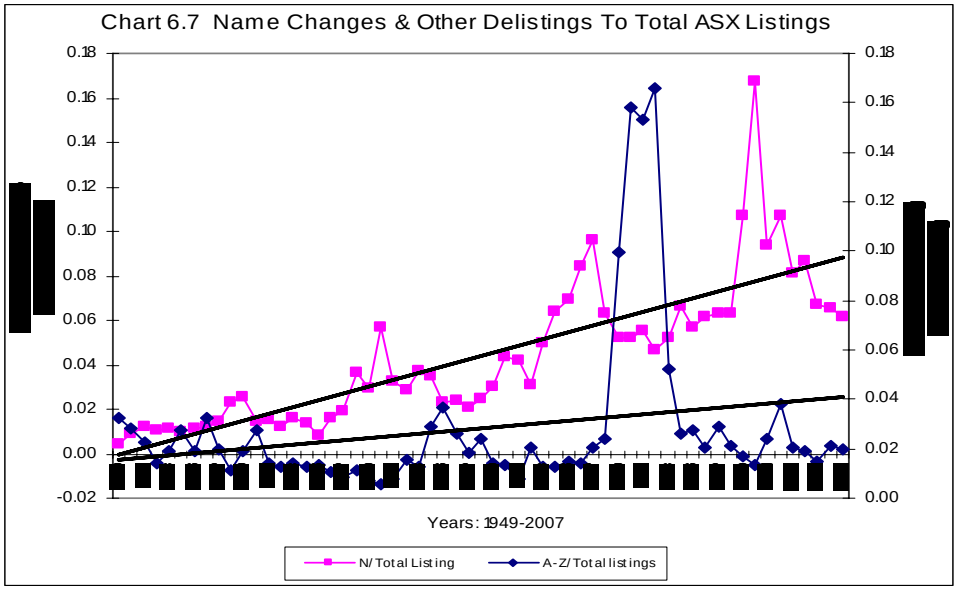
Over time code A-Z has exhibited a positively increasing trend with the main reason for this was one incidence of a spike from 1990-92. Except for this spike (in the chart), the rest of the data shows the number of code A-Z de-listings never exceeded 50 per year.

The majority of the de-list codes (Appendix 2) had very little activity during the period under research; most activity was due to request of company (code C) (that occurred throughout the period), failure to pay ASX listing fees (code F) (activity from the mid 1970s onwards), liquidation (code L) (activity from 1949 to the late 1990s), insufficient shareholder spread (codes S) and transferred to main board (code T) (activity from the mid 1980s to the mid 1990s). The remaining codes experienced minimal activity. Other de-listings have been aggregated because they do not appear to be mergers or name changes.

Ratio of Name Changes and Other Delistings Relative to ASX Listing

Chart 6.7 shows name changes and other de-listings to total ASX listing. Peak occurred in the late 1960s to early 1970s, the late 1980s and early 2000s. This peak activity tended to occur at times of peak merger activity in the Australian economy. The characteristics between the two differ.

The ratio of other de-listings to total listings has remained relatively stable at approximately 0.20 during the past fifty years except for the one spike during the period of the late 1980s to the early 1990s, corresponding to immediately after the merger boom of the period. Except for the peak in the late 1980s the trend approximates the horizontal. It is difficult to ascribe reasons for the one off major spike in this delist code while the other values remained constant over many decades. In the late 1980s the Australian economy experienced a significant merger peak and in the early 1990s a large number of companies were also delisted.



At the beginning of the recession its possible that many companies become privatised (code P) as a defensive measure to avoid a possible hostile takeover; did not pay listing fees (code F) since a merger was expected and potentially felt that it would not serve its best interests in continuing to undergo such non-required expenditure; or that the company decided to restructure (code C) and delist itself.

An examination of the rest of the delist codes (Appendix 2) does not reveal substantial individual code reasons for the de-listings except for the one peak in 1991-92 following the late 1980s merger boom. The main outcome from the data on Other De-listings is that there was considerable activity in may of the codes during the period 1989-1992, which was the period of severe economic recession experienced by the Australian economy, and immediately followed the merger boom of the late 1980s. Many companies were delisted in 1990 because they failed to pay ASX listing fees, a large

number were delisted and transferred to the main board of the ASX in 1992 and a large number of companies were removed by order of the ASX in 1991. These removals were not in relation to merger activity. However the large number of companies delisted due to not paying ASX listing fees in 1989 could be an outcome of merger activity as this was the height of the merger boom of the late 1980s.

Merger Deviation From Trend

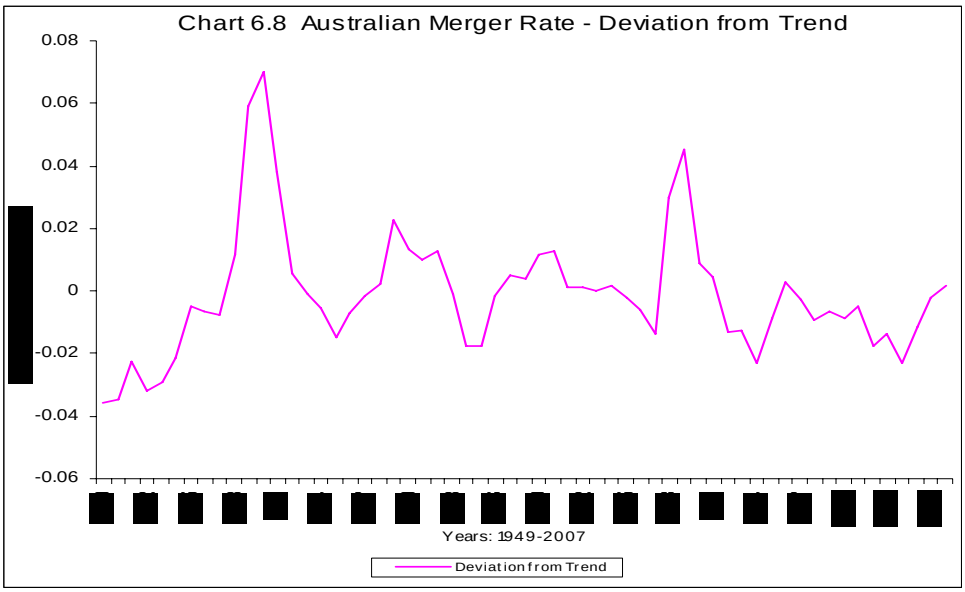


Chart 6.8 shows that the deviation from trend of the Australian merger rate during the period 1949 to 2007. Most of the deviations have occurred in the bandwidth of +2% to –2%, with several major positive spike deviations above +2% in 1960, 1969 and 1989. There were a couple of negative deviations from trend marginally below –2% in 1994 and 2004. These correlate with earlier evidence that the Australian economy experienced merger peaks and troughs and there were also distinct periods of movement from negative to positive and positive to negative. The first major positive deviation is the period of the late 1950s when there was significant merger activity due to an economic boom following the Korean War and protectionist policies. Merger activity dropped off quickly as a result of the credit 'crunch' of 1961 and the deviation from trend becoming negative by the mid 1960s. Another positive deviation occurred in the late 1960s (peaking in 1969 due to the mining boom. At this time many companies become attractive as an acquisition target due to their increasing value (Tobin's q), a

general time of enhanced company profitability due to the low cost of funds and relatively low inflation.

Chart 6.8 also confirms a major economic recession in the early 1950s associated with the collapse of wool prices towards the end of the Korean War. Previously the deviation from trend in the merger rate was considerably low due to the high prices of wool, the resultant high levels of company profitability (and their ability to ward off predators) and high company values (and low Tobin's q). The incidence during the Korean War showed a major negative deviation from the trend (below 2%) in the merger rate. With the collapse of wool prices, company profitability and values value fell, as did their ability to minimise takeover threats. Subsequent negative deviations from trend occurred but not to the depth of the early 1950s period. The 1950s was one of government protection of local industries and after company values fell considerably, this provided an impetus for acquisitions. The protection of local industries also minimised the threat from overseas predators of local companies. As the economy heated the brakes were applied through a credit squeeze (availability and high cost of funds) of the early 1960s. This resulted in a negative deviation from trend but quickly reversed in the late 1960s with the mining boom (when companies were relatively cheap to acquire, due to a low Tobin's q).

During the Whitlam Labor Government (of the mid 1970s) the economy (through considerable government spending expansionary policies) experienced a boom but this was not translated into a merger boom and in fact the deviation from trend shows a strong negative movement in 1974-75 (profits and business confidence were very depressed. Following the Labor Government, the expansionary policies of the Liberal/National Party Government led to a mini merger boom with the deviation from trend in the merger rate becoming positive. During the late 1970s, the world economy experienced an shock as oil prices quadrupled due to the political instability and revolution in Iran but the Australian economy experienced a minor merger boom (positive deviation from trend). After the stock market crash of 1987 mergers activity declined as many companies experienced a significant drops in profitability allied with the high cost of capital.

The mid to late 1980s was the last major deviation from trend when Australia (with the rest of the world) experienced strong economic growth following the economic liberalisation policies. Though there were more mergers in the late 1980s compared to the boom period of the late 1950s, the greater level of ASX listings indicates a lesser magnitude in the deviation from trend than during the late 1950s. The significant positive deviation in the merger rate of 1989 occurred due to the undervaluation of company assets, the growth in company profits, the relaxation of exchange controls, the low costs of capital and new and innovative financing methods. The late 1980s was the second most significant merger boom since World War II. Following the stock market correction of 1987, liquidity was increased, thereby making it easier for companies to pursue growth through acquisitions and mergers. The government facilitated this process as it used increased liquidity and attempting to maintain low cost of capital measures to ward off any recession. However, this only worked for a time and merger activity declined as many companies experienced increased capital costs, falls in profitability and fall in GDP until the oncoming recession of 1990.

Literature describes the 1980s as the fourth merger wave in the US, the UK and Australia and the deviation from trend of the merger rate supports this observation. Without this significant positive deviation in the late 1980s the overall merger rate would have been much lower and would have continued on a negative deviation since the beginning of that decade. The above factors led to a fall in the merger rate and deviation from trend.

From a significant positive peak in 1989 the deviation from trend moved to a major negative in 1994 concurrent with a major recession with many other world economies as an open economy was more susceptible to influence from the UK and the US. The negative deviation from trend in the merger rate in 1994 was the major deviation since World War II. Though there was a minor movement into positive territory in 1996, the deviation from trend remained around zero for several years until Australia experienced the effects of the tech bust of the early 2000s, again experiencing a strong negative deviation from trend from 2001 to 2004 with marginally positive in 2005. Australia did not have the depth and spread of a tech industry and didn't experience the level of merger activity as occurred in the US; neither did it experience the level of the tech bust. In the mid to late 1990s many companies adopted defensive strategies and interest

rates (cost of funds, though falling), were still relatively high; the growth of real GDP was minimal; company profitability was relatively low; the inflation rate was relatively high; and the UK and US economies were relatively dormant in their merger activities (except for some major merger transactions) compared to their recent histories.

Ultimately, there have been a number of temporal fluctuations in the merger rate over time in the Australian economy. These fluctuations can be explained by several of the merger motives and reasons that were summarised in Table 6.2 and reinforced by the affects (influences) of several of the six independent variables on the merger rate. Not every variable in each instance caused a temporal fluctuation in the merger rate over time but combinations of these at different periods of time resulted in either positive or negative deviation from trend in the merger rate (hence merger wave peaks and troughs). The history of temporal fluctuations the Australian merger rate has been influenced by a number of these independent variables described in this chapter.

6.2 MERGER REASONS AND TEMPORAL FLUCTUATIONS

Extensive research (detailed in Chapter 2), has provided a body of literature for the economic theories, motives and reasons and timing for merger strategy: desire to achieve production economies of large-scale and multi-unit operations; possibility of achieving distribution and advertising economies; financial advantage of large size; tax advantages; gains from the sale of securities; strategic control of patents. These are summarised in Table 6.2. This part of this chapter aims to draw from Chapter 2 and link the key empirical questions, issues and methodologies in this thesis with the research that was conducted previously. To show the link and content between this thesis and previously expounded research, Table 2.1 is partially reproduced below as Table 6.2.

Table 6.2 Summary Table: Motives For Mergers and Acquisitions

Merger Motives	Reasons	Reference
Economies of scale	Horizontal acquisitions to reduce cost Vertical integration Reduction in over capacity Achieving economies of scale Asset purchases re asset price (Tobin's q)	Gammelgaard, 1999. Dettmer, 1963. Goldberg, 1983. Golbe and White, 1988.
Transaction costs	Minimise governance costs Vertical integration to reduce costs and gain competitive advantage Extant legal and regulatory framework may lead to M&A	Hart, 1995 and Williamson, 1975. Porter, 1985.
Growth	Main strategy by companies Decision is down to whether it will be through internal or external means Accessing new markets	Starbuck, 1965. Hallen & Wiedersheim-Paul, 1982.
Monopoly	Desire to become market leader Achieved through horizontal integration	Gilbert & Newbery, 1992 Eckbo, 1983. Kim & Singal, 1993.
Diversification	Desire to minimise risk and uncertainties Achieved through diversification or conglomerate mergers	Pfeffer & Salancik, 1978. Lewellen, 1971. Weston & Mansignhka, 1971. Gort, 1974.
Debt/Equity	Minimise financial cost Minimise risk of bankruptcy by sharing capital Tax motives	Steiner, 1975. Brearley & Myers, 1988. Gilson, Scholes & Wolfson,1988.
Undervaluation	Imperfections in strategic sector create firm price variations Hubris theory	Barney, 1986. Roll, 1986. Barney, 1988. Gort, 1969.
Empire building	Managers have private and personal reason for their behaviour Hubris reason Executive compensation	Gammelgaard, 1999. Ravenscraft & Scherer, 1987. Roll, 1986. Baumol, 1959.
Synergy	More profitable single entity than separate parts Elimination of inefficiencies Can be achieved through economies of scale Can be achieved through economies of scope	Teece, 1987. Gaughan, 1999. Asquith, 1983. Sanchez, 1999. Mester, 1987.

Source: Gammelgaard (1999)

Lessons and tools will be drawn upon for this research since it allows the adoption of techniques that may result in interesting outcomes specifically applicable to the Australian experience. The previous researchers (as cited in Table 6.2) had as their focus either the US or the UK economy and the Australian economy was not part of their main context. The focus of this research is the Australian economy while drawing upon the motives, tools, techniques others have employed.

Previous research examined the motives and reasons for merger activity while this thesis examines the reasons and timing for Australian merger activity. Mergers occur for a variety of reasons and these are just as applicable to the Australian economy. It doesn't infer however, that all the reasons for occurrence between all the economies at the same time, even though there may have been similar peaks and troughs in merger activity in Australia, the US and the UK. Firms may have similar reasons for

undertaking merger activity, but the reasons for peak and trough merger occurrence may vary between different economies.

Table 6.2 summarizes nine merger motives and for each motive, several reasons were offered. This previous research appeared to be focused more on the micro economic aspect (which may well be important) of mergers rather than the macro economic ones. For example, previous research examined merger motives of economies of scale, transaction costs, growth, monopoly power, diversification, debt/equity considerations, undervaluation of companies, empire building and synergy considerations.

As pointed out in Chapter 2 aggressive mergers are likely to occur where opportunities are greatest in relation to costs, i.e. shareholder values are high, interest rates are low and the economy is strong. Defensive mergers are likely to occur when the economy is weak, interest rates are high and shareholder values are low. From the perspective of this current research the independent variables that have been reviewed impacting the merger rate are interest rates, inflation rate and the level of stock market capitalisation.

As mentioned previously, when a firm decides to merge or acquire then it must also consider factors such as timing, cost of capital, opportunity cost between internal and external growth etc. In a similar manner this research examined Tobin's q and Company Gross Operating Surplus as independent variable affecting the merger rate.

Undervaluation has been cited as one of the merger motives in the previous research. The reasons given for this motive have been that imperfections in strategic sectors create firm price variations and hubris theory also plays a part. This thesis examines one of the independent variables, being Tobin's q (an indicator of the value of a company reflected as the ratio of the market value of the company divided by the replacement cost of capital). The higher this ratio the indicator is that it is more likely that this firm will be taken over and vice versa.

It has been shown that companies merge according to the hubris theory, where managers undertake activities for their own personal advancement and therefore seek to acquire other firms for their own pride and personal motives and that pure economic gains are not the sole motive or even the primary motivation in the merger.

The concept of synergy in M&A activity is rather intangible in the acquisition process since not all mergers can be readily and easily translated, as the merger entity is greater than the sum of the two parts, and can be a difficult measure to express. Asquith (1983) and Bradley, Desai and Kim (1983) view synergy in a broader sense and include the elimination of inefficient management by installing the more capable management of the acquiring firm. Allied within synergy are the concepts of economies of scale and economies of scope, both cost reduction synergies. Revenue enhancing synergies (or efficiency gains) may be gained from horizontal or vertical mergers. Financial synergy refers to the possibility that combining two or more companies into one entity may lower the cost of capital. This thesis' examination of Tobin's q, interest rates and inflation rate incorporate the synergistic concerns in M&A activity. Additionally the examination of the real GDP growth rate, stock market capitalisation and company gross operating surplus also are important factors in this thesis and are related or at least similar to the comments of the previous research.

The examination of the independent variables on the dependent variable is part of the overall research into the causes and timing of M&A activity in Australia. This thesis seeks to address the reasons and timing of Australian merger activity and through this research several of the merger motives are examined from an Australian context: economies of scale; transaction costs, diversification; debt/equity; undervaluation, using qualitative and quantitative analysis.

Data has been obtained and analysed for several factors to be reviewed as part of the overall research topic. Several of the questions and data analyses conducted in this research are also part of the overall context of merger research previously conducted as shown in Table 6.2. A brief comparison between the current research questions and the above table shows the link between the current research and previous research.

This section of the research therefore provides a link between the motives and the reasons for the timing (temporal fluctuations) of merger activity. Owen (2006:2) states that, "it is possible to posit the hypothesis that there is no one reason for the development of merger waves, nor is their any great mystery concerning their existence." It's also added that, "there will never be a single explanation for these

events as they change fundamentally over time and, whilst some characteristics seem to be consistent, many others are not." These comments show that an organization responds continually to both internal and external pressures. With such ongoing pressures, which in themselves change over time as well as the change in their mix, the motives for mergers can change and so could the reasons and timing for these mergers.

From an examination of the motives for merger summarised in Table 6.2, it would be expected that there would be some variables consistent with the explanations that would tend to influence the timing of merger activity. The analysis below allows this to be examined as a relationship linkage between the theory and the practical aspects of the reasons and timing for merger activity. Eight variables have been identified that might be expected to influence the nature and timing of mergers and are consistent with the explanations. These are explained below with their relationship to the merger motives outlined by Gammelgaard (1999) summarised in Table 6.2.

6.3 VARIABLES AND DATA SOURCES

Third party data (for independent variables and the dependent variable) for this thesis was obtained from a number of sources, both public and private. Once the data was obtained it was manipulated, analysed and reviewed to ensure accuracy and completeness. Where there were gaps in data series, estimates were derived in order to complete the stream. These were all collated so that the research could manipulate data sets for all the variables covering the period 1949-2007. Each of the separate data that was obtained is discussed below according in its use as a dependent and independent variable. Where required the data was indexed/deflated to a base year.

6.3.1 Independent Variables

The following independent variables were selected from the literature review as ones with a potential major function in the occurrence of merger activity.

Australian Business Cycles

Boehm and Summers (1999:1) state that the measurement and analysis of business cycles has been one of the "core research topics in economics through the past century". The data for this variable covers the period 1951 to 2006 including contractions and expansions in the Australian economy during this period. This data is in two formats. The first is entitled Classic Cycles and is the peaks and troughs in a plot of the level of the series, representing the general level of economic activity. Secondly, Growth Cycles are the recurring fluctuations in the rate of growth of aggregate activity relative to the long-run trend rate of growth.

The data on Australian Business Cycles covers phases of business cycles in Australia 1951-2006; was obtained from the Melbourne Institute of Applied Economics and Social Research and closely approximates the research period under investigation (1950-2007). It was comprehensive in that both Growth Cycles and Classical Cycles have been detailed. For each of these cycles the dates of the peaks and troughs by month and year are given and the duration in months is also given. Though the data sets for Growth Cycles and Classical Cycles end a year earlier (2006) compared to the ASX data (2007) this does not affect the analysis of results.

Asset Prices or Tobin's q (Bargains)

The value of assets, what companies are worth, would be expected to be a variable that would influence the nature and timing of merger activity. The research by Barney (1986 & 1988), Roll (1986), and Gort (1969) has shown the undervaluation of a firm can be an important factor as to whether it is acquired by another. When the value of a firm is low (in relation to others in the market) then there would be a higher likelihood for it to be an acquisition target. Since a company is an entity it must respond continually to both internal and external pressures. These pressures can lead to a change in the value of a company (increase or decrease) and when this occurs, the likelihood of a merger may either increase (if the value of the firm falls) or decrease (if the value of the firm rises and it becomes prohibitively expensive to acquire).

The variable of asset prices may not only fall within the undervaluation motive. Asset (firm) prices may be a variable under several other motives such as economies of scale (where an acquirer seeks to merge in order to achieve either vertical or horizontal integration (Goldberg, 1983; Golbe and White, 1988)); or it could be due to debt/equity reasons since a firm with a lower purchase price will result in lower financial costs for the acquirer (as the initial asset purchase as well as the other transaction costs required to complete the transaction of the takeover), as previously explained by Steiner (1975) and Brealey and Myers (1988).

Since Tobin's q is defined as being the ratio of the market value of the company (numerator) divided by the replacement cost of capital (denominator), Golbe and White (1988) state the lower the ratio of market value to replacement cost, the greater the bargain (of that firm) and hence the greater the likelihood of some potential acquisition.

In calculating the "q", data for the numerator, data was obtained from the Australian Bureau of Statistics (ABS), Reserve Bank of Australia (RBA) the Australian Stock Exchange (ASX), the All Ordinaries level for the period 1950-2007. This was adopted as the value for the market value of the firm. So as not to restrict population capture, the All Ordinaries measure was used rather than the All Industrials. For the denominator, data was obtained from the ABS/RBA covering the same period. Gross Fixed Capital Expenditure Total Private was adopted as the value for the replacement cost of capital. Complete (without gaps) data sets were obtained for both the numerator and denominator so the derivation of the q ratio was straightforward.

Interest Rates (Cost of Funds)

Falling interest rates in conjunction with a rising stock market removes a major constraint to merger activity as previously provided by Williamson (1975), Porter (1985) and Hart (1995) since the level of interest is one of the most important transaction costs in merger activity. The cost of funds (including ancillary costs, such as fees, commissions and charges to these costs of fund) play an important role in the debt/equity motive. For an acquirer the affect on its credit rating and financial viability is important if it decides to undergo an acquisition when the cost of funds is high therefore the level of debt/equity is important pre and post merger transaction outcomes.

While there are several applicable measures of interest rate (all reviewed for appropriateness), the Bank Overdraft rate was adopted. For the period 1976-2007 it was sourced from the RBA (a listing on an annual basis of the Bank Overdraft Rate, expressed as a percentage) and from Australian Historical Statistics (data on the Bank Overdraft Rate, expressed as a percentage) as the interest rate measurement. Their combination provided the period 1950-2007.

The data (Indicator Lending Rates, in tabular form) was quite detailed with comprehensive explanations and comparisons could be made because each table had several measures of interest rates and the most applicable data for the research selected. The initial RBA data covered the period 1950-1997 with further investigation required to obtain the period 1998-2007; there were some gaps in the data ranges but no consistency in these gaps; some tables had many gaps and the period was left blank or termed not available; the measure of London Inter Bank Offer Rate (LIBOR) was not readily used as a measure of interest rates; the data for interest rates and yields has gaps from 1949-1969 and no data was available after 1997; and finally, though outside our scope of study, there were gaps in the data prior to 1950.

Changes in CPI (Inflation Rate)

Changes in the level of CPI may be reflected in the prices of company stock as well as the cost of replacement assets, so these changes in yearly CPI may be an important category in examining when M&A activity occurs in peaks and/or troughs over time. The desire for growth is usually a main strategy and is implemented through a combination of internal and/or external means and accessing new markets (Starbuck, 1965 and Hallen & Wiedersheim-Paul, 1982).

Changing economic conditions (disturbance theory) result in perceived differences in company values. Since companies have definite sets of values at any given point in time and one of these measures is the level of CPI it translates into the overall value of a company, its asset replacement cost as well as the prices of its individual components. Differences of opinion may result in increased levels of merger activity.

With respect to economies of scale, horizontal mergers occur to reduce cost, while vertical mergers occur to gain sources of supply and/or markets. Companies must therefore consider the importance of the effect of CPI on the desire to integrate horizontally and vertically since acquisitions have to be made for these assets, which in turn will result in an increased cost or debt burden for the acquirer. The purchase invariably will be made at what is considered to be close to the market price (or premium) so the purchase price of the asset incorporates the CPI factor.

Transactions costs are also dependent on the level of CPI, as all players will set prices, fees and charges according to the prevailing market prices (rates). Therefore what the acquiring firm will pay for these costs is important since they aim to minimise governance costs (Hart, 1995), firms aim to minimise governance costs. The monopoly motive is relevant in relation to merger reasons and timing of mergers because firms may desire to become market leaders (Gilbert and Newbery, 1992) at a particular period of time, also a time when other firms are also pursuing this strategic option, leading to merger wave peaks. When many firms leave an industry the result could be a merger trough.

The inflation rate is a measure of change of the Consumer Price Index (CPI) and this was adopted as the measure of the inflation rate in Australia from 1949/50. The annual average of the CPI was sourced from the Consumer Price Index, Annual Average All Groups for the period 1950-2007 from the RBA and the ABS. Since these data sets are the same, the data sets from the ABS were utilised for this research. The data possesses the following features: it is in one continuous stream without any gaps covering the period 1950-2007; major consumer groups with their CPI percentage are given; annual average inflation rate (CPI) is given for each year; anomalies are explained; and the base year of 1989/90 is used.

Stock Market Capitalisation

Rising share prices are very often an indicator that an economy is strengthening and this is followed by increased profits for many firms, which can trigger increased levels of merger activity. The motive of undervaluation this is important because firms that have

the ability to raise finance due to their financial strength (strong profits and strong balance sheet) may be able to acquire others who may not be in a similar situation.

Increasing stock values and increasing balance sheet fundamentals provides options for growth through internal or external strategies (akin to economies of scale motives and growth motives). A rising stock market facilitates merger activity either by allowing companies to raise finance through the issue of new shares or allowing them to use new shares as the medium of exchange in the deal. Therefore, undervaluation is another important merger motive for the reasons and timing of merger activity. Coupled with falling interest rates then finance becomes particularly easy to raise and removes a major constraint to merger activity.

Stock market capitalisation refers to the measure Market Capitalisation of Listed Entities on the ASX. This data has been sourced from the RBA Market Capitalisation of Listed Domestic Equities for the period 1980-2007; Committee of Enquiry (1980) (also referred to as the Campbell Inquiry) Market Capitalisation of Listed Entities for the years 1953, 1963-1979; and Stock Exchange Annual Reports for the period 1960-1962 for the Market Capitalisation of Listed Entities. For the period 2002-2007 the RBA data was also confirmed to the ASX website/Historical Market Statistics. This was one of a few incidences in which one specific data set was compared with another to ensure consistency. The amalgamation of these data sets provided the period of 1950-2007. Due to the lack of data 1949-1952 and 1954-1959 estimates were made. It was of concern that several gaps existed in this data source.

Real GDP Level

Owen (2006:4) explained, “another important factor in determining the level of merger and acquisition activity is the overall size of the economy”; also adding that it is easier to attempt merger deals in larger economies than in smaller ones. As stated earlier by Golbe and White (1988), a large economy provides merger opportunities (depth and spread) that a small one may or could not. Therefore the opportunities for economies of scale are much greater as a motive for merger activity. Additionally, there ought to be more opportunities for growth, for diversification and for obtaining synergy (the

achievement of economies of scale and scope) than would otherwise be available in a small economy.

The inclusion of real GDP is an important link between merger motives, reasons and timing because this factor appears to be included in many of the merger motives discussed by Gammelgaard (1999). A large economy and with growth in its size that economies of scale, transaction costs, growth, diversification, empire building and synergy have greater opportunities to come to fruition than in comparison to small economies. The literature on M&A supports this with examples of the discussion (their causes and effects) of merger waves, their causes and effects in the relatively large economies of the US, UK, Germany, Japan, Italy, France, Australia, and the Netherlands rather than the smaller economies, as asserted by Owen (2006).

Most of the data for GDP was obtained the RBA Gross Domestic Product table and was augmented by data from Australian Historical Statistics for the years 1950-1959, as the RBA data only commenced in 1960. Firstly, real GDP was calculated after deducting CPI from the annual nominal GDP value and secondly, the real and nominal GDP values were indexed to a base year. The weaknesses of these data sets were that there were gaps in the series from 1959-1960, and estimates were made. Since the values of the data sets of the RBA and ABS (Australian National Accounts) differed by small margins (not considerable) for the period 1950-1959 no further investigation was taken and the RBA figures were used.

Company Gross Operating Surplus (Company Profitability)

As the level of the economy is growing, so the operations and profitability of companies in that economy would be growing. Company profitability is an important factor because financially strong companies can be in a position to obtain synergies through the eliminate inefficiencies (Gaughan, 1999), obtain and achieve economies of scale (Asquith, 1983) and scope (Sanchez, 1999).

The increase in the level of company gross operating surplus (profitability) also has an effect on transaction costs and the firms desire to achieve growth. Enhanced profitability can allow a firm reduce its governance costs (Hart, 1995) and obtain

opportunities to achieve the optimum mix between internal and external financing for acquisitions (Hallen and Wiedersheim-Paul, 1982). Greater levels of internal funding for growth reduces the need for external borrowings and can also work in a further positive manner because the company can obtain more favourable external financing.

Where a firm achieves considerable internal rates of return and resultant significant profits, it may be in a position to exercise monopoly power over others in the industry and pursue growth motives in order to become a market leader. Alternatively, it may opt for conglomerate growth (US merger wave of the 1960s) and pursue growth outside its core industry. The Australian company Email Ltd pursued such a strategy in the 1950s 1960s and 1970s where it expanded from its traditional base of meter manufacturing to one where over time it became a conglomerate enterprise comprised of four business divisions, being: metals, appliances, industrial products and metering.

Where there are also considerable differences between the levels of activity within different industries, the monopoly merger motive may have greater prevalence than others including that the timing of merger activity is also industry specific. These patterns are determined by shocks to the industry, which can result from changes in economic and regulatory conditions (Mitchell and Mulherin, 1996). Owen adds:

> "When a substantial shock is received by an industry, it often becomes necessary for the firms within that industry to make some major changes in response. Under these circumstances, merger and acquisition activity is often the fastest form of response and, in some situations, may even be cheaper than the alternatives" (2006:4).

A prime external shock was the quadrupling of world oil prices and oil embargo as a result of the 1973 Arab-Israeli War, which quickly ended the conglomerate merger boom of the 1960s and early 1970s (of the US merger wave which began in the late 1950s). The high energy costs fed into worldwide inflation and also created uncertainty in unemployment, company profitability, stock market prices and cost of finance. The oil crisis of 1973 resulted in a sharp increase in inflation and a worldwide economic downturn.

Company Gross Operating Surplus data was obtained and combined this with the Total GDP to determine the ratio of Gross Operating Surplus Private Corporate (GOSPC or company profitability) to GDP. This ratio has been determined in order to firstly ascertain what movements there may have been in the Australian economy during the period 1950-2007 and how any movement in this ratio may have had an effect on the merger rate. This measure was adopted to ascertain the change in company profitability in comparison to the change in GDP over time. As this ratio increases or decreases it indicates whether companies are becoming relatively more or less profitable in relation to the aggregated economy.

For the period 1950-1959 Gross Operating Surplus Private Corporate was sourced from Australian Historical Statistics for both Gross Operating Surplus Private Corporate and Original GDP Total. Further, the GOS data from Australian Historical Statistics appeared different in some respects and in comparison to the data from the tables on GOS and GDP from the RBA. The data for both sets of statistics (GOSPC and GDP) for the period 1950-1959 (data was not available for all of the period or was only partially available from one source) was estimated using the data from the ANA tables on Gross Operating Surplus (GOS) and then applying this to the RBA tables. The RBA GOS and GDP data was adjusted by the percentage change in the GOS data from the ANA tables in the Australian Historical Statistics publication. In this way, where there were estimates, they were uniform across the GOS and GDP data applicable to the RBA. For the period 1960-2007 the uninterrupted data series was sourced from the ABS Gross Operating Surplus Private Corporate and Original GDP Total. As there were some minor differences in series in the years 1959/60, and hence the possibility of errors, an estimate was used. The combination of these data sets provided the timeframe 1950-2007.

Data on US and UK Merger Activity

One of the largest and extensive data sets compiled as background research was the sourcing and collation of data on M&A activity for the US economy, which included data on M&A numbers on a yearly basis as well as the total yearly value of M&A transactions. The original US data sets employed for this part of the research include the total yearly number of mergers and the total yearly value (US $b) mergers. This

data was obtained from several sources and combined to form one continuous stream covering 1895 to 2006 from which the research period 1950-2006 was selected. Nelson (1959) provided data for 1895-1954; Scherer (2002) for 1895-1962; Narver (1967) for 1955-1962; Steiner (1975) for 1963-1964; Keenan and White (1982) for 1965-75; Weston et al. (2004) for 1970-1974 and 1975-2001; Scherer (2005) for 2002-2003; and Majoras and Barnett (2006) for 2002-2006. At the time of thesis finalisation 2007 data was not publicly available from the US Federal Trade Commission. Correlation in merger activity was conducted between the US and Australia merger activity to explore any relationships.

Correlation in merger activity was also conducted between the UK and Australian merger activity to ascertain any relationships. Long-term data was obtained on the number and value (UK £m) of UK mergers. Once compiled into one continuous stream covering continuous stream covering the period 1880-2007, provided research data for 1950-2007. Hannah (1983); provided data for the period 1880-1953; Utton (1969) for 1954-1965; Hannah (1983) for 1966-1968; and the Office for National Statistics (2008) for 1969-2007. Interestingly, none of these data sets overlapped.

Data on UK M&A activity is surprisingly more extensive than that of the US. The UK data incorporates merger activity that specifies the actual yearly number of merger deals as well as the total value of these deals. Therefore two continuous data sets were available for analysis in conjunction with the Australian data. As outlined for the US data, possessing a several data sets can be unwieldy and may increase the likelihood of using making errors. Since there are only three UK sources the risk is minimal.

Though the Australian and UK data end in 2007 and the US data ends in 2006 this does not pose any difficulty in the overall analysis. A large number of data sets can be unwieldy, may increase the likelihood of using inappropriate data source and possibly lead to errors. Some of the data sets overlapped but the differences were minor so it didn't matter which data set was adopted. Though the aggregate values of mergers were not used, some of the values in the some of the years of this data set do appear to be questionable (either too low or too high). A third correlation in merger activity was conducted between the US and UK to explore potential relationships.

6.3.2 Dependent Variable

Australian M&A (Merger) Rate

The dependent variable is the merger rate and also covers the period 1950-2007. The data used for the merger rate comprises the number of companies (or count of mergers) that had been delisted (due to merger or takeover) on an annual basis (delist code M) from the ASX and also the total number (or count) of entities listed on the ASX every year. Dividing the count of annual listings into the count of code M derived the merger rate. The original data set covered annual delistings that started in 1926 and ended in June 1999, with other ASX and separate data sources ending at 2007 added. The data is an amalgamation of all taken over and merged companies.

As surveyed in Chapter 5 and discussed in Table 5.1, previous Australian scholars conducted research on merger activity and used different methods in data collection and analysis in their studies on merger activity. Each of the data sources and methods employed by these researchers has its limitations, as explained in Table 5.1. for example Bushnell (1961) collected data on individual mergers and aggregated them over a very brief time period; McCarthy (1973) collected data on ASX listed companies that were taken over by listed and unlisted acquirers but it was of short duration and covered industrial and mining companies listed only the Sydney Stock Exchange; the work of Stewart (1977) was on individual mergers obtained from several data sources but though it was detailed quantitative data only mergers where one entity disappeared were counted not purchases of assets; the BIE (1990) examined firm disappearance due to takeover and were compared with other data sets for consistency, however it used a narrow measure of only including publicly listed companies.

The approach conducted in this research is one of collating data over long time periods of publicly listed entities that were acquired or merged, and disappeared from ASX listing. This is a similar limitation to that of the BIE. Another limitation is the use of publicly listed firm disappearance excludes the population of privately held companies that engage in merger activity. However, this research uses single source delistings for long run periods, being a considerable improvement over previous research and improvement on available data. There are also positives in this method as it provides

consistency over long time periods, consistency of identification (same criteria over all the population) of firm disappearance and consistency in the use of this dependent variable. Conceptually the delisting measure is a good measure of merger activity as each company removal from the ASX was specifically reviewed to ensure correct identification and capture in the delisting population.

Data From ASX Publication Delisted Companies As At 30 June 1999

The data from the ASX (in soft copy and hard back publication) was quite detailed but a couple of additional categories had to be added to the data for meaningful and effective manipulation, being the column 'Reason Code' and the column with the date given as the year of the ASX activity.

The original data though it offered a brief explanation of the delisting reason was inadequate for manipulation purposes. The delisting reasons were examined in detail and ASX delist codes were created and used so that ultimately 15 different alphabetical delist codes were created and applied as detailed in Appendix 1. In this manner continuity of explanations between the ASX provided data and the manipulated data arising from the original ASX data is offered. The sorting of the ASX data by delist code revealed that there may be reasons why there have been other de-listings besides a merger or takeover. A number of issues became apparent with the ASX data and affects on its applicability of this data, review and conclusions and they are summarised in Table 6.3.

Table 6.3 Features of ASX Delisting Data

Features	Weaknesses
Period	Initial data from ASX publication only covered the period 1920-June 1999.
Content	The content of the data was not comprehensive.
Errors	There were some minor errors in the original data in that some of the company names were ineligible or the reason for the delisting was ineligible or the year of the delist was unclear or partially given. When this occurred, estimates were conducted to rectify gaps.
Formatting	There was an overabundance of data detailing the history of changes in company status within one column or row, which created time-consuming difficulties in manipulating it.
ANZSIC	In its original format the data didn't have Australian and New Zealand Standard Industry Code (ANZSIC) code for each company that was listed. The code is a means to identify which sectors of the economy the change in status of the company occurs in and could be a useful tool for further industry analysis. Since the focus of this research is on determining the reasons and

Features	Weaknesses
	timing for merger waves then to have the facility to review in which sectors of the economy concentration of merger and acquisition waves occurs could conceivably be quite important as either part of this research or some future research. Since this code was missing from this original source data then the task of attempting to identify each company's ANZSIC would quite monumental and outside the resource and time constraints of this research.
Additional statistical information	The contents of this data did not provide what could be perceived as some additional valuable statistical information that could also be relevant to this research, namely the total additions of companies in a year, the total deletions of companies in a year and the net result of this in the total number of companies listed on the ASX at the end of the year.
Merger values	The data on mergers is given as the number of mergers that occurred but does not provide a dollar value of the mergers.
Problem companies	Even though every effort was taken to correctly identify each one of the companies and the reason for their de-listing, the research found a minor few problematic companies in which the information was either incorrect or only partial. The majority of these errors were corrected and the data was been included in the relevant worksheet. For the others, their omission from the overall data would not affect any outcome.

'Stock Exchange Journal' and 'Shares' Magazines.

Since the ASX delisted publication only contained data up to 30 June 1999, additional data was sourced from back copies of the magazine *The Stock Exchange Journal*, (subsequently renamed *Shares* magazine. On a monthly basis, *Shares* magazine provided details of all the additions, removals and name changes of publicly (ASX) listed companies. Information from *Shares* magazine from July 1999 to December 2004) was collated and manipulated into similar formats as the data from the ASX publication and added to it to provide data continuity to the end of 2004.

For removals, the data was made up of the ASX Code, the Name of the company, the Date of Removal and the Reason for Removal. Using the Delist Code (Appendix 1), each removal was assigned a delist code, such as 'C' or 'M' etc, depending on the reason for the delisting. For name changes, the data was made up of the ASX Code, the Old Name, the Effective Date, the New ASX Code, and the New Name. Using the Delist Code (Appendix 1), each name change was assigned the delist code 'N', since this category referred to a name change. Several of the shortcomings in the data from *Shares* Magazine are shown in Table 6.4.

Table 6.4 Features and Weaknesses of *Shares* Data

Features	Weaknesses
Format	The data was not in a monthly/quarterly/yearly total of the number of ASX listed companies. It would have been beneficial to have the data in the following format: companies listed at the beginning of the year, plus additions, minus deletions, resulting in the number of companies listed on the ASX at the end of every year.
Errors	There were some data errors in the *Shares* Magazine details, which required further investigation. The errors were minor and did not impact the aggregate yearly data.
Definition	There are some errors in definition of the activity that resulted in the delisting that required further clarification.
Manipulation	Obtaining and manipulating the data into the same ASX format was time intensive.
Reason codes	The reason codes for the delisting obtained from *Shares* Magazine appeared to be fewer that those provided by the ASX in its Delisted Companies Book 1929 to 1999. Consequently, each delist reason had to be examined to ensure the appropriate delist code was applied to minimise any potential skewing of the data towards any one (or several) particular codes.
Companies removes	Each company removed from the ASX was reviewed to determine the most appropriate delist code. Problems arose due to the issue detailed in point 3 above.
Merger value	Similarly to the ASX data, the data on mergers was given as the number of mergers that occurred but does not provide a dollar value of the mergers.
Stock Exchange Journal	*Shares* ceased publication in November 2005. Its last edition referred the reader to the *Stock Exchange Journal* for any further reference material, but the *Journal* did not provide any further information on ASX delisted companies. Further, in its final year of publication there were gaps and omissions in several of the months in which *Shares* magazine attempted to provide data on ASX delisted companies.

Data subsequent to mid 2005 was obtained from the following:

ASX Web Sourced Data

The data on annual listing and delisted companies for the years 2005 and 2007 was sourced from the ASX website. In the same manner as the initial ASX and *Shares* magazine it was manipulated so that it provided the total number of annually listed entities, the reasons for the de-listings and the delist code. Where there were gaps in this data, it was obtained from the private research provider Delisted.com. However this ASX data required considerable time-consuming review and collation so that the total de-listings and the reason codes for the de-listings could be presented as yearly data. Also, the more recent ASX web sourced data did not include any data on the actual value of mergers that occurred annually. The data only comprised the numbers of de-list codes on a yearly basis, (thereby limiting possible research into this area) unlike the US and the UK data that included the number and value of merger transactions on a yearly basis.

Other Data Sources for ASX Data

For the period 1960-1962 data on the total number of entities listed on the ASX was obtained from the ASX Annual Reports maintained and generously provided by the J. P. Morgan library in Melbourne. For the years 1963-1971 the data was obtained from the Campbell Inquiry (1980) through the records maintained at the State Library of Victoria. The ASX Research Department was gracious in providing this data for the period 1972-2004. And for the years 2002-2007 the data was obtained from the ASX website/Historical Market Statistics.

The above commentary shows that no one organization expends the effort to source and maintain comprehensive data on Australian merger activities; rather, several organizations maintain separate databases, use different means of obtaining the data, manipulating it and reporting it. This factor accounted for the considerable time spent on sourcing, manipulating and analysing data from different sources. Though different organizations maintain merger data gaps existed in the period 1949-1959, and estimates were made on the annual listing of companies. Since numbers not values were maintained, this somewhat limited the analysis.

Cyclical variability in merger activity may occur for some or all of the above reasons; and that it may go either way. There may be situations where one or several of the reasons might cause cyclical merger variability and there may be situations where we can expect no cyclical variability. Each variable needs to be examined individually or variables examined collectively to assess the likelihood of cyclical variability.

6.4 CONCLUSION

The first part of this chapter examined and analysed the quantitative facts and key trends in Australian mergers during the period 1950-2007. This included a discussion on the structure of the data used in the construction of the variables used in the analysis of the merger rate (for delistings due to mergers, total ASX listings and implied new listings). Though not fully discussed in this thesis, a brief explanation was offered of the importance of other delist codes N and A-Z. During the period 1950-2007 there have been positive major and minor i.e. pronounced fluctuations, as well as minor ones, in

the merger rate with no one reason explaining these deviations from trend in the merger rate. At different times in Australia's history different combinations of the merger motives (independent variables) have influenced the movements in merger activity (behind the causes for the temporal fluctuations in the merger rate). An important finding accruing to this chapter is that of the pronounced variability in mergers over time. And, in spite of considerable economic growth over more than half a century, the Australian economy has experienced a slight downward trend in the mergers.

The second part of this chapter discussed merger reasons and temporal fluctuations in merger activity. The motives and reasons for mergers were examined from the literature and from these several independent variables were selected for analysis: Australian business cycles, Tobin's q, interest rates; changes in CPI; stock market capitalisation; real GDP, company gross operating surplus; and US and UK merger activity. These variables were selected and the direct link was shown between this research and the literature on mergers and acquisitions.

Following on from the link to the literature the third part of the chapter developed the rational and roles of the independent variables and the dependent variable with explanations on the data sources that were used to create these variables. Explanation was also provided on the importance of correlations in merger activity (to be undertaken) between the US, UK and Australian. Having provided the foundation, Chapter 7 focuses on addressing the other three research questions.

CHAPTER 7 EMPIRICAL ANALYSIS

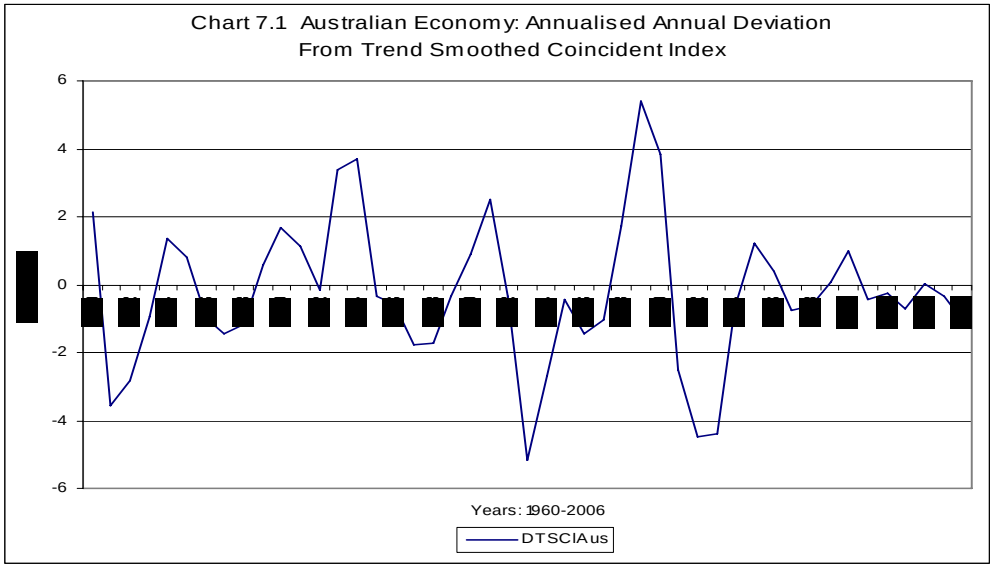
Of the four key empirical questions to be addressed in this thesis, the first - what the main quantitative facts about the level of merger activity in Australia, and about trends and fluctuations in the rate of mergers - was addressed in Chapter 6. The remaining three research questions are addressed in this chapter:

1. Given that we have found that there are periodic fluctuations in merger activity in Australia, are these fluctuations systematically related to the business cycles in the Australian economy?
2. Do the reasons that have been proposed for mergers and acquisitions explain such cyclical variability in merger activity as is observed in Australia?
3. Is the timing of merger fluctuations in Australia closely related to that of merger fluctuations in the USA and the UK, so that variations in Australian activity could be explained in terms of common international factors?

7.1 FLUCTUATIONS IN MERGER ACTIVITY IN AUSTRALIA AND THE BUSINESS CYCLE

The starting point for the analysis of this question is, in addition to a time series for the merger rate, a quantitative indicator of the business cycle. Given two such series, a descriptive analysis can be undertaken of fluctuations in merger activity by comparison with cyclical fluctuations, and an econometric analysis of these variables can also be undertaken. The data used for the cyclical indicator have been constructed by the Melbourne Institute of Applied Economic and Social Research to provide quantitative indexes with which to examine the nature of, and trends in, the Australian business cycle. Of the various indexes constructed, we here use the coincident index, as Boehm and Summers (1999: p. 2) advise that this is a "combination of several time series that one would expect to contain information about the current state of the economy". The monthly data from Boehm and Summers have been compiled into annual data for the coincident index and reconstituted into yearly mean deviations from trend to provide the cyclical indicator. This series is referred to as the annual deviation from trend smoothed coincident index for Australia (DTSCIAus).

Chart 7.1 represents the deviation from trend of the smoothed coincident index on an annual basis in the business (economic) cycle over 1960-2006. A zero level indicates there is no deviation and therefore the economy is in a balanced position, being neither at a peak (boom) nor in a trough (recession). The level of deviation depicts the size (or extent) of the peak or the trough in economic activity. For the chart the business cycle peaks vary in distance from the zero axis to the top of the peak; in addition some peaks and troughs in the business cycle are longer or shorter than others in the context of an expansionary or recessionary economy. The width of the peaks or troughs in the business cycle indicate the duration of that aspect of the business cycle, i.e. whether it is a long or short boom or contraction.

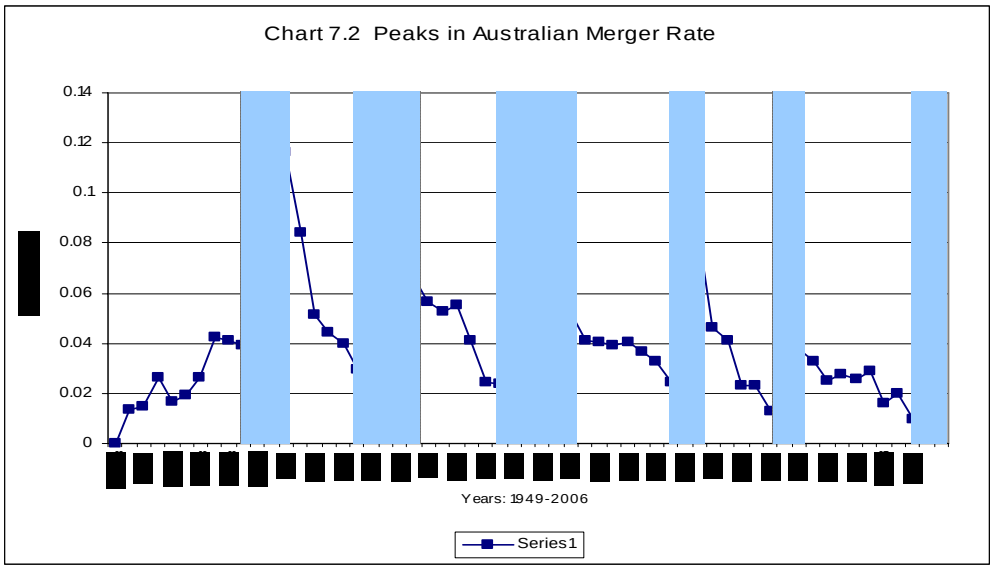


During the period since the mid 1950s there appear to have been eight periods of varying levels of boom economic activity in the Australian economy. These boom cycles (positive deviations from zero) have varied in length. Chart 7.1 above provides detail as to the length of these cycles. The economic booms occurred in the period of several years leading up to the peak in 1960; the smaller peak in 1965 following government expansionary policy and significant increase in expenditure as the Vietnam War escalated; a peak associated with the mining/mineral boom in 1970; the peak in 1973 associated with the global boom and expansionary fiscal policies from the Whitlam Government; the high growth rates in 1979-81; the long boom leading to the peak in 1989-90 following the deregulation and expansion of the Australian economy (and worldwide economic expansion) and liberalisation of exchange rate controls; the minor boom of 1995 as the economy began to rebound from the recession and the pick

up in economic activity up to 2000, influenced in part by the Olympic Games in Sydney.

Economic troughs (contractions) occurred in 1961 (credit crunch and recession that followed), 1967, the recession of 1974-76 (after the wages boom and the outbreak in inflation in 1974), the sharp recessions of 1981-82 and 1990-92 and some slowing of activity in 1997-98 and 2005-06.

In Chart 7.2 merger activity peaks and troughs are shown and the duration of periods of increasing merger activity highlighted with shading. This chart provides a more graphic representation of the extent of changes in merger activity and of the duration of each of the merger increase in the Australian economy.



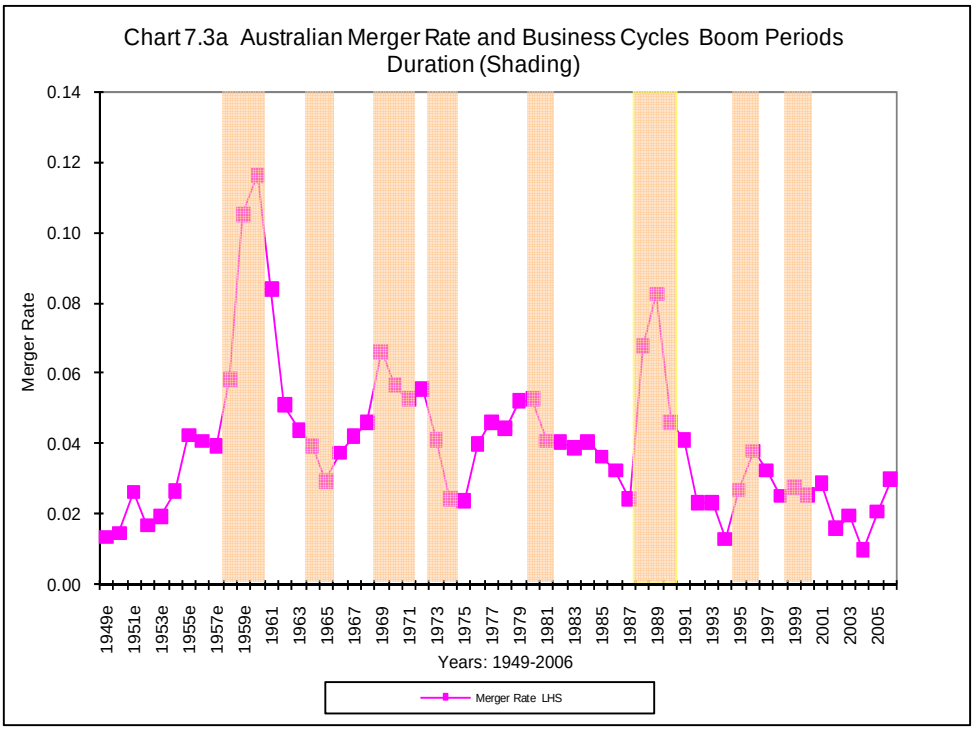
Note: Shading represents periods of increase in the merger rate.

7.1.1 Qualitative Discussion

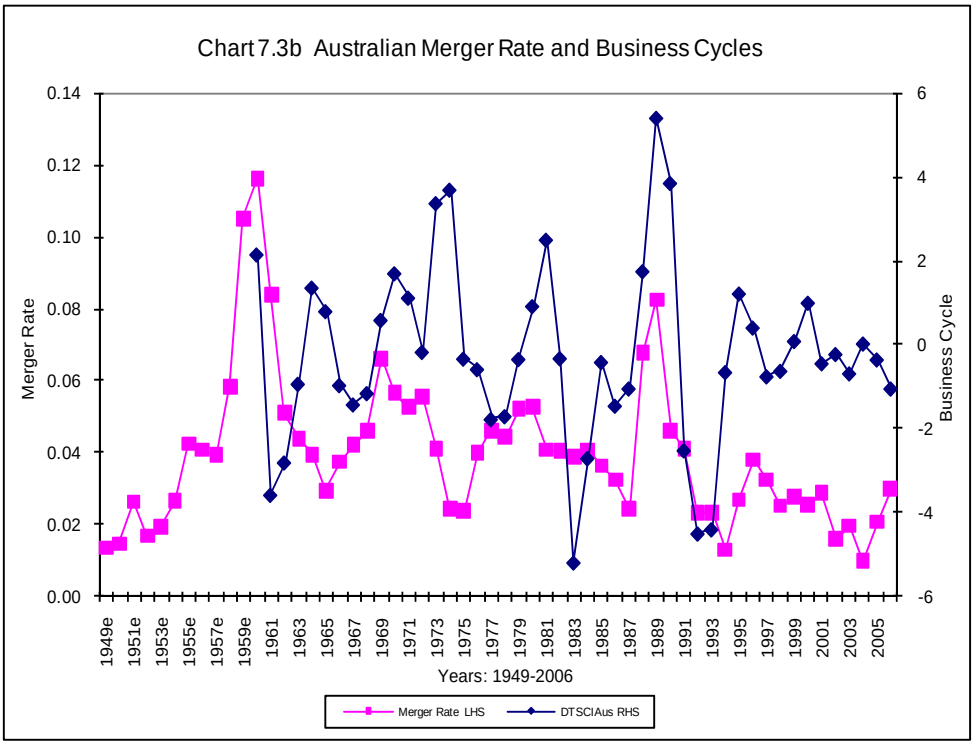
In order to provide a better picture of the relationship between the business cycle and the merger rate, the data for each series and the periods in question have been combined in Chart 7.3a and Chart 7.3b, with a comparative description in Table 7.1.

Periods when the Australian economy experienced a boom phase of the business cycle have been shaded in Chart 7.3a and the width of the shaded portion indicates the length

of the boom. These are periods in which the DTSCIAus index is above zero. Prior to 1960 the information is not available for the Australian business cycle index and therefore, on the basis of the descriptive literature (cited in Table 7.1), the length of the economic expansion has been estimated from the mid 1950s.



Note: Shading represents business cycle growth phase.



The analysis below indicates that in the eight post 1995 business cycles, the boom phases of which are highlighted by the shading in Chart 7.3a, in four cycles the merger rate showed pronounced pro-cyclical behaviour, in one cycle there was some evidence of pro-cyclical movement but also other indications, while in three cycles the evidence is quite contrary to the pro-cyclical hypothesis. This is taken to be evidence of what we describe as Selective Cyclical Sensitivity (SCS); that is that merger fluctuations are influenced by cyclical trends in some cycles but not in others. SCS may arise, for example, if there are both different characteristics of different cycles and if the nature and determinants of merger activity vary over time, so that different cyclical characteristics influence merger activity in different ways across business cycles.

In analysing the eight post 1955 business cycles and their links to the merger rate, Table 7.1 provides a broad analysis of growth and merger rate patterns over the full period from 1949. Tables 7.2 and 7.3 focus on the eight cycles in question, with Table 7.2 analysing the five cycles in which there is either a strong or partial pro-cyclical movement in the merger rate, and Table 7.3 examining the three cycles in which there was clearly no pro-cyclical change in the merger rate. The main conclusions over the eight cycles from these various forms of qualitative analysis are as follows:

- the merger rate rose sharply during the boom of 1958-60, and fell abruptly in the recession of 1961-62, showing strong pro-cyclical behaviour;
- during most of the modest boom in 1964-65 the merger rate continued to fall, and was significantly lower in 1966 than in 1963;
- the merger rate rose during the early stages of the minerals boom of the late 1960s, but did not sustain that growth through to 1971;
- during the boom of 1973-74 merger rate fell sharply and was only about half its 1972 level in 1974, but rose as the economy fell into recession;
- in the boom at the end of the 1970s the merger rate rose in a pro-cyclical manner, but did not continue that rise as the boom developed;
- in the late 1980s boom the merger rate rose sharply and then collapsed as the economy went into recession, in both cases showing pronounced pro-cyclical movement;

- the merger rate again showed clear pro-cyclical movement in the modest boom of the mid 1990s but no such movement in the 1999-2000 boom.

As noted these findings are taken to be evidence of selective cyclical sensitivity, with the periods of most marked pro-cyclical behaviour being in the booms of 1959-60 and 1998-90 and the period in which such behaviour is most notably absent being the Whitlam period from 1973-74 and the subsequent decade.

Table 7.1 Comparison Between Merger Rate and Main Business Cycle Trends

Period	Merger Rate	Economic Cycle	Economic Historical Context
1950/52	Minor expansion	Major expansion	Expansion prior to the end of the Korean War. Collapse in commodity prices (particularly wool) ended the boom that had continued since after the end of World War II. Severe restrictions on imports were imposed and plunged economy into severe business recession.
1953/58	Minor peak	Steady expansion	Post Korean War recession gathered pace in 1953. After this Government permitted inflationary boom for most of the last half of the decade. Inflation got out of hand in 1956. The recession was followed by a steady expansion.
1959/60	Major peak followed by sharp decline	Major expansion (Peak 1) then recession	Speculative boom of 1959 and 1960. Major boom of the 1950s ended in high inflation and the 1960 credit squeeze and resultant severe recession of 1961.
1964-66	Minor trough	Minor peak (Peak 2)	Continued economic expansion and increased government spending to fund the escalation of the Vietnam War, but a pause in growth over 1966-68.
1969/71	Minor peak	Minor expansion (Peak 3)	Strong expansion with minerals boom and continued expansion of spending and involvement in Vietnam War until 1971.
1972	Minor slowdown	Minor slowdown	Slowdown during period of McMahon government.
1973/75	No rise; sharp decline over 1973-75	Major expansion (Peak 4) followed by recession	Boom of 1973-74, then first world oil shock and quadrupling of oil prices. Rising inflation and business uncertainty led to recession. Profits and business confidence were very depressed
1979-81	Minor peak	Major expansion (Peak 5)	After the second oil shock of 1979, the Fraser government provided stimulus to the economy while attempting to control inflation and the money supply.
1982/84	Minor trough	Major contraction	Economy turned down after 1981 under the influence of the global recession, high inflation and interest rates and tight fiscal policies. ALP leader Hawke won the March 1983 election at a time of economic instability and deep recession.
1984/89	Major peak	Strong expansion (Peak 6)	Through the Prices and Incomes Accord, the expansionary budget of 1983/84 and global recovery, the economy picked up from 1984, reaching a cyclical peak in 1988-90.
1991-93	Sharp decline	Major recession	The collapse of the boom lead to a major recession after 1990-91.
Post 1996 (-2007)	Minor troughs	Minor expansions (Peaks 7 and 8)	Period of continuous economic growth from 1995 to 2007, with two minor peaks in activity in 1995-96 and in 2000.

Sources: Matthews and Jay 1997; Matthews and Grewal 1997; Treasury 2001.

Table 7.2 Coincident Movement in Merger Rate and Business Cycle Coincident Activity: Five Cycles

Period	Coincident Activity
1959/60	The period ending 1959/60 witnessed the business cycle and the merger rate moving in the same direction into major expansion and major peak. This was a long-term economic boom following the end of the Korean War. The contraction followed the overheating of the economy and resulted credit/liquidity problems that were experienced that led to the recession of the early 1960s. The merger rate followed a sharply pro-cyclical path over this time.
1969/70	In the period ending 1969/70, there was a boom in merger activity as well as a boom in the business cycle, generally attributed to the significance of the mining boom. The period of the late 1960s was a boom time for the economy and for mergers in general. The boom was followed by a recession of the early 1970s in which the economy contracted (a major factor being the first oil shock following the Arab-Israeli War) and merger activity declined.
1977/78	There was a small period, in 1977/80, when merger activity coincided with the business cycle; however the magnitude of the business cycle expansion was considerably larger than that of the merger rate boom. In the same manner the magnitude of the business cycle contraction was larger than the movements in the merger rate. After the recession of the early 1970s the economy expanded greatly but was then adversely affected by the oil shock of 1979 ultimately adversely affected the economy in 1980 and concurrently merger activity fell. The trough for the business cycle in this instance was the low point of the 1983 recession.
1987/90	For the expansionary period of 1987-90 there was a period when the merger rate peak coincided with major expansion in the economy. This period of the late 1980s was seen as a major merger wave, and this supported by the data; however the expansion that occurred in the late 1980s was also significant and the contraction and recession that followed in the early 1990s was also significant.
1994-96	Over this period of modest boom the merger rate rose appreciably, falling when the economy slowed in 1997 and 1998.

Over the period since 1995 there have been there were five instances where the merger rate peak coincided with the boom phase in the business cycle but there were only two clear cases (1961-63) and 1991-93) where the merger rate followed the business cycle contraction. From a qualitative perspective a perusal of the movements between the two indices in Chart 7.2 indicates that in each instance the boom phase of the business cycle appears to have led, or at least been simultaneous with, the rise in the merger rate.

Table 7.3 Divergent Movements in the Merger Rate and Business Cycle: Three Cycles

Period	Divergent Activity
1964-66	After the credit crunch of the early 1960s the economy expanded, reaching a cyclical peak in 1964-66. However the merger rate continued to fall through into 1965, and was lower in 1966 than in 1964.
1973-77	The merger rate fell during the boom after 1972, but recovered as the economy fell into recession after 1974. Indeed for the decade after 1972 there is little evidence of pro-cyclical movement in the merger rate.
Post 1996	From 1996-2006 the economy grew steadily, with a minor peak around 2000 and a slowing thereafter, but the merger rate showed no evidence of pro-cyclical movement, being lower in 2006 than in 1996.

The above discussion on the qualitative aspects of merger rates and the business cycle has shown that in some recessions there is a pronounced cyclical effect between major peaks and troughs in merger activity that are associated with the business cycle. There

is also evidence of other instances where major peaks and troughs in merger activity do not appear to qualitatively correlate with the booms and contractions in the business cycle. We now move to test these qualitative findings econometrically.

7.1.2 Empirical Econometric Analysis on Business Cycle and Merger Rate

Continuous Period 1960-2006

To explore these qualitative findings further, regression analysis was conducted on the data sets for the business cycle and merger rate over the continuous period 1960-2006, since business cycle data was only available from 1960 and the latest data available is for 2006. The functional form estimated is: Merger Activity (merger rate) is a function of the Cycle and Trend (initially without the auto regressive (AR) term), represented as MA = F(Cy, Trend (initially without AR term)). The results are shown in Table 7.4 and subsequently tables.

Table 7.4 Relationship Between Business Cycles and Merger Rate (Without AR Term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.395	0.367	14.334	0.772
Cycle	0.002	0.001	1.928**				
Trend	-0.0008	0.0002	-4.904*				
Constant	0.061	0.005	13.097*				

Source: Author estimates.

Note: For the tables in Section 7.1.2, *, ** indicates significance at 5% and 10% levels respectively.

There is preliminary evidence in Table 4 of a positive business cycle effect on the merger rate and a negative effect of time on the merger rate. The *t* statistic for the Business Cycle is 1.93 and at this level it is significant at the 10% level. The t statistic for the Trend is 4.90, implying a downward trend in the merger rate significant at the 5% level. The critical values for the Durbin-Watson (DW) statistic show that it is, for 44 degrees of freedom, well below the critical value. This implies that the estimated equation suffers from serial correlation in the residuals, and that as a result the estimated coefficients are not reliable.

Table 7.5 Relationship Between Business Cycles and Merger Rate (With AR Term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.568	0.537	18.389	1.745
Cycle	0.001	0.0008	1.445				
Trend	-0.0005	0.0003	-1.956**				
Constant	0.050	0.007	6.759*				
AR(1)	0.493	0.107	4.624*				

Source: Author estimates.

When this problem is corrected by the inclusion of a first order autoregressive term (Table 7.5) the cycle coefficient remains positive, but is no longer significant at the 10% level. The trend term remains significant, but now at the 10% rather than the 5% level. In this equation the value of DW has reached 1.75, which indicates no autocorrelation. These results indicate that, while there is some evidence of a cyclical effect on the merger rate, no clear finding can be made on the basis of the corrected equation.

Period 1960-2006 excluding 1972-1984

The qualitative analysis above suggested that it was in the period after 1972 that the link between the merger rate and the cycle was most clearly broken. During this period there was considerable economic uncertainty in the aftermath of the first oil shock, the Whitlam period of government and high levels of inflation and unemployment. To test this, the period 1972-1984 was excluded from the period of the regression. The regression outputs in Tables 7.6 and 7.7 provide further evidence for the hypothesis of selective cyclical sensitivity. When the Whitlam period is excluded a strong cycle/trend relationship is evident in the data of Table 7.6 and remains evident when the DW is fixed (Table 7.7).

Table 7.6 Relationship Between Business Cycles (Excluding Whitlam Period) and Merger Rate (Without AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.514	0.483	16.414	0.833
Cycle	0.004	0.001	2.844*				
Trend	-0.0009	0.0002	-4.984*				
Constant	0.064	0.005	11.786*				

Source: Author estimates.

Again the functional form fitted is equation MA = F(Cy, Trend , (initially without AR term)). The t statistic for the Business Cycle is 2.84, indicating significance at the 5% level, and the t statistic for the trend variable is 5.0, also indicating a high level of significance. But again the DW statistic is too low for the results to be acceptable. However, when the correction is made through the inclusion of a first order autoregressive term, which has the effect of increasing the value of the DW statistic to 2.0, both the cyclical and trend variables remain significant at the 5% level. This result supports the qualitative analysis, and provides evidence for a robust cyclical impact on the merger rate outside the 1972-84 period. It thus supports the finding of selective cyclical sensitivity.

Table 7.7 Relationship Between Business Cycles (Excluding Whitlam Period) and Merger Rate (With AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.628	0.590	16.334	2.001
Cycle	0.003	0.0001	2.199*				
Trend	-0.0005	0.0003	-2.059*				
Constant	0.052	0.009	5.924*				
AR(1)	0.473	0.131	3.617*				

Source: Author estimates.

7.1.3 Conclusion

There are two main conclusions from the analysis of this section. First, the qualitative analysis suggests some evidence of cyclical sensitivity. The fluctuations in the merger rate show clear pro-cyclical behaviour in some cycles (eg pronounced upswings in the booms of 1958-1960 and of 1988-90, with downturns in the subsequent recessions) but limited or no pro-cyclical variation in other cycles (such as the upswing in 1972-1973 and the subsequent sharp downturn). This phenomenon of merger waves being partly but not consistently associated with economic cycles we refer to as selective cyclical sensitivity. Secondly, the quantitative analysis confirms the conclusion of selective cyclical sensitivity. Various regressions with a cyclical measure and a trend variable over the full period show a positive sign for the cyclical variable but not significance even at the 10% level after correction for serial correlation in the residuals. However, when the Whitlam and post-Whitlam periods (1972-1984) are excluded the cyclical variable is significant at the 5% level.

One issue not fully explored here is the extent to which cyclical fluctuations in the number of listed companies (the denominator in the merger rate) masks fluctuations in the 'true' merger rate. This is an issue for further work, involving more detailed econometric analysis.

7.2 WHAT ARE THE MAIN DETERMINANTS OF THE CYCLICAL VARIABILITY OF M&A ACTIVITY IN AUSTRALIA

We turn now to the question of whether the reasons that have been proposed for mergers and acquisitions explain such cyclical variability in merger activity as is observed in Australia. In this section the trends in the main determinants in Australia over the period of interest are reviewed, and then the results of a range of econometric analyses are reported. As discussed in Chapter 2 above, research by authors such as Gammelgaard (1999), Tobin (1969), Gorton, Kahl and Rosen (2000), Gort (1969), Earl and Fisher III (1986), Golbe and White (1988) and Scherer (2002) has enumerated several determinants in merger activity. Gammelgaard (1999:4) succinctly summarises these motives, reiterating there is not one theory covering all aspects of merger motives and the reasons for mergers and acquisitions varies across different theories such as the neo-classical, capital market, institutional and managerial behavioural approachs.

Table 7.8 Different Motives of Acquisitions

Motive	Result	Theory
Minimise Cost	Large scale reduces different kinds of costs	Economies of scale
Minimise Cost	Hierarchical solutions reduces governance costs	Transactions cost
Market Shares	Create or extend sales opportunity	Growth
Market Power	Above-normal profit	Monopoly
Minimise Risk	Minimising fluctuations in revenues	Diversification
Minimise Financial Cost	Reduced capital cost and utilising of tax shield	Debt/equity
Speculative	Acquisition's price is lower than correct market price	Undervaluation
Managerial Ambitions	Maximising managers wealth	Empire-building
2+2=5	More efficient use of pooled complementary resources	Synergy

Source: Gammelgaard (1999)

The determinants examined in this thesis fall within the categories enumerated by Gammelgaard, being: Tobin's q; Interest rates; CPI; Stock Market Capitalisation; Real GDP Growth Rate; and Company Gross Operating Surplus; Business Cycles and US/UK merger activity. These are discussed in light of the literature, reviewed and analysed in conjunction with the Australian merger rate. Table 7.9 summarises the six potential determinants.

Table 7.9 Summary of Six Determinants

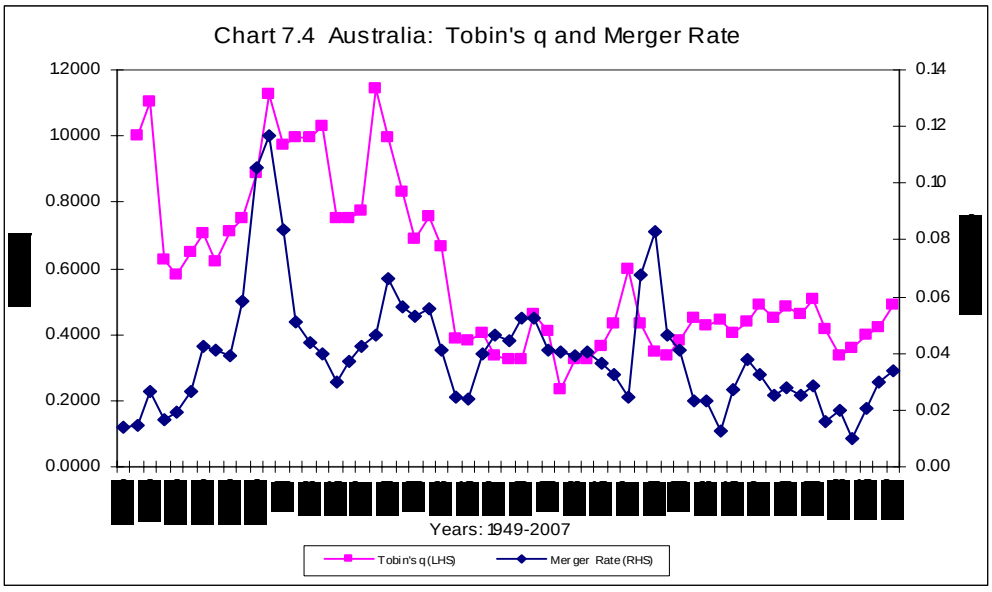
Determinant	Features and Rational For Inclusion
Tobin's q	Tobin's q (Tobin, 1969), per Golbe and White (1988:281) is one measure of determining whether a company can be purchased at a bargain price and places it within the Gammelgaard's speculative motive; the theory behind this is one of underlying undervaluation of the firm and the result being that the acquisition's price is lower than the correct market price. Gammelgaard cites Barney (1988), Roll (1986), Gort (1969) and Hughes, Mueller and Singh (1980) in support of this determinant, i.e. when a firm is perceived as being undervalued, it is more likely to be acquired.
Interest Rates	Gammelgaard refers to the determinant of transaction costs in light of vertical integration (1999:5), which includes merger transaction costs, i.e. the motive is to minimise transaction costs. Gammelgaard cites Williamson (1975) and Hart (1995), in that acquisitions reduce the cost related to governance structures, supplier's monopolistic gains and risk premiums and finally the cost related to the negotiation of contracts. In an acquisition, the ability to reduce the interest cost may have profound rewards on the organization as well as its success. Gammelgaard's other theory of debt/equity is firm motive to minimize financial costs resulting in the reduction of capital costs and possible utilisation of a tax shield. A merger can provide added benefits that may not have existed in the previously separate firms (minimization of the risk of bankruptcy by sharing capital). Steiner (1975) explains that risk adverse investors may prefer to make loans to large diversified firms rather than to small, specialised firms, ratified by Golbe and White (1988) and Scherer (2002).
Consumer Price Index	During a time of low and stable CPI the relative price of assets changes very little or changes to a level that is expected and can be factored into companies' strategic plan and operations. During a time of volatile and high CPI levels, the costs of purchasing assets can be high and the known price can be unpredictable, thereby making it more difficult for a firm to decided whether and what type of growth it desires to engage in (use of internal versus external resources and their timing). If the value of the two merged firms is not higher than the value of the two individual and independent firms, other ways for growth should be explored. Paying a relatively higher price for a firm than one ought to may negate any synergy effects; so per Teece (1987) and Richardson (1972), the price paid is paramount for the pooling resources so as to obtain a 2+2=5 effect.
Stock Market Capitalisation	Stock market capitalisation supports the debt/equity theory where the motive is to minimize financial costs through the pursuit of acquiring a company at a lower value. The price paid for a company affects the debt/equity ratio of the acquirer's and the merged firm. If the price is higher than anticipated more will be paid. Pautler (2001:10) asserts that stock market studies in the US have consistently found that lower returns (higher prices) tend to be associated with negotiated mergers, the higher returns (lower prices) with tender offer takeovers. An acquirer seeks a target's undervalued shares so that any bidding will probably result in gains for these shareholders. Pautler's stock market studies using the capital asset pricing model consistently show that target companies' shareholders enjoy significant abnormal returns in a takeover.
Real GDP Growth Rate	Since real GDP is adjusted for changes in inflation, it indicates purchasing power and therefore wealth ability. The greater the increase in real GDP, the greater the wealth consideration and the purchasing power of the individuals in the economy. If real GDP is growing then therefore the majority of the components of the economy are growing, adding to this composite growth. The real GDP growth rate does not actually fit into any of the theories and motives for acquisitions since it is a macroeconomic consideration rather than a microeconomic one (since the theories and motives for firm behaviour that might lead to certain types of acquisition activity). Real GDP growth rate is an important overall parameter in which firms operate.
Company Gross Operating Surplus	Company gross operating surplus is surplus (profits) due to the owners of incorporated businesses, (after a subset of total costs are subtracted from gross output to calculate gross operating surplus). This determinant fits within the theory of economies of scale since this motive is to minimize cost (large scale reduces different kinds of cost) by more efficient use of resources (Gammelgaard, 1999:4). Such objectives lead to abnormal (superior) profits which the firm may utilise for acquisitions. The monopoly motive may result in two companies together achieving sufficiently large market share to have a perceptible influence over product (or less often input) and prices (Scherer, 2002:2). Monopoly theory motive aims to increase market power through abnormal profit. Abnormal profit provides opportunities for acquisitions which may result in industry concentration (and political and legislative issues); it is a means of achieving corporate objectives through merger and a firm that has engaged in a successful merger can find itself in a dominant market position will use it. A firm will attempt to be a market leader through the acquisition of its competitors (Gammelgaard, 1999:6). Monopoly position also improves the firm's bargaining position (Gilbert & Newberry, 1992) as it strategically uses surpluses to achieve monopoly status.

7.2.1 Determinants and the Merger Rate – Qualitative Findings

Here (7.2.1) the main trends in the six potential merger determinants are reviewed, in the light of cyclical trends. It is understood that there are many potential determinants and that each determinant may play a role to play in a given merger scenario, so that no specific conclusion can be drawn from a single variable analysis, with a multivariate analysis being required. Such an analysis is reported in section 7.2.2.

Tobin's q and Merger Rate

Over time both the q ratio and the merger rate have been declining, with the q declining at a faster rate than the merger rate. Until the late 1960s q tended to be at a high level but then quickly dropped (collapsed) to much lower levels during the 1970s and early 1980s. From the mid 1980s it reached another high level (but not as high as the previous decades of the 1950s and 1960s, fluctuating between 0.80 and 1.20) before falling again at the end of that decade and except for minor fluctuations, has remained at a ratio approximating 0.4.



Over time q has gone from peaks to troughs and not necessarily in relation to the merger rate, i.e. a high q resulting in a lower merger rate and a low q resulting in a higher merger rate. There have been periods where there is some relationship and other periods an absence of a relationship between the two variables. In the late 1940s to the

early 1950s q was high and the merger rate was low, indicating a positive relationship between the two variables. However in the early 1960s q was at a peak and so was the merger rate, evidently the high q did not seem to deter merger activity during that period. One explanation for this was that since the Second World War to the mid 1970s, Australian industry had experienced a long boom, marked by large increases in the population and little economic fluctuation. There was high growth in manufacturing due to import restrictions and led to increased profits in the manufacturing industry. Manufacturers during this period became likely acquisition targets during the late 1950s to early 1960s until the advent of the credit squeeze of the early 1960s.

In the mid 1960s as q increased the merger rate tended to fall, again exhibiting some relationship between the two. By the early 1970s, both q and the merger rate were high and then both steadily declined during the early 1970s. The increase in q during the late 1960s and early 1970s was due to the increased value of companies due to the mining boom, which permeated all the economy. Once the mining boom began to recede, so did the merger rate. During the mid to late 1970s q had fallen and remained relatively low while merger activity tended to pick up. Australia experienced a recession in the early 1980s and this lowered the value of companies, therefore a lower q (the value of companies being acquired fell) resulting in an increase in the merger rate. As q began to rise, the merger rate began to fall in the early to mid 1980s with a reversal in the mid to late 1980s when q increased considerably as did merger activity. Here the high cost of acquiring firms did not seem to be an impediment to merger activity since the introduction of relatively cheap and new forms ('junk bond') of financing (as well as deregulation of the financial system and the opening of the Australian economy) resulted in a merger boom. The merger boom followed the rise of the q ratio. Chart 7.4 shows that the merger rate closely followed the q ratio; as q increased, the merger rate fell; this scenario reversed itself in the early 1990s when the economy experienced another recession.

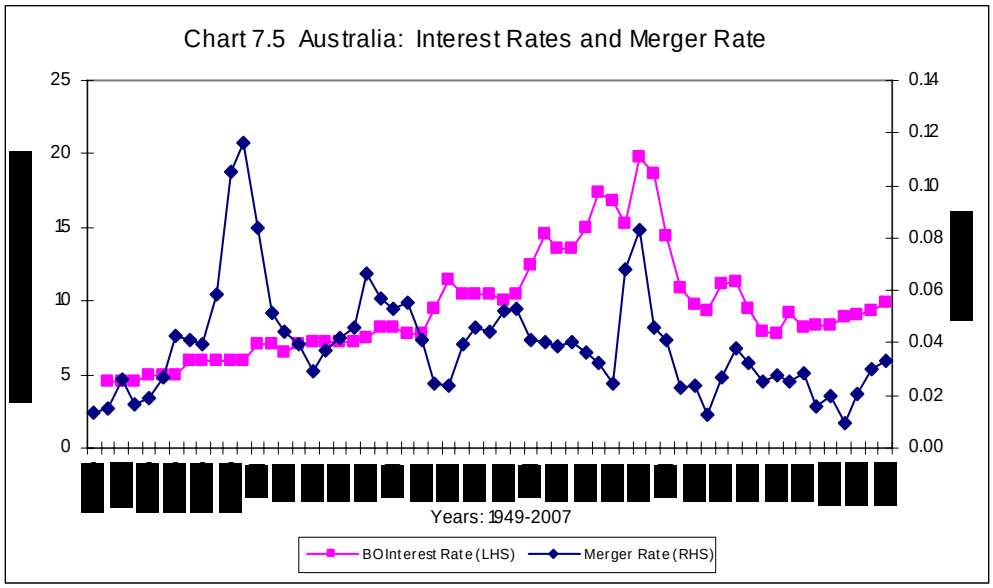
After the 1980s q began to decline, (cheaper acquisitions) but the merger rate also declined. Though the merger rate continued to decline q began to increase again resulting in a high level in 1997. After the stock market crash of the late 1980s the government continued to allow ample liquidity in the economy while allowing interest rates to increase in the early 1990s. Temporarily this did not deter merger activity but

once the historically high interest rates (18-20%) began to impact, the merger rate began to fall and it continued to do so all through the 1990s and early 2000s until it turned around in 2005. During the early 2000s while q was low the merger rate began to increase, supporting the finding of some cause and effect relationship.

In the late 1990s, q was relatively low and stable (within the range of 0.4-0.6) yet the merger rate showed a downward trend, only increasing from 2005 onwards. The tech boom of the 1990s partly explains this, which ultimately resulted in a tech bubble of the early 2000s when many companies lost a lot of their value and were acquired. The impact on the Australian economy was low due to its small IT sector.

Interest Rates and Merger Rate

Australian nominal interest rates have tended to remain relatively low and stable for several decades since the Second World War; only showing signs of minor increase during the period of the 1940s, 1950s and 1960s; with signs of some volatility from the mid 1970s onwards and continuous increases up to the end of the 1980s. They began to fall from nearly 20% in 1990, to 7-10% from the mid 1990s onwards. Chart 7.5 shows that over time there has been an increase in the overall trend in nominal interest rates while the merger rate trend has been a decreasing one.



Following the deregulation of the Australian economy in the early 1980s and the development of new financial instruments in capital markets (junk bonds) of the mid 1980s the economy witnessed a merger boom, even with high interest rates. Ultimately the very high nominal interest rates ended this boom into a recession. There is less evidence of a relationship from the mid 1990s onwards as the level of nominal interest rates and merger rate moved in similar directions (whereas it would be expected they would move in opposite direction). Only in the early 2000s did nominal interest rates begin to show increasing frequency and the merger rate fell, but from 2005 onwards nominal interest rates increased steadily as did the merger rate.

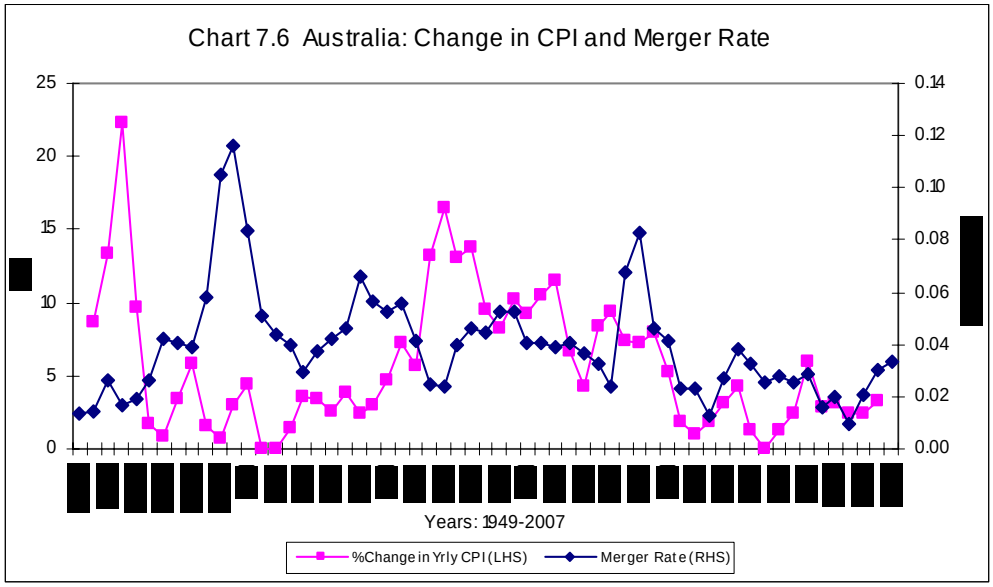
In some cases there is some evidence of a relationship between nominal interest rates and the merger rate; and this relationship was more evident from the mid 1970s to the mid 1990s unlike other periods when the merger rate tended to move in a separate manner to interest rates. At times companies have strategically engaged in merger activity even with high financing costs and there were times when companies were not prepared to engage in merger activity even with low finance costs. Implied in this are other factors besides finance costs that influenced merger decisions. This is apparent during the late 1950s to early 1960s (protected manufacturing boom) and early 1970s (mining boom). Companies were prepared to engage in merger activities to achieve corporate objectives even though the costs of the merger might be higher than desired due to other compensating benefits such as synergy, diversification, etc.

Change in CPI and Merger Rate

The similar movement between the level of CPI and the merger rate is depicted in Chart 7.6; both moving in a downward trend over time. Except for some instances (early 1950s, mid 1950s and mid 1970s), there is a close relationship between the timing and level of the indices. In all other periods similar movements occurred, i.e. when the CPI was high, the merger rate was high and when the CPI was low the merger rate was low, with minimal deviations.

The level of CPI is not an overt influencer on the merger rate and it may not be the best indicator of merger activity. Companies will engage in merger activity and since the CPI may not necessarily reveal the true value of companies, acquirers factor this into

their strategic objectives when they contemplate an acquisition. The results show some relationship between the change in CPI and the merger rate with only three historical exceptions where the change in CPI and the merger rate move in opposite directions. There may be something about the level of the CPI, which might be an inducer or precursor of merger activity; or that the merger rate might have an impact on the CPI through the prices for target firms being reflected in the overall movement in market prices.

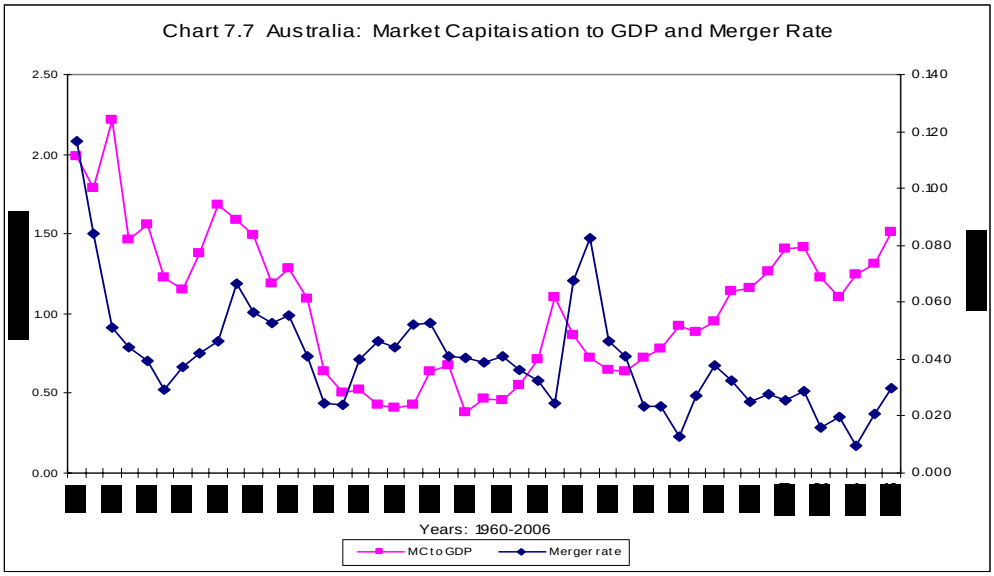


Stock Market Capitalisation To GDP and Merger Rate

In the early years up to the mid 1970s, except for some minor deviations, the percentage of stock market capitalisation to GDP exhibited similar movements to the merger rate. It was during the period of the 'Whitlam' government (mid 1970s) and immediately afterwards that the variables moved in opposite directions, some evidence of congruence in the late 1970s, then some divergence in the early 1980s to mid 1980s. The other periods of divergence were the early 1990s and 2000.

From the mid 1980s onwards the market capitalisation of companies on the ASX as a share of GDP grew strongly, peaking in 1987. The rise in the share of market capitalisation to GDP was reflected in an increase in the merger rate and the merger boom of the late 1980s. While market capitalisation to GDP fell, the merger rate

increased; meaning that firms became cheaper to buy, resulting in the merger boom of that period. However the recession of the early 1990s witnessed similar movement in both variables since companies felt the effects of the recession (and on their value) as well as the difficulty in the market to source merger finance (as well as general depressed economic activity). After these affects and from the mid 1990s onwards, the share of market capitalisation to GDP increased quite dramatically; hence overall market capitalisation was not a factor influencing the merger rate.

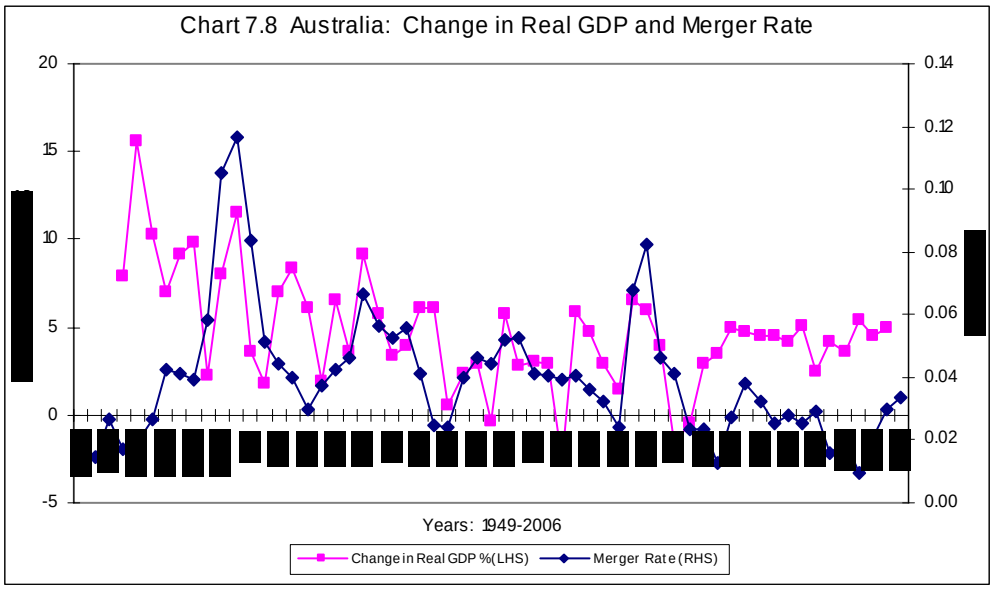


Since the late 1980s stock market capitalisation as a percentage of GDP has shown significant increase over time (except for a short period of negative movement in 2000-2002, possibly due to the burst of the 'tech bubble' and the loss of value of many technology firms). From the mid 2000s onwards, the ratio of stock market capitalisation to GDP has shown an increasing trend (which continued up to the Global Financial Crisis of late 2008). Since the peak of the merger boom of the late 1980s the merger rate has fallen considerably and has generally moved inversely to stock market capitalisation to GDP. The merger trough of 1994 was followed by a merger spike in 1996, after which the merger rate declined for several years, rebounding weakly in 2005-2006. As firms grow and their value increases, it becomes more difficult for mergers to occur. During an economic boom, it is more likely for more firms to list on the ASX and the increased listings would also be reflected in the fall in the merger rate.

During the 1990s the increasing level of market capitalisation affected (to some degree) the merger rate. The deregulation of the Australian economy and financial markets (mid 1980s) also opened the door for foreign firms to list on the ASX, influencing the merger rate. So while mergers have shown an increase, in some cases the number and value of firms on the ASX has increased at a greater rate than the mergers; therefore putting downward pressure on the merger rate. Since the beginning of the 1990s, the relationship between market capitalisation to GDP and the merger rate was weak. In the mid 1990s where there was some relationship between the two but it is not evident elsewhere since then; only some positive signs of this reoccurrence since 1994 but from different bases. This reinforces the concept that as the number and value of all the firms in the economy increases, it would become more difficult for merger occurrence.

Change in Real GDP and Merger Rate

In this section changes in real GDP as a cyclical measure were compared to the merger rate but the data from the Melbourne Institute was used in regression analysis in Section 7.2.2. It can be seen that the ABS data covering 1950-2006 shows that real GDP has increased in every year except 1983 and 1991. Chart 7.8 below indicates a declining trend over time in change in real GDP; negative changes in real GDP of the early 1980s and the early 1990s confirm major recessions. Over time the changes in real GDP have been similar to changes in the merger rate.



The data sets of the late 1940s and early 1950s are derived estimates and the calculation of the change in real GDP in 1951 shows a major decrease over 1950 as data was not available in 1949. As explained previously the Australian economy experienced the Korean War boom and collapse in wool prices, severely impacting the economy. The following decades witnessed close relationships between changes in the merger rate and changes in real GDP; where there was a positive movement in real GDP, this was reflected in the merger rate and where there was a negative movement in real GDP this too was reflected in the merger rate. Qualitatively, there is indication the real GDP level has strongly influenced the merger rate over several decades. This persisted up to 2000 after which there was divergence between the two variables; when real GDP had several years of positive growth the merger rate declined in 2002-2004, rising in 2005 and then again exhibiting similar movements as the change in real GDP. The major influence at that time was the burst of the tech bubble and its effects on M&A activity.

The merger rate has followed similar movement to economic expansion and contraction indicating some level of relationship between the merger rate and the level of real GDP. The influence of other determinants (besides real GDP) on the merger rate would account for the level of movement in the merger rate over time (i.e. in several instances, the movements in the merger rate have not been of the same magnitude, either positive or negative, as the changes in real GDP).

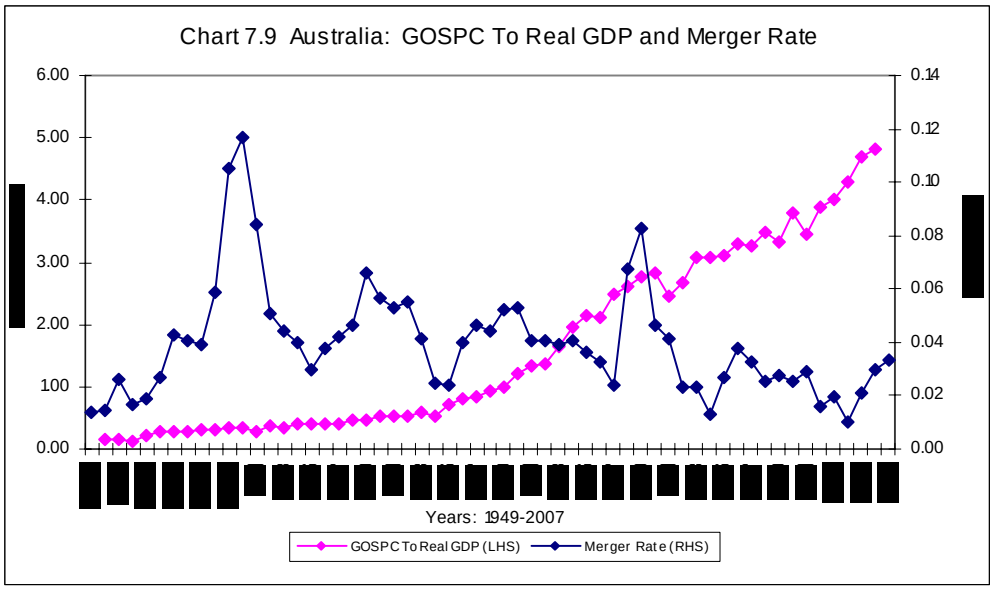
Gross Operating Surplus Private Capital (GOSPC) To Real GDP and Merger Rate

The qualitative measure used in this part of the analysis is the level of GOSPC/GDP and the merger rate, whereas in Section 7.2.2, the ratio of Market Capitalisation to GDP has been used as the valuation measure. In Chart 7.9 we have examined and plotted GOSPC to Real GDP and the merger rate, and a review of the Market Capitalisation to GDP reveals similar movements over time. (Data for both Market Capitalisation to GDP and GOSPC to GDP, show similar movements since 1950).

The above chart shows that over time the contribution of company profitability to GDP has increased from approximately 0.5% in the 1950s to approximately 5% in 2007, i.e. the level of company profitability has increased at a much faster rate than the GDP level. With more profitability, more internal financing would be available to facilitate

growth as well as leveraging internal funds to obtain external funding sources. With greater financial ability, and flow-on synergistic factors of this increased profitability, then the merger rate would move in a similar manner to the ratio of GOSPC to GDP.

The level of the GOSPC might move in an opposite direction to the merger rate, since as companies become more profitable, then their values increases (impact on Tobin's q); so, though they may be targets, they might be more difficult to acquire. Acquirers may have more funds for acquisitions, but more profitable targets can employ measures to ward off potential acquirers. Under this scenario, it would be expected that the level of GOSPC to GDP would move in an opposite direction to the merger rate; and this is the situation that existed since the mid 1970s.



When the ratio of GOSPC to GDP grew marginally (1950 to 1974), there were some pronounced peaks and troughs in merger activity, namely in the late 1950s, the mid 1960s, 1969 and a major trough in 1974-75. Through these peaks and troughs in merger activity, the overall trend was in increase in the merger rate. Since company profitability as a share of GDP remained constant, other factors (determinants) played a role in the merger rate as has been discussed previously (manufacturing boom of the 1950s, mining boom of the late 1960s and oil shock of the early 1970s).

From the mid 1970s, except for a couple of pauses, the ratio of GOSPC to GDP has grown at an accelerating rate especially from the late 1990s onwards, reaching five

percent in 2006. From 1990 onwards, the merger rate was relatively at one of its lowest levels while company profitability was at its highest. There is some level of an inverse relationship, i.e. high profitability concurrent with higher GDP, dampening merger activity. A major driver of this increase in company profitability since the early 1980s has been the ongoing revision (reduction, especially corporate levels and some personal levels) of the tax regime, the introduction of the Goods and Services Tax (GST) in 2000 with the concurrent reduction in the corporate tax rate, resulting in a further acceleration of company profitability since 2000. The increase in the number of ASX listed companies during this period may also have impacted the merger rate. The divergence in movements of the two variables may also be due to the strategic option of using internal sources of funds to grow business (rather than mergers).

7.2.2 Determinants and the Merger Rate – Econometric Findings

Given the potentially complex links between multiple merger determinants, the business cycle and the merger rate, many forms of econometric investigation are possible, using a wide range of econometric techniques. Some of these have been reported in international literature, although there has been, to our knowledge, no econometric analysis of the determinants of mergers in Australia using a long run of time series data. Here we report the results of some simple multivariate linear regressions, using four of the six determinants discussed above. Additionally, the business cycle was incorporated into some analyses to provide a more detailed picture of the effect of the determinants and business cycle on the merger rate (merger activity). Real GDP and Gross Operating Surplus Private Capital were the two determinants not included in the review, the former because it is closely related to the cyclical variable and the second because its effects may be adequately represented by the Market Capitalisation variable. Therefore the four determinants were Tobin's q, Market Capitalisation, Inflation, and Real Interest Rates. The time period employed in this section was the full period of 1950-2007.

Experiments were made with many combinations of these merger variables, both with and without the cyclical variables, to investigate the power of these variables to explain both variability over cycles and merger rate fluctuations on their own. A selection of these results is reported below, but none of the full set of regressions was satisfactory on theoretical and statistical grounds. They allow only a limited and negative conclusion –

that no evidence was discovered that the defined merger reason variables can explain Australian merger rate fluctuations over the period studied.

Business Cycle, Tobin's q and Market Capitalisation

A number of experiments were undertaken with a mix of the business cycle variable and several determinant variables, to test whether the determinants variables can explain the apparently selective nature of the cyclical response discussed above. In other words, do the determinant variables help to discriminate those business cycles in which there is a pro-cyclical response of merger activity from those in which there is not? Three such experiments are reported here, of which the first involves the addition of two of the potential determinants: Tobin's q and Market Capitalisation. This equation is represented as MA = F(Cy, Trend, TQ, MC (initially without AR term)). The outputs are shown in Table 7.10 and Table 7.11 below. We have checked the time series properties of the data using Augmented Dickey-Fuller (1979, 1981) and Dickey Fuller (DF) unit root tests to check whether our main variables follow random walks. It is observed that all our variables under consideration are stationary in their levels. These results are also confirmed using the Phillip-Perron (1988) (PP) test.

Table 7.10 Relationship Between Merger Activity as a Function of Business Cycle, Trend, Tobin's q, and Market Capitalisation (Without AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.407	0.350	7.198	0.791
Cycle	0.002	0.001	1.884**				
Trend	-0.0001	0.0003	-1.873**				
Tobin's q (TQ)	0.004	0.036	0.014				
Market Cap (MC)	0.339	1.438	0.236				
Constant (C)	0.053	0.016	3.223*				

Source: Author estimates.

Note: For the tables in Section 7.2.2, *, ** indicates significance at 5% and 10% levels respectively.

In terms of the uncorrected equation there is evidence of a positive business cycle effect on the merger rate and a negative effect of time on the merger rate, but neither the Tobin's q nor the Market capitalisation variables are significant. The Cycle t statistic is 1.88 and that of the Trend t Statistic is 1.87, so that the Cycle and Trend values are significant at the 10% level. The t-Statistic values for Tobin's q and Market

Capitalisation are very low, 0.01 and 0.24 respectively, implying no discernible impact on the merger rate in this specification. The value of Durbin-Watson (0.79) is also unacceptably low.

The addition of a first order autoregressive term eliminates the autocorrelation but otherwise does nothing to improve the regression results (Table 7.11) but otherwise does nothing to improve the regression results[1]. Indeed, the t-Statistics for the four substantive variables - Cycle, Trend, TQ and MC - show that they are not significant in this instance.

Table 7.11 Relationship Between Merger Activity as a Function of Business Cycle, Trend, Tobin's q, and Market Capitalisation (With AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.578	0.525	10.940	1.729
Cycle	0.001	0.0009	1.470				
Trend	-0.0003	-0.0004	-0.840				
TQ	0.016	0.026	0.626				
MC	-1.094	1.196	-0.915				
C	0.048	0.015	3.250*				
AR(1)	0.513	0.110	4.663*				

Source: Author estimates.

There is a case for dropping the time trend from this equation, as the trend variable may be obscuring more fundamental relationships between the economic variables. Indeed the properties of the uncorrected equation do change sharply when the trend variable is omitted (Table 7.12). The t statistic of the cycle variable falls and it is no longer significant. However both the Tobin's q and market capitalisation variables are significant at the 5% level, with a positive coefficient on the Tobin's q variable (t statistic of 4.02) and a negative coefficient on the market capitalisation variable (t statistic of 2.92). However, yet again the low value of DW (0.766) shows that successive error terms are close to one another, and that the values and significance levels of the coefficients are not reliable.

[1] Note that the autocorrelation tests conducted here is that of *Durbin's h* test. This is an alternative to the most commonly used La Grange Multiplier (LM) serial correlation test which is more appropriate for testing models with lagged dependent variables.

Table 7.12 Relationship Between Merger Activity as a Function of Business Cycle, Tobin's q, and Market Capitalisation (Without AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.357	0.312	7.963	0.766
Cycle	0.002	0.002	1.493				
MC	-1.792	0.614	-2.920*				
TQ	0.064	0.016	4.016*				
Cons	0.024	0.008	3.161*				

Source: Author estimates.

The corrected equation (Table 7.13) shows that there is interesting information about the effects of these determinants on the merger rate even when the AR term is included. The Cycle variable is no significant, so this equation cannot be interpreted as one in which the other determinants explain selective cyclical sensitivity. But the Tobin's q (1.88) is significant at the 10% level and the market capitalisation at the 5% level (2.44), with the same signs as earlier. This might be taken as evidence that these two variables are effective in explaining changes in the merger rate, but unfortunately these findings are not sustained when the cycle term is excluded.

Table 7.13 Relationship Between Merger Activity as a Function of Business Cycle, Tobin's q, and Market Capitalisation (With AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.570	0.529	13.615	1.760
Cycle	0.001	0.001	1.081				
MC	-1.646	0.674	-2.441*				
TQ	0.030	0.016	1.876**				
Cons	0.038	0.010	3.858*				
AR(1)	0.549	0.061	9.067*				

Source: Author estimates.

Business Cycle, Tobin's q and Inflation

Other experiments were undertaken with combinations of determinant variables in conjunction with the cycle variable, in an effort to find a coherent and statistically reliable explanation of selective cyclical sensitivity. The phenomenon described above was regularly repeated, with potentially interesting relationships in uncorrected equations not remaining significant when the correction for autocorrelation is made. One further example is provided here, that of the use of the Tobin's q and inflation variables in conjunction with the cycle variables (Tables 7.14 and 7.15).

Table 7.14 Relationship Between Merger Activity as a Function of Business Cycle, Tobin's q, and Inflation (Without AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.382	0.339	8.851	0.861
Cycle	0.002	0.001	1.687**				
TQ	0.049	0.011	4.687*				
Infl	0.157	0.065	2.408*				
C	0.005	0.008	0.651				

Source: Author estimates.

In the uncorrected equation, the t-Statistic value for the business cycle is 1.69, significant at the 10% level, and with a positive effect on the merger rate. Both the Tobin's q and inflation variables are significant at the 5% level (4.69 and 2.41 respectively), but both have positive signs. Prior to correction this appears to be a strong result on statistical grounds, but the positive sign on the inflation variable is counter-intuitive. In addition the DW statistic is again low(0.86).

Table 7.15 Relationship Between Merger Activity as a Function of Business Cycle, Tobin's q, and Inflation (With AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.549	0.505	12.474	1.810
Cycle	0.001	0.001	1.494				
TQ	0.010	0.015	0.739				
Infl	0.059	0.070	0.846				
C	0.028	0.010	2.847*				
AR(1)	0.558	0.100	5.592*				

Source: Author estimates.

Adjusting for the AR term provides an improved value DW value at 1.810; evidence that there is no remaining autocorrelation. At a t-Statistic value of 1.494 there is some evidence of a positive effect by the business cycle on the merger rate but this value is not significant. But now neither the Tobin's q nor inflation variables are at all significant, implying that the statistical relationships shown in Table 7.14 are unreliable and are probably generated by the serial correlation of the variables and the cycle.

Tobin's q, Inflation and Real Interest Rates

Further experiments were undertaken to explain mergers in terms of their core determinants that was identified in the literature, leaving aside the cyclical variable. Here we are trying to explain the overall behaviour of the merger rate in terms of the

determinant variables. The best results that were obtained on an uncorrected statistical basis are reported in Tables 7.16 and 7.17 below.

Table 7.16 Relationship Between Merger Activity as a Function of Tobin's q, Inflation and Real Interest Rates (Without AR term)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.418	0.378	10.304	1.068
TQ	0.065	0.012	5.502*				
Inf	0.345	0.096	3.604*				
R	0.230	0.097	2.385*				
Cons	-0.025	0.014	-1.731**				

Source: Author estimates.

In the uncorrected equation (Table 7.16) the t-Statistics for each of the three substantive variables are relatively high, and each is significant at the 5% level. However, the signs of the inflation and real interest rate variables are puzzling, since it would be expected that they should be negative. In most analyses high inflation and interest rates are seen as acting on merger activity. But again the value of the DW statistic is low, and these relationships do not survive the autocorrelation correction (Table 7.17).

Table 7.17 Relationship Between Merger Activity as a Function of Tobin's q, Inflation and **Real Interest Rates (With AR term)**

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	DW
				0.546	0.502	12.331	1.792
TQ	0.020	0.015	1.316				
Inf	0.188	0.110	1.702**				
R	0.171	0.117	1.456				
Cons	0.008	0.017	0.475				
AR(1)	0.509	0.102	4.996**				

Source: Author estimates.

7.2.3 Conclusion

The main conclusions from this section are thus as follows:

(i) Merger reason variables do not appear to explain selective nature of cyclical sensitivity. There is an extensive international literature, which is reviewed in this thesis, on the reasons for mergers and acquisitions and hence on how they might vary over time. Some econometric analysis has been undertaken to explore whether such factors

(such as a measure of corporate profitability or Tobin's *q* – the ratio of market value to replacement cost) explain the selective nature of the response of the merger rate to cycles. This analysis was unsuccessful, and no evidence has been uncovered that this selective response can be explained by more fundamental variables.

(ii) Leaving aside the cyclical variables, there is no evidence that merger reasons can explain the overall temporal pattern of merger waves. Similarly, time series econometric analysis with the standard variables in the literature proved unsuccessful in explaining the temporal pattern of mergers in Australia over the period 1960-2006. In several experiments, no relationships were uncovered that met the necessary criteria: that the variables were statistically significant and had the expected sign, and that the equation was free from serial correlation in the residuals.

It would be useful in further econometric analyses to use lag structures to explore the dynamics of these relationships more fully, and to investigate the possible masking effects of cyclical variations in the denominator of the merger rate. But the underlying problem in such analyses is that there are many potential determinants of mergers, and no well-defined single model of their evolution to be tested econometrically. As we have seen, it appears that different cycles have different characteristics and that the nature and determinants of merger activity vary over time, so that different cyclical characteristics influence merger activity in different ways across business cycles.

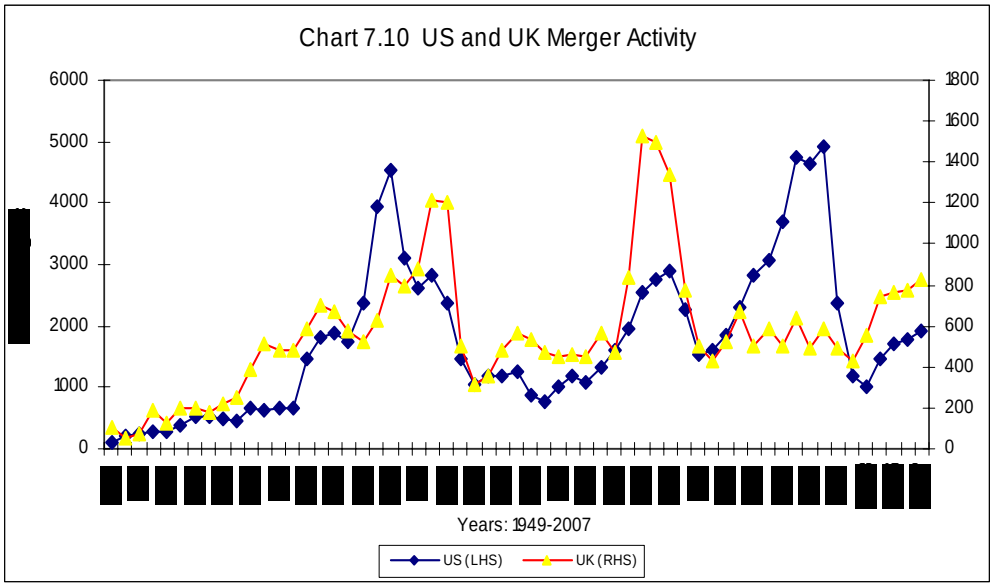
7.3 WHETHER AND HOW THE TIMING OF M&A FLUCTUATIONS IN AUSTRALIA RELATE TO THE USA AND THE UK

This section of the chapter examines any relationships between the US merger activity, the UK merger activity and Australian merger activity during the periods 1949-2007, based on qualitative and quantitative review. In this section we have used merger numbers rather than merger rates for the US, UK and Australia, as equivalent merger rate measures have not been assembled for the US and UK.

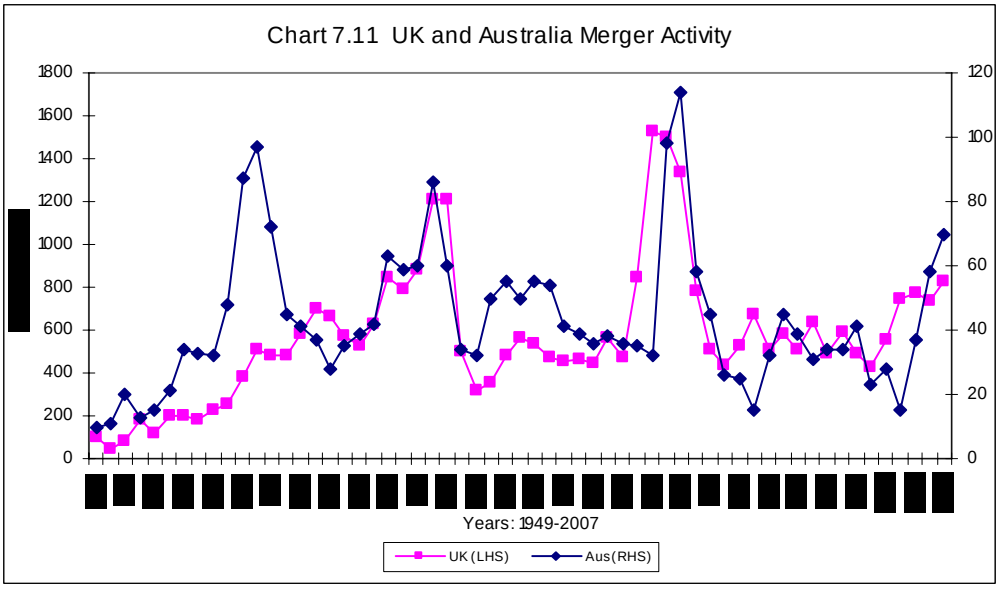
As discussed in Chapters 3 and 4, and as evident from Chart 7.10, both the US and the UK experienced merger booms in the late 1960s to early 1970s, in the late 1980s and, to a lesser degree, from about 2003. The US had a major merger peak associated with the

hi-tech boom in the late 1990s, but there was no corresponding rise in the UK. The history of US and UK merger waves tends to suggest that each wave has had a different motivator, including regulatory and economic factors (Owen, 2006).

7.3.1 Qualitative Analysis on US, UK and Australian Merger Activity



During the period from 1956 to 1962 the UK experienced a sustained period of increasing merger activity while US merger activity remained flat; and it was only from 1962 that the US began to show increased levels of merger activity, peaking in 1969. After a couple of years of falling activity in the mid 1960s, UK merger activity began increasing again from 1967, reaching peak levels in 1972 and 1973. Thus during the period of the late 1960s to early 1970s there was a difference in the timing of merger peaks. Both economies had peak merger activity in the late 1980s with the magnitude of the UK merger peak being much greater, relative to underlying trend levels, than that of the US; both went into decline in the early 1990s and then both experienced increased levels of merger activity from the early 1990s. But while the US experienced considerable merger activity (the hi tech merger boom) from the mid 1990s onwards till the end of the decade, the UK had relatively stable merger activity throughout the decade of the 1990s and it led in increased merger activity in the new century. Both countries saw rising merger activity after about 2003.



Comparisons between the UK and Australian merger activity (Chart 7.11) show strong similarities and minor differences. Both economies experienced merger booms in the late 1960s to early 1970s; after a drop in activity both economies experienced a mini merger boom in the mid to late 1970s; another merger boom in the late 1980s and then the beginning of another boom in the mid 2000s. The main difference is that in the mid 1950s to the early 1960s, Australia experienced a considerable merger boom but for the UK though there were increasing levels of merger activity, there was no comparable peak.

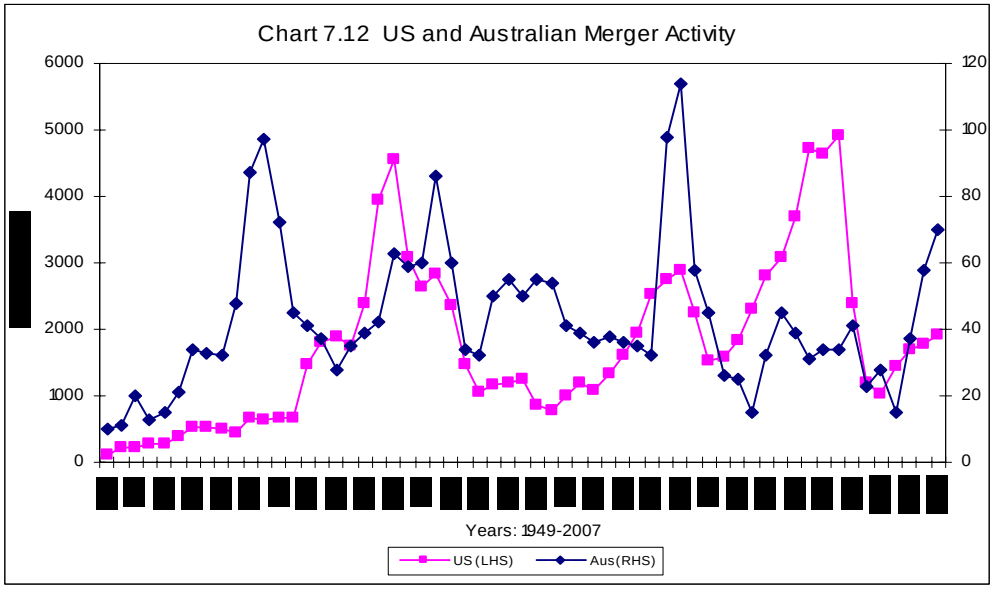


Chart 7.12 shows that there were periods when the US and the Australian economies experienced similar merger booms and corrections, notably in late 1960s to the early 1970s and during the late 1980s and early 1990s, but that there is otherwise marked dissimilarities in merger patterns. The US economy also experienced significant merger activity due to the tech bubble and its subsequent collapse in 2000, where merger activity declined and then both economies experienced a growth in merger activity in the mid 2000s with Australian merger activity growing at a faster rate than the US. The other major period of divergence was in the in the late 1950s, when Australia experienced a merger boom following the end of the Korean War while the US only experienced a minimal steady increase in merger activity. When Australia went into a recession in the early 1960s following the credit squeeze, the level of merger activity fell as well, the US began experiencing a sustained level of increasing (conglomerate) merger activity of over eight years in duration (1962-1970), peaking in 1969; (there was a difference in the timing of the merger peaks in this period). This growth in US mergers has been attributed to the boom conditions experienced its early involvement in the Vietnam War and resultant requirement for companies to supply the war effort and opportunities this presented for growth. After this it declined for many years till the boom of the late 1980s.

The main conclusions from this qualitative review of merger patterns in the three countries are that:

- there is reasonably strong similarities in merger patterns in the US and the UK, with the main divergences lying in the timing and height of some fluctuations and the absence of any merger boom in the UK in the late 1990s;
- quite strong correspondence between merger patterns in the UK and Australia, with the striking exception of the merger peak in Australia in 1959-60; and
- limited similarity in merger patterns in the US and Australia, with particularly marked divergences in 1959-60, in the late 1970s and in the late 1990s.

These findings, especially those of similarities of Australian merger patterns with those of the UK but divergence from those of the US, are somewhat surprising, given the

dominant role of the US in the world economy over this time. We now turn to test these conclusions econometrically.

7.3.2 Empirical Econometric Analysis on US, UK and Australian Merger Activity

For international comparisons, Ordinary Least Squares regressions have been conducted on the data for the above three mentioned economies using a similar linear model to that employed above: US = $a + bT + c$UK (for example), where the dependent variable is US or UK mergers and the independent variables are the other relevant country mergers and a time trend. The regressions reported here cover the full period 1949-2007. As before correction for serial correlation is required, and both the corrected and uncorrected equations are represented in Tables 7.18 to 7.20. As briefly documented below, the results confirm the qualitative findings summarised above.

Table 7.18 Relationship Between US and UK Merger Activity

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	D.W.
Outputs without autoregressive correction term:							
Regression				0.398	0.377	14.510	0.310
UK	1.543***	0.442	3.487				
Trend	24.157***	8.134	2.970				
Constant	153.251	292.026	0.525				
Outputs with autoregressive correction term:							
Regression							
UK	1.416***	0.378	3.747	0.861	0.850	80.423	2.001
Trend	23.130	16.423	1.408				
Constant	245.588	605.270	0.406				
AR(1)	1.266***	0.121	10.479				
AR(2)	-0.497***	0.122	-4.067				

Source: Author estimates using E-views.

Note: Here for the Tables in Section 7.3.2, * indicates significance at the 1% level.

For the relationship between mergers in the US and the UK, a second order autoregressive correction is required to remove the autocorrelation evident in the initial equation. But after the correction the coefficient on the UK merger variable remains significant at the 1% level, providing confirmatory evidence of commonality in merger patterns in the two countries, but there is no indicator of a significant trend element in the relationships.

Table 7.19 Relationship Between UK and Australian Merger Activity

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	D.W.
Outputs without autoregressive correction term:							
Regression				0.483	0.464	26.109	0.706
Australia	7.816***	1.388	5.630				
Trend	7.407***	1.771	4.183				
Constant	12.443	83.222	0.150				
Outputs with autoregressive correction term:							
Regression				0.717	0.702	45.695	1.526
Australia	4.170***	1.469	2.839				
Trend	6.579	4.940	1.332				
Constant	200.902	197.599	1.017				
AR (1)	0.728***	0.097	7.527				

Source: Author estimates using E-Views.

For the UK and Australia, the Australian merger variable is significant at the 1% level after the first order autocorrelation correction (with no significant trend influence), but this relationship is not quite as strong as might be expected from the strong post 1963 correction evident in Chart 7.11. This is likely to reflect the impact of divergent patterns during the 1950s, an hypothesis tested in the next section.

Table 7.20 Relationship Between US and Australian Merger Activity

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	D.W.
Outputs without autoregressive term:							
Regression				0.297	0.272	11.850	0.317
Australia	9.625	6.212	1.549				
Trend	35.769***	7.925	4.514				
Constant	271.615	372.434	0.729				
Outputs with autoregressive term:							
Regression				0.789	0.777	67.178	1.275
Australia	6.772	4.607	1.470				
Trend	20.488	30.938	0.662				
Constant	886.444	1253.870	0.707				
AR(1)	0.850***	0.074	11.446				

Source: Author estimates using E-views.

7.3.3 Empirical Econometric Analysis on Australia/US and Australia/UK Merger Activity

Given the sharp divergence of merger patterns in both the US and the UK from those in Australia prior to 1963, the regressions were also run over the post 1963, to test the strength of the relationship when those earlier trends are excluded. Here Australian

mergers are the dependent variable, with other country mergers and a time trend as the independent variables. The results are provided in Tables 7.21 and 7.22.

Table 7.21 Relationship Between Australia and US Merger Activity (1963-2007)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	D.W.
Outputs without autoregressive term:							
Regression				0.057	0.012	1.275	0.835
US	0.003	0.003	1.148				
Time	-0.277	0.225	-1.231				
Constant	44.215***	7.915	5.586				
Outputs with autoregressive term:							
Regression				0.367	0.320	7.739	1.806
US	0.005	0.004	1.227				
Time	-0.188	0.489	-0.386				
Constant	40.026	15.974	2.506				
AR(1)	0.599	0.139	4.305				

Source: Author estimates using E-views.

Note: Here for the Tables in Section 7.3.3, *** indicates significance at the 1% level.

Table 7.22 Relationship Between Australia and UK Merger Activity (1963-2007)

	Coefficients	Standard Error	t Statistic	R Squared	Adjusted R Squared	F statistic	D.W.
Outputs without autoregressive term:							
Regression				0.393	0.365	13.623	1.220
UK	0.042***	0.008	5.033***				
Time	-0.220	0.179	0.179				
Constant	21.430	7.433	7.433				
Outputs with autoregressive term:							
Regression				0.481	0.442	12.348	1.915
UK	0.037***	0.010	3.566***				
Time	-0.198	0.293	-0.676				
Constant	24.575	10.863	2.262				
AR(1)	0.398	0.153	2.601				

Source: Author estimates using E-views.

These results further reinforce the qualitative conclusions summarised above, that thee is quite strong correspondence between merger patterns in the UK and Australia, with the striking exception of the merger peak in Australia in 1959-60, but tht there is limited similarity in merger patterns in the US and Australia, even after excluding the marked divergences around 1959-60. In the corrected US equation the coefficient on the US merger variable is not significant and virtually all of the explanatory power arises from the autoregressive term, and the coefficient of determination in the uncorrected equation is only 0.057. But in the UK equation the t Statistic on the UK merger term is significant at the 1% level, and the uncorrected equation has much greater explanatory power.

The finding of no apparent relationship between merger patterns in Australia and the US is somewhat surprising, given the dominant role of the US in the world economy over this time, and its influence in Australia. This puzzle remains one of many matters that could be fruitfully examined in further work.

7.3.4 Conclusion

The central conclusion of this section is that, in spite of some correlations between merger patterns in the US and the UK, mergers waves in Australia are strongly temporally correlated with those in the UK but not with those in the USA. Australia shows a divergent pattern to that in both countries prior to 1963, but the correction with the UK and the divergence from the US are both marked in the 1963-2007 data.

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APPENDIX 1

Delist Code Explanations

Delist Code	Description	Explanation
A	Nationalised	There have been minor instances where companies have been nationalised, and hence have been delisted from the ASX
B	Transferred to ASX Second Board	These are companies that had been transferred to the ASX Second Board (when it existed) and as such have been classified as delisted.
C	At Request of Company/ Directors Request/ Company Restructure	This code refers to companies that have been delisted for any of the given reasons of the delisting being at the request of the company, at the request of the directors or the company and where the company has undergone some form of restructure and therefore has been delisted from the ASX
D	Debentures	Refers to situations where the delisting has occurred and the company's shares have been made into debentures and therefore the company cannot remain on the ASX as a listed public company.
F	Failure to Pay ASX Listing Fees	This refers to situations where the ASX has delisted the company since the company had failed to pay its ongoing listing fees.
G	At Government Request	Refers to a situation where a company has been delisted at the request of the government.
L	Liquidated/Receivers/Managers Appointed	Where a company has been liquidated, or receivers or managers have been appointed, it is given that it cannot continue to trade and is therefore removed from the ASX listing.
M	Merged or Taken Over	Where a company has merged with another or company A has taken over company B, creating a new entity but still listed on the ASX.
N	Name Change	This refers to a name change of the company in

Delist Code	Description	Explanation
		question. While this does not mean that the company has been completely removed from the ASX, the fact that it has undergone a name change infers that it has been 'removed' with its old name and then 'added' as a result of its new name. Where a company has a new name, by default, it necessarily infers that it then has been assigned a new ASX listing code
P	Became a Private Company	A company may remove itself from being publicly listed on the ASX and make itself a private company and remove itself from having its shares publicly traded. This could occur for a number of reasons, which are outside the scope of this thesis.
R	Listing Rules	Refers to companies that have been delisted from the ASX due to some failure of meeting the ASX listing rules, resulting in their removal from the ASX.
S	Shareholding Spread	Refers to insufficient shareholder spread as required by the ASX, and as a result of this issue, the company has been delisted from the ASX.
T	Transferred to Main Board	This delisting occurs when companies have been transferred to the Main Board of the ASX and have therefore been delisted
X	Stock Exchange Order	Through some Stock Exchange order or requirement, the company in question has been removed from the ASX listing.
Z	No Reason Given	This is a code that has been used to account for companies that have been delisted from the ASX when the reason for the delisting does not fit any of the other reasons given above.

APPENDIX 2

Yearly Summary of ASX Companies Delisted 1949-2007.

Summary of Delist Codes A-Z														
Year	A	B	C	D	F	G	L	P	R	S	T	X	Z	Total
1949			10				13					1		24
1950			1				18					1	1	21
1951			4				11					1	1	17
1952			2				8					1		11
1953	1		2				12							15
1954			3				5	1				13		22
1955			8				7							15
1856	1		1				18	2				2	2	26
1957			6	1			9							16
1958			2				7							9
1959			3				13							16
1960			6				16					1		23
1961			2		1		8		1					12
1962			2				7			1		1		11
1963			3				8			1		1		13
1964			4				7						1	12
1965			6				6					1		13
1966			3				7							10
1967			2				5					1		8
1968			3				6					1		10
1969			2				2			1			2	7
1970			2				2		1			1		6
1971			3				2			2			2	9
1972			10		6		4			4				24
1973			4		4	1	4			4			2	19
1974			6		13		7		7	7				40
1975			6	2	22		4		7	4		4		49
1976			3		14		2		4	9		1		33
1977			2	3	6	1	7			3				22
1978			13		6		1			7				27
1979			8			1	1		1	4				15
1980			5	3	2		2			2				14
1981			5	1			1			1				8
1982			9	1	2		1	1	2	4				20
1983			3		1		3			4		1		12
1984			8			1	1			1		1		12
1985			10	1	1		1			2				15
1986			1		4		4			3	3			15
1987			7		7				2	2	9			27
1988			8	1	6	1	4		2	4	8	1		35
1989			13	2	92		9	1	3	12	5			137
1990			23	2	142	1	17	3	3	3	3		1	198
1991			33	1	58		15			5	6	50		168
1992		33	28		30		3	1		8	64	18		185
1993			15	2	15		1		2	1	10	10		56
1994			8	1	7	1	1	1		1	5	5		30
1995			6	5	11		1		1	1	6	1	1	33

Summary of Delist Codes A-Z														
Year	**A**	**B**	**C**	**D**	**F**	**G**	**L**	**P**	**R**	**S**	**T**	**X**	**Z**	**Total**
1996			10	3	7					1	2	1		24
1997			13		6		1		13		2			35
1998			12		6		2		5				1	26
1999			12		7				2					21
2000			17						1					18
2001			21		13									34
2002			29	1	19				5					54
2003			20		8				1					29
2004			16	1					12					29
2005			20		4				2					26
2006			23		6			1	1			10		41
2007			30		5				7					42
Total	2	33	537	31	531	7	294	11	85	102	123	129	14	1899