

**GAINS FROM HORIZONTAL MERGERS IN THE
BANKING INDUSTRY: EVIDENCE FROM STOCK
MARKET REACTIONS**

by

Mingming Gao
(1665442)

Major Paper presented to the
Department of Economics of the University of Ottawa
in partial fulfilment of the requirements of the M.A. Degree

Supervisor: Professor R.A. Devlin

ECO 7997

Ottawa, Ontario

August 1999

INDEX

ABSTRACT	3
SECTION 1. INTRODUCTION	4
SECTION 2. OVERVIEW OF BANK MERGERS	
2.1 Outline of Bank Merger Proposal	6
2.2 Overview of U.S. Bank Mergers	9
2.3 Motives for Merger	10
2.4 Debates over Market Definition	11
SECTION 3. THEORY AND LITERATURE REVIEW	
3.1 Merger Theories	15
3.2 Literature Review	24
SECTION 4. DATA SOURCE AND EMPIRICAL MODEL	
4.1 Data Source	31
4.2 The Reaction of Stock Market and Effects	33
4.3 The Methodology	34
4.4 The Model	36
SECTION 5. EMPIRICAL RESULTS ANALYSIS	41
5.1. Merging Banks	44
5.2. Rival Banks	46
5.3. Overall Effects	47
SECTION 6. SUMMARY AND CONCLUSION	50
CHRONOLOGY	56
REFERENCES	57

ABSTRACT:

This paper examines the potential effects of the proposed banking mergers in Canada by using stock market reactions to various events. The industry experienced two proposed horizontal mergers in 1998. We examine the reactions of the stock market to the proposed bank mergers when the messages of merger were leaked or announced, when the MacKay report and the Competition Bureau report were published, and when the decision was made by the Finance Minister, Paul Martin, that the merger would not be permitted. An event-time analysis approach is used to explain the effects of the price changes of the relevant stocks around the event dates, which tell us whether the market expected the merging banks to gain abnormal returns. While we find that Paul Martin's decision had negative effects on stock prices, there is little evidence indicating that the proposed mergers would have had collusive and/or anticompetitive effects.

1. INTRODUCTION

The literature on mergers is replete with studies that evaluate the impact of mergers on the participants, (see Desai and Stover, 1985; Neely, 1987; Trifts and Scanlon, 1987). But there has been very little actual testing of the adjustment of prices to specific kinds of new information such as merger challenge and decline. The prime purpose of this paper is to examine how common stock prices adjust to the different types of information that influence a merger.

A considerable amount of empirical evidence has been gathered on successful merged banks in the United States, which indicates that the stockholders of merging firms earn positive abnormal returns from the merger activity¹ (see Cornett, 1991; Houston and Rynganert, 1997 and Prayer and Hannan, 1998). But few of them are relevant to the proposed mergers recently experienced in Canada not only because of the difference in the banking industry in the two countries, but also for the mergers in Canada were proposed but not permitted to take place.

There are a number of articles relevant to the two proposed bank mergers in 1998 between the Royal Bank of Canada and the Bank of Montreal; the Canadian Imperial Bank of Commerce and the Toronto Dominion Bank (Chant, 1998, Hassanwalia, 1998 and Clemens, 1999). However these are generally restricted to newspaper commentaries or theoretical arguments based on the government decisions. To the author's knowledge, no articles have drawn any conclusions relevant

¹ A detail discussion of some of this evidence, and how it relates to the findings of this paper, is given in section 3.

to Canadian proposed bank mergers based on empirical evidence from the stock market.

To fill in this gap, we performed an empirical test to examine the effects of proposed mergers on shareholders by testing the stock market reactions to a series of important events: when the messages of merger were leaked or announced, the Task Force report,² and the Competition Bureau report and the announcement by the Finance Minister, Paul Martin, that the mergers would not be permitted. The objective of this analysis is to measure the level of "abnormal returns" surrounding the events dates. As in an efficient market, all information should be reflected in the market reactions to the relevant event dates.³

The test focuses on the two proposed bank merger announcements during 1998 in Canada. Our test uses a market model and daily return data to analyse any price effects arising from these events on the stock of the four proposed merger banks and other four rival banks.

The result shows that the stock prices of the proposed merger banks soar up resulting in positive and significant abnormal returns compared with rival banks when the merger proposal were announced or leaked. We also find that the stock prices dropped significantly at the time of Paul Martin's declining of the proposal, even below the original level. For the rival banks, the stock prices move in the same

² The Task Force report (MacKay report) given to Finance Minister, Paul Martin is basically advice to the government. It does not comment directly on those proposed mergers, but it does say, "there should not be a blanket ban on big bank mergers. Instead, mergers should be allowed if, after a full public review, they are found to be in the public interest." (<http://www.edmontonjournal.com/archive/0998/091698mackay.html>).

direction with the proposed merger banks but to a less degree at the time of the publication of MacKay report and merger refusal. From the analysis below, the market power hypothesis⁴ is generally rejected by the data. This conclusion, which is also to some extent, supported by Stillman (1983), casts serious doubt on the validity of government intervention for the 'consumer protection' rationale.

The paper proceeds as follows: Section 2 provides an outline of the Canadian banking industry structure and presents a brief overview of the recent bank merger wave in the United States. Section 3 reviews the relevant literature applied event-time studies to mergers and presents survey of a number of hypotheses that attempt to explain why firms in general, and banks in particular, are keen to merge. The hypotheses are then tested in later section by analysing the stock price behaviour of merging banks and their competitors during the periods surrounding the merger announcements and the regulatory decisions to approve or deny proposed mergers. Section 4 describes the data sources; the empirical methodology and the model employed to carry out the test. Section 5 further identifies the market reactions of stock prices to the series events, interprets the empirical results for the stock price changes and investigates the reasons for stock market reactions around the four events dates. This exercise allows us to differentiate between alternative hypotheses of bank mergers. Section 6 offers concluding remarks.

2. OVERVIEW OF BANK MERGERS

³ This assumption will be discussed in detail in section 4.2.

⁴ The hypothesis is going to be discussed in detail in Section 3.1.

2.1 OUTLINE OF BANK MERGER PROPOSAL

Four of Canada's 'Big Five' banks proposed to merge in 1998 – the Royal Bank of Canada with the Bank of Montreal, and the Toronto Dominion Bank with the Canadian Imperial Bank of Commerce. The proposals to merge have aroused considerable debates in political and financial policy areas.⁵ Supporters of the mergers think that greater consolidation in the banking industry is essential for the Canadian banks to be competitive in an increasingly global economy. Opponents argue that mergers will result in creating market power among Canadian banks, higher prices for banking services, and reduced consumer welfare.⁶

The responsibility of the Competition Bureau is to ensure that firms operating in Canada behave according to a set of rules designed to promote competitive behaviour. These rules requires that proposed mergers be examined to determine whether the merged companies will substantially lessen competition by raising prices, limiting choice and decreasing service. Under the Competition Act, the proposing parties of the merger, should notify the Competition Bureau and provide specified information, before the merger is completed if the proposed merger exceeds certain thresholds (in terms of the size of the parties and the size of the merger). This process, commonly referred to as “merger prenotification”, is intended to allow the Bureau to assess the competitive impact of the proposed merger and take appropriate action if the mergers are likely to prevent or reduce competition substantially. Should the

⁵ The chronology of bank mergers contained in the appendix is based on the News from the Competition Bureau, the web site <http://strategis.ic.gc.ca/SSG/ct01336e.html>.

⁶ <http://www.fraserinstitute.ca/critical-issues/1998/mergres>.

Bureau reach a conclusion to this effect, and after taking into account any claimed efficiency, it will generally require that the proposal be restructured or abandoned.

For the bank mergers, unlike other mergers, they need the ultimate approval of the Minister of Finance under the Bank Act. The Competition Bureau merely recommends an outcome, it is the Minister of Finance who makes the final decision. In recognition of this fact and as part of the Merger Enforcement Guidelines as Applied to a Bank Merger, the Competition Bureau should send a letter containing its assessment to the proposed bank mergers to the Minister of Finance.

In January 1998, the Bureau began reviewing the proposed merger of the Royal Bank of Canada and the Bank of Montreal. Following the merger announcement of the Canadian Imperial Bank of Commerce and the Toronto-Dominion Bank in April 1998, the Bureau began another review. It decided to examine both proposals at the same time in order to capture the full impact of both transactions. After a systematic review, the Bureau drew the conclusion that in many local areas, the merged banks would not only dominate the branch banking, but also have a strong grasp of the investment products through their subsidiaries.⁷ Relied on the study carried out by the Competition Bureau, the Ministry of Finance rejected the merger proposal for that the mergers would have lead to an unacceptable concentration of power. The two giant banks created by the mergers would lessen competition among Canadian banks, financial and insurance companies.⁸ This

⁷ "The Competition Bureau and Bank Mergers." <http://strategis.ic.gc.ca/SSG/ct01337e.html>

⁸ This is the idea raised by Competition Bureau for refusal of bank mergers. <http://strategis.ic.gc.ca/SSG/ct01337e.html>

decision relied on the study carried out by the Competition Bureau. The Ministry of Finance does not automatically deny a merger if it results in market concentration above the threshold. Instead, potential mergers are further analysed to consider the appearance of possible mitigating factors including active competition from trusts and credit unions, ease of entry into the market, improvements in efficiency, the number of large banks remaining in the market, and other circumstances that would make the exercises of market power more difficult.

2.2 OVERVIEW OF U.S. BANK MERGERS

The U.S. banking industry has been rapidly consolidating for more than a decade, and there are no signs that merger activity will stop. Since 1981, the banking industry consolidations in U.S. have been striking, and include recent mergers between large banks that will change the face of industry. The industry has undergone a wave of horizontal mergers in 1998 such as the mergers of National Bank Corp. with Bank American Corp.; Wells Fargo Co. with Norwest Corp.; and First Chicago NBD Corp. with Bank One Corp.

As a result, the number of commercial banks has declined by almost 30 percent, from 13,123 in 1988 to 9,215 in 1997.⁹ The reduction is second only to the one that occurred during the Great Depression, when the number of banks declined by half. Historically, restrictions on commercial banks to expand geographically have been among the primary determinants of the structure of banking industry in the

⁹ Source: Federal Deposit Insurance Corporation. The number includes all FDIC insured commercial banks. The latest number is for the third quarter of 1997.

United States (e.g., Frieder, 1988). But the current trend in the states appears to favour a policy of nation wide entry (see Amel, 1988). As of March 1988, 27 of the 42 states that had passed laws under the Douglas Amendment either already permitted nation-wide entry or have provisions for converting to such a policy in the near future (see Spiegel, 1996). In addition, recent changes in banking laws have relaxed constraints on bank activities and geographic expansion, and technological improvements have brought about new markets and payment systems. (Simons and Stains, 1998)

2.3. *MOTIVES FOR MERGER*

The recent merger wave in the banking industry especially in the United States is arguably the result of the developments in data processing technology and communications networks (Douglas, 1998). The underlying force behind the wave appears to be the extraordinary advance in communications and computer software technology. With the development of personal computers and the software that manages networks, it is possible for banks to provide widespread services at branches and automated teller machines (ATMs). The evolving technology in delivering banking products and services is frequently cited as another reason to expand market scope.¹⁰ Thus, it is no longer necessary for banks to have a physical presence in all communities in order to deliver banking products. Over time, increased competition in banking markets supported by the new technology will be beneficial to the vast

¹⁰ Many banks can now serve consumers and small business independently of branches through ATMs, telephone call centres, personal computers, and calling officers who work from their homes.

majority of the bank consumers (Broaddus, 1998). Databases have made information management far less expensive and more efficient. The cost savings accrue most significantly in the management of very large databases for sharing information among a large number of users and over long distances. So the benefits of the technology revolution accrue most fully to very large scaled banks which can have relative advantage of economies of scales. While the technological advance is typically thought to be good for consumers, the banking merger trend has been greeted with the fears of diminished service, higher fees, and decreased credit availability.

2.4 DEBATES OVER MARKET DEFINITION

Whether or not bank mergers will create market power depends upon the market definition employed. Jackson (1992) pointed out that when analysing a bank merger relevant product markets are initially defined by actual sources of competition. A variety of competitive criteria are evaluated for each relevant market under detailed review. The goal is to determine whether or not the merger is likely to result in a substantial lessening or prevention of competition.

There are two problems with the definition of the market. First, operationally it is very difficult to set a boundary for what constitutes the banking industry, i.e., how broadly the market should be defined for banking products or services. Second, an ideally competitive market - one characterised by many banks, none of which have

Indeed, the number of ATMs grew from around 800 in 1972, to 18,500 in 1980, and 109,000 in 1994 (Rhoade, 1996a).

the ability to influence prices - may not be the best benchmark for policy recommendations in the banking industry.

Defining a meaningful geographic market is often the most difficult aspect of merger analysis. The merger applicants seek to define their market as broadly as possible to minimise the potential possibility of market power, while regulators tend to define it more narrowly.¹¹ "The potential constraining influence of firms that can participate in the market through a supply response is considered subsequent to an initial market definition. The suppliers that will likely be added to the market within a year are included in market share calculations." (<http://strategis.ic.gc.ca/SSG/ct01283e.html>, Competition Bureau report, 1998, market definition section, paragraph 23) The Competition Bureau considers a local, 'economically integrated area' to be a banking market. In practice, this usually means a city, a metropolitan statistical area, or a rural county.

Merger applicants have argued that defining the market in a local manner has become obsolete as a result of changing demographic, economic, and financial conditions. In particular, the spread of banking and branches has led banks to restructure some of their business lines. For example, banks have established small business lending and consumer finance units that serve large areas (Hassanwalia,

¹¹ The following market definition is applied by Competition Bureau in their research: relevant markets are normally defined through use of the "hypothetical monopolist" test. Under this test, "a relevant market is the smallest group of products, (which includes those of the merging firms) and the smallest geographic area such that a sole supplier of these services could profitably maintain a small but significant, non-transitory price increase than would prevail absent the merger." (<http://strategis.ic.gc.ca/SSG/ct01283e.html>). The hypothetical monopolist test is applied to define both the product and geographic boundaries of the relevant market.

1998). Merger applicants sometimes cite the existence of such units as a sign that the geographic scope of banking markets has increased. However, this argument confuses a service area of a bank with a market, which is an economically integrated area where customers can switch among the service providers without incurring large transaction costs. There is no reason that banks cannot charge different prices in different markets within their service areas. Indeed, even if the headquarters set baseline prices for services, local managers are usually given discretion to adjust prices in keeping with local conditions.

The purpose of defining relevant market is to identify the suppliers with which the merging parties compete. Each relevant market includes all substitute products and services to which consumers would likely turn in response to a significant and non-transitory price increase on the part of the merging bank (Hawawini and Swary, 1990). An additional source of competition to banks comes from a number of nonbank financial service companies such as mutual fund and investment firms that offer cash management services. Such services typically include money market accounts with loan, mutual funds, and credit cards. Some of the financial service companies market their services nationally and internationally as well. How much market power an individual firm possesses depends critically on how the market is defined, the broader the definition, the less market power any particular firm will have. If the banking market were defined as the global financial market, perhaps the Ministry of Finance would consider eliminating the restrictions on foreign banks and

on domestic financial institutions. These restrictions create a barrier to entry and make the Canadian banking industry less competitive. Clemens (1999) argued that opponents of the mergers failed to realise that the main barriers to competition in the financial services industry are not due to features of the industry. Rather they stem from government regulation that limits the ability of other banks, in particular, foreign-owned financial institutions to enter the Canadian market and compete on an equal footing with existing institutions. Indeed one of the goals of NAFTA is that Canada should open up its financial system fully to foreign banks. Hence, as a part of an overall reform package, it is important that the restrictions on financial institutions be removed (Clemens, 1999).

In this paper we test merger proposal effects on Canadian banks. The analysis excludes financial institutions and insurance companies, since the main concern for the proposed merger was that the "Giant Banks" after the merger will create monopoly power in the traditional banking service areas that have not yet been opened to insurance companies and financial institutions. As we test the stock market reactions of the proposed mergers on the Toronto Stock Exchange, we choose the rate of return in banking industry as R_{mt} on the stock market for each event day,¹² which is the rate of return on the value-weighted portfolio to estimate the value of coefficients.

¹² The definition is also given in section 4.4. We also test the result using the market return for all industries and compared it with the result using banking industries and find that the results is not much different from using R_{mt} in our model.

3.THEORY AND LITERATURE REVIEW

3.1 MERGER THEORIES

Merger, which is the behaviour that two firms agree to combine under established legal procedures is a kind of investment decision made by one firm to materially influence the economic behaviour of another firm (Jensen and Meckling, 1976). Section 91 of the Competition Act defines a merger as “any transaction in which control over, or a significant interest in, the whole or a part of a business of another person is acquired or established.”¹³

There are two classes of merger theories (Weston and Halpern, 1983). The first refers to non-value maximising behaviour by the management of merging firms, they attempt to maximise growth in sales or assets or to control a large empire (Benston, 1980). Under such conditions, the management of the merging firm may be motivated by the desire to increase the firm's size regardless of whether the merger is a wealth-creating activity (see Amihud and Lev, 1981). Mergers of this type have no economic gains to be divided among the expanding corporations. Indeed, it is likely that there would be an overall economic loss.

The second general class of theories refers to value maximisation motivations in which the merger should meet the same criteria as any other investment decisions (Gorden and Yagil, 1981). The decision to merge with another firm, as other investment decision, should be primarily motivated by the desire to increase the market value of the merging firms. In this case, the management of the merging firm

is said to display a wealth maximising behaviour. The increase in the stockholders' wealth of the merging firm could be the result created by the merger. Thus there should be a positive expected economic gain or at least earn a normal rate of return accrue to the merger shareholders.

There are a number of merger motivations that are consistent with the goal of value maximisation. The first class consists of financial motivations. One argument presented is that a merger permits a redeployment of excess cash held by either of the merging firms (Madden, 1981). Another argument is that the diversification benefits provided by a merger can reduce the probability of default therefore reducing possible bankruptcy costs and increasing the debt capacity of the new entity (Weston and Halpern, 1983). Both of these influences would increase the market value of the combined firm compared to the sum of the market value prior to the merger. Another set of economic motivations is captured by the wealth maximisation motive in which the merger results in an increase in the total expected cash flowing to the firms (Dodd, 1980). These gains can occur from economies of scale generated from horizontal mergers, excess capacity in factors of production (such as managerial or financial control), or cost advantages when output is increased by the post-merger in a range of products. There is strong evidence indicating that mergers generate net aggregate gains, resulting in benefits or at least no losses to merging firm shareholders.¹⁴

¹³ <http://strategis.ic.gc.ca/SSG/ct01288e.html>.

¹⁴ Jensen and Ruback (1983) provide a comprehensive review of this literature.

Identifying the sources of gains to merging firms is crucial to policymakers, especially in such a highly regulated industry as the Canadian banking industry. Many of the motivations reviewed in this section appear to be reasonable explanations of merger activities. However, a number of these motivations have similar predictions regarding the impact of the merger on the security price of the affected firms as merger gains are most likely due to more than a single factor. For example, the elimination of a merging firm's inefficient management and the synergies resulting from the combination of two or more independent management teams. Thus it may be very difficult to distinguish among the motivations. In the section below, we examine a number of hypotheses that seek to explain the merger phenomenon and its effect on the shareholder wealth of merging firms. We also discuss the relevance of these hypotheses to the case of the banking industry.

A number of hypotheses have been advanced to explain the sources of these gains. Hypotheses that assume that the merger wishes to increase shareholder wealth are consistent with wealth maximising behaviour (Hawawini and Swary, 1990). Shareholder wealth will increase as a result of a merger only if (a) the future cash-flow stream generated by the combination exceeds the sum of the future cash-flow streams of the two individual firms, and/or (b) the risk to the merged firms is reduced. The future cash flow generated by the merger will exceed the sum of the two individual firms if:

(1) The merger can reduce the cost of its product after the merger. The potential reduction in production or distribution costs resulting from the adoption of

more efficient technology (productive efficiency), and the removal of the merger firm's inefficient management, including management that does not adopt policies that maximise the wealth of shareholders (synergy). This would be possible if the merger generates synergies through economies of scale divestiture of redundant assets, etc. This merger motive is known as the productive efficiency or synergy hypothesis (Hawawini and Swary, 1990).

(2) The creation of monopoly power in the product market that may lead to higher product prices and profits. The firms can raise the price of its product after the merger. This would be possible if the bank succeeds in reducing price competition in the market by obtaining some of its competitors. This merger motive is known as the market power or collusion hypothesis. However, the achievement of monopoly power through a merger is often included within the synergy class because of the expected increase in post-merger cash flows.

The generally acknowledged effect of mergers in any market is potentially two-folded (Higgin and Schall, 1975) with both positive and negative effects. The potential benefits of mergers are increased geographic diversification, elimination of inefficiencies and creation of economies of scales. The merger can also increase the efficiency of the merged firms' service provision, and raise the market shares. (Berger, 1998). Theoretically, then, the implication of increased efficiency for banks from merging would be to lower prices, e.g., raise deposit rates, lower loan rates, and decrease service fees.

The second effect of mergers, however, is to increase market power of the merged firms, which theoretically implies the ability, that the merged bank captures a sufficiently large segment of the market, to raise their service charges and collect economic profits. Moreover, according to this idea, in the particular region that the merged bank belongs to, corresponding prices should rise as well, although to a lesser degree (see Simons and Stavins, 1998).

According to the market-power or collusion hypothesis, horizontal mergers create monopolistic power by reducing the number of competing firms in an industry. The reduction in the number of competitors allows the merged firms to raise their product price. The reduction in the number of competitors will also lower the cost of monitoring rival firms in the industry. The traditional collusion argument presumes the incentive to co-ordinate the production rates of the individual firms within an industry is a function of the costs of monitoring the collusive agreement (Stigler, 1964). Using Stigler's (1964) theory of oligopoly, a horizontal merger can reduce the monitoring costs by reducing the number of independent producers in the industry. The fewer the members of the industry, the more obvious are each producer's actions, and the higher is the probability of detecting members who try to cheat by increasing output. The higher this probability, the lower the expected gains from cheating, and the more stable is the cartel¹⁵ (Eckbo 1983, 1985).

¹⁵ Of course, in the absence of government supported entry barriers (such as patents, licences, tariffs, etc.), the collusion argument assumes the degree of resource specialisation in the industry is sufficient to slow down the entry process. See, for example, Stigler (1950) for a discussion of the minimum necessary condition for merger for monopoly (or oligopoly) to take place. Note also that the collusion hypothesis does not necessarily presume a complete cartelisation of the industry. A subset of firms

How can this hypothesis be tested? One approach suggested by Eckbo (1983) and Stillman (1983) is to examine the price reactions of rival firms in the industry when the merging firms announce their intention to merge. When a merger occurs, the number of banks operating in a given segment may change. The fact that merger activities alter the number of competitors in the banking industry means that the announcement of a merger may have implications for merging banks as well as their rivals. If the merger creates market power that is translated into higher product prices and lower monitoring costs, then all the remaining firms in the industry should benefit and not just the proposed merging firms. Thus, the merger announcement should increase the rivals' benefits as well. Since effective collusion generates monopoly rents, the market power hypothesis implies that the rivals of the merging firms should earn positive abnormal returns around the merger proposal announcement. The same conclusion holds for rivals expected to remain outside the collusive agreement, in particular since those firms will not bear the costs of restricting output. Furthermore, the rivals should earn negative abnormal returns in response to subsequent merger challenge and decline prohibiting the merger from taking place, such as the MacKay report and the Paul Martin report in Canadian bank merger cases, provided the reports are expected to significantly increase the costs of collusion. Such an announcement will reverse the expectations of increase monopoly rents caused by the earlier merger proposals.

may find it optimal to form a cartel agreement after the merger has been completed and produce a marginal output (or input) restriction on their own.

Table 1

The Expected Sign of the Abnormal Returns to the Merging Firms and Their Horizontal Rivals as Predicted under the Collusion and Efficiency Hypotheses.

Hypothesis	Announcement of merger proposal		Announcement of MacKay report		Announcement of merger decline	
	Merging banks	Rival banks	Merging banks	Rival banks	Merging banks	Rival banks
Market power	<i>Positive</i>	<i>Positive</i>	<i>Negative</i>	<i>Negative</i>	<i>Negative</i>	<i>Negative</i>
Synergy	<i>Positive</i>	<i>Unrestricted</i>	<i>Negative</i>	<i>Unrestricted</i>	<i>Negative</i>	<i>Unrestricted</i>

The above implications of the market power hypothesis are necessary but not sufficient to conclude a given merger is highly anticompetitive. As indicated in Table 1, a pattern of abnormal returns to the merging banks and their rivals which is consistent with market power or collusion hypothesis can also be consistent with productive efficiency or synergy hypothesis. The latter hypothesis represents a class of theories predicting an increase in the market value of the merging banks due to the implementation of a more cost-efficient production/investment policy after the merger is consummated.¹⁶ In general, the efficiency hypothesis does not restrict the sign of the abnormal returns to the rivals. To see why, note that with productive efficiency each merger announcement can have both product price effect and

¹⁶ The productive efficiency hypothesis covers a wide range of possible specific reasons for merger, such as others, realisation of technological complementarities, replacement of inefficient management teams, utilisation of unused corporate tax credits, and avoiding bankruptcy costs. A general review of traditional non-monopolistic hypotheses of merger motivation can be found in Steiner (1975).

information effect. That is, the intensified competition in product markets (the merging banks are being replaced by a more competitive corporate entity) tends to result in lower product prices. This price effect causes a negative change in the market value of the rivals at the time of the proposal announcement, and a positive (reversed) effect at the time of the antitrust complaint. On the other hand, since the production technologies of competitors are closely related, the news of a proposed efficient merger can also signal opportunities for the rivals to increase their productivity,¹⁷ this is called information effects. Similarly, the news of the antitrust complaint can signal a significant restriction in the future merger opportunities of the rivals. For each of the two announcements the total wealth impact on the rivals is the sum of product price effect and offsetting the information effect, leaving no necessary restriction on the rivals' abnormal returns under the efficiency hypothesis¹⁸ (Hawawini and Swary, 1990).

Horizontal mergers, by nature, may be anti-competitive. As a market becomes more concentrated, the more likely that anti-competitive behaviour will follow. That

¹⁷ For example, the proposal announcement may disseminate information that enables the rivals to imitate the technological innovation motivating the merger. If such innovation activity requires merger, then the stock prices of the rivals will bid up in anticipation of the expected gains from the future merger activity. Interestingly, Jarell and Bradley (1980) presents evidence consistent with the proposition that the introduction of public disclosure laws has resulted in extensive dissemination of technological information associated with tender offers, therefore significantly, reducing the private gains from company take-overs. Note also that if the technological innovation is scale increasing, then imitation by the rivals will further reduce the product price. In fact, merger waves may be a race by imitators to lower their costs in response to this continuing price decrease.

¹⁸ In principle, one could discriminate between the market power and synergy theories by examining the abnormal returns to the merging firms' corporate customers and suppliers of inputs. For example, relative to the proposal announcement, corporate customers and suppliers should lose under the collusion hypothesis and gains under the efficiency hypothesis. However, tests based on this notion are difficult since it is necessary to identify customers and suppliers in the banking industry who cannot switch their purchase/sales to other industries at a lower cost.

is why the bank regulators are concerned that the merger would increase the banking service prices and thereby benefit the participants in the industry. Furthermore, the market power hypothesis predicts negative abnormal returns for rival firms at the time the merger refusal, as the decline causes a reduction in the probability of an increase in prices.

Since our study focuses on merging activities in the banking industry, evidence from studies on merging in other industries may not be applicable since banks operate in a different environment and under a different set of constraints compared with nonbanking firms. This is due to the regulatory framework within which banks operate, a framework which has the potential to strongly affect the incentives for horizontal bank mergers. In addition, regulators such as Ministry of Finance are directly involved in the process of bank mergers. These mergers are the subject of antitrust policies and laws and must be processed and approved by bank regulators - Ministry of Finance.

To draw normative conclusions concerning merger regulation, a further limitation of the tests should be emphasised. The market power and synergy hypotheses are not mutually exclusive, which means that the observed stock value changes in a given merger can result from the combination of simultaneous positive and negative effects. Because positive effect caused by the realised benefits within the merging banks can outweigh the negative social welfare effects of collusion. Therefore, even a pattern of positive abnormal returns to the rivals which is truly consistent with the market power hypothesis is not sufficient. However, evidence that

is inconsistent with market power, but consistent with productive efficiency on the part of the merging banks, implies that blocking the merger will reduce social welfare. Essentially, such evidence would indicate that the social efficiency gains created by the merger are sufficient to outweigh the potential welfare loss from collusion. Consequently, it is possible to use the implications in Table 1 to examine whether the proposed bank mergers are socially desirable, efficient mergers.

3.2. LITERATURE REVIEW

There is an impressive body of empirical evidence on the U. S. banking industry which indicates that stock price changes in individual common stocks occur after merger announcements and the stockholders of merging banks earn positive abnormal returns from merger activity. A standard interpretation of this evidence is that control over the target firm's resources enables the successful bidder to initiate a revaluation of its own shares by implementing a higher valued operating strategy (Eckbo, 1983). Following this view, stockholder gains reflect an increase in the expected spread between the merging firms' future revenue and costs. However, the more difficult issue of whether the gains predominantly originate in cost-side effects ('productive efficiency' theories) or in revenue-side effects ('market power' theories) has remained unanswered. Indeed, despite the widespread concern with anti-competitive consequences of mergers, reliable evidence on the importance of market power theories in the context of this particular corporate activity is almost non-existent.

To test the hypothesis that mergers increase profitability and efficiency, several studies have followed Gort and Hogarty (1970) in using the market prices of the merging firms' shares before and after merger plans were announced. These studies have been reviewed and summarised in a paper by Jensen and Ruback (1983). Almost universally, stock market share value studies of merger effects have shown large increases in the prices paid to acquired firm shareholders, and small, and in some cases negative, changes in the market value of the acquiring firms' shares. However, in the study of 1,970 corporate merger cases, Eckbo (1986) finds gains for both the acquiring and the acquired firms' stockholders. Combining the results for the acquired and acquiring firms indicates positive changes in share values following the announcement of mergers, although the average gain is not large if the changes are weighted by the asset size of the acquiring and acquired firms.

The studies surveyed by Jensen and Ruback (1983) would appear to provide support for the 'efficient markets' view of mergers, although logically one cannot rule out the possibility that the rise in share values reflects the effects of market power rather than increased efficiency. Eckbo (1983) has attempted to distinguish empirically between these competing explanations. Using a sample of horizontal mergers against which antitrust suits had been brought, and a control group of rivals of the merging firms, Eckbo investigates the impact that the announcement of the merger plans of the former has on the share prices of the latter. The evidence presented by Eckbo indicates that the rivals of horizontally merging firms systematically experience positive abnormal returns during the merger announcement

period. This finding is consistent with the market power hypothesis; although Eckbo argues that it is also consistent with the efficiency hypothesis, if a proposed efficient merger conveys information to rivals of opportunities to increase their productivity. Thus the crucial test is the response of rivals of merging firms to antitrust complaints against the merger. Eckbo does not find any evidence that antitrust complaints have a negative impact on the value of rival firm shares. He argues this contradicts the market power hypothesis, and he concludes that his empirical tests do not support that hypothesis. But this conclusion depends heavily on the assumption that rivals of merging firms 'rationally expect' that an antitrust attack on their merging competitors will be to their own advantage. If the exercise of market power is viewed something more dangerous, rivals of merging firms may believe they will gain when law restrains the market power of their competitors, which are those proposed merger banks.

Furthermore, empirical studies by Eckbo (1983), Stillman (1983) and Eckbo and Wier (1985) reject the prediction that horizontal merger is more likely to have market power effects. Their findings are based on the merger-induced abnormal performance of competitors of merging firms that were challenged with violations of Competition Act. Moreover, these authors conclude that, although challenged, horizontal mergers were not anti-competitive. Eckbo (1985) also studied firm and industry specific characteristics (such as concentration), concluding that the positive abnormal returns to competitors of the firms are not positively correlated with the change in concentration implied by the horizontal mergers and, whatsmore, are not

correlated with the pre-merger level of concentration. Nevertheless, the evidence also indicated that the gains are not only available to firms involved in the merger, but appear to be shared with rivals in the industry. In this respect, the structure of the industry plays an important role.

Eckbo's paper (1986) presents some empirical evidence for Canadian industries but not for bank mergers. He does not specify what generates the positive returns. Furthermore, his conclusions are based on a sample biased towards the collusion hypothesis. On average, 80-85% of mergers during that period-involved bidder and target firm with smaller asset sizes than the smallest merger in the sample studied. The sample of comparable size and importance would yield evidence that systematically favours the market power hypothesis (Hawawini and Swary, 1990).

The above evidence implies that merger gains do not result from the acquisition of market power. Given this finding it is interesting to examine the effects of antitrust actions on merging firms. Ellert (1976), Wier (1983), and Eckbo (1983) found that antimerger law enforcement imposes substantial and abnormal losses on merging firm shareholders. Their findings indicate that shareholders of both bidding firms and target firms involved in lawsuits that were later decided against them earn, on average, negative abnormal returns. The authors interpret these findings as implying that enforcement agencies impose costly constraints on involved firms. Evidence presented by Stillman (1983) and Eckbo (1983) that the competitors bear no abnormal losses at the time of anti-competitive lawsuits, further confirms the conclusion that merger is not collusive.

More recent studies, however, have directly addressed the effects on merging banks. James and Wier (1987a) examined the effects of competition on acquirer wealth in the market for bank mergers, using stock market data. They found that the gains to acquirers are positively related to the number of alternative target firms and negatively related to the number of potential bidders in the market. Other studies by Neely (1987), Trifts and Scanlon (1987) and DeCossio et al (1987) performed the market reactions to the announcement of bank mergers. They all report a substantial rise in the stock price of target banks and a relatively smaller drop in the stock price of bidding banks in mergers during the week the merger proposal is announced. Cornett and De (1989) found a significant and positive stock market reaction to announcements of interstate bank mergers for both bidding and target banks. They conclude that the results are relevant to various factors such as the size of participating banks and the type of financing used in the transaction.

Houston and Ryngaert (1993) demonstrated that the overall gains perceived by the stock market of mergers between large banking institutions are positive. Their results uncover a number of findings concerning mergers of publicly traded banks during the period 1985-1991. The contribution is considering the total return of the bidder and target banks at the time of the merger announcement. While Palia (1994) reviewed studies that examine bank mergers from two different approaches, one used heavily by bank merger practitioners and primarily using accounting data, and the other using stock price data. The evidence from these two approaches is compared and contrasted. A sample of traded banks is then examined for any relationship

between these two approaches. They found that the merging banks do earn excess returns and there is a negative relationship between the bid premiums and the excess returns earned by the merger banks.

Cornett (1991) investigated stock market reactions to the announcements of the mergers based on evidence from interstate bank mergers. They considered all 196 interstate bank mergers that took place before the end of 1986. The results of their study indicate that both the bidder and the target banks involved in interstate bank merger experienced significant positive abnormal returns during the period surrounding the announcement of the merger. But this study is restricted to U.S. interstate bank mergers, and the small sample size with the use of weekly, rather than daily, data make it difficult to compare their results with the findings of the other studies.

A summary of the above literature review is provided in Table 2. The most important evidence from the review is that most studies found that the parties involved in a merger gain from the transaction due to productive efficiency, while antimerger law caused losses to the shareholders of the merging firms.

Table 2

The Summary of Literature Review

Author	Main Results
Eckbo (1983)	Merger increases the firms' expected future value due to productive efficiency.

Jensen & Ruback (1983)	Rise in the share values after the merger nouncement.
Stillman (1983)	Mergers were not anti-competitive.
Eckbo & Wier (1985)	Gains caused by synergy to merger and rival firms.
Ellert (1976), Wier (1983)	Antimerger law caused losses to merging firm shareholders.
Eckbo (1986)	Find gains for both the acquiring and acquired firms' shareholders.
Trifts & Scanlon (1987), Neely(1987), DeCossio et al.(1987)	Substantial rise in the stock price of target banks but drop in stock price of the bidding banks.
Cornett & De (1989)	Significant positive returns of interstate bank mergers for both bidding and target banks.
Houston & Ryngaert (1993)	Overall gains of mergers between large banking institutions are positive.
Palia (1994)	Merging banks earn excess returns.

It is important to note, however, that in the empirical work to date the usual procedure has been to separate the target and bidder firms and investigate the pre and post merger behaviour of bidder and target firms. There is also an attempt to isolate and measure the impact of the merger from other events that affect the merger. Interpreting the results obtained from the several studies of U.S. bank mergers leads to the conclusion that the merger announcement brings positive stock market returns to the merging banks. However, the banking sectors in Canada and the United States are sufficiently different to draw any meaningful conclusions.

There are some different characteristics of the Canadian bank mergers compared with U.S. Firstly, the bank mergers in Canada were never allowed to proceed. Secondly, the proposed merger banks have approximately the same asset size therefore no separate consideration of the gains to the bidder and target will be investigated in the Canadian cases. The third, which is the most important reason, is the size of the market and the structure of the financial system. Because the relevant market is much smaller in Canada compared to the United States, Canadians have to be more concerned about the concentration of power and the lessening on the competition than do Americans. Fourthly, the U.S. has a longer history of strict enforcement of antitrust laws to regulate merger activity. Restrictions on the ability of commercial banks to expand geographically have been among the primary determinants of the structure of commercial banking in U. S. (e.g., Frieder, 1988).¹⁹

4. DATA SOURCE AND EMPIRICAL MODEL

4.1 DATA SOURCE AND EVENTS DATES

The data used for this paper consist of the stock exchange prices of the four proposed merging banks and also the four main rival banks, Bank of Nova Scotia, Canadian Western Bank, Laurentian Bank and National Bank of Canada. The data are from the listed stock prices on the Toronto Stock Exchange as reported in the section of entitled 'Financial Post' in the daily newspaper *National Post*.

¹⁹ These restrictions have been imposed by individual state laws limiting branching of multiple bank holding company activities within state boundaries, and by national laws, and the Bank Holding Company Act of 1956.

Several of the earlier studies of mergers by non-financial firms use the effective date of merger as the event date. An important feature in the proposed Canadian bank mergers, however, is the regulatory uncertainty on merger approval. In contrast to antitrust action in non-financial mergers that focuses primarily on the potential reduction of competition and creation of monopoly power, (Jensen and Ruback, 1983), regulatory control in banking mergers involve a much broader set of benefits and adverse effects. Potential benefits include improved convenience for the community, increased competition, improved operating efficiency, expanded resources for the merger bank, and improved management. These potential benefits are against the traditional antitrust concerns, such as undue concentration, reduction of existing and potential competition, lower service standard as well as the financial condition of the banks. A merger proposal may be rejected if it does not satisfy the public benefits criterion whether or not it violates antitrust regulations. The focus of our study is to determine if the proposed mergers were consistent with value-maximising behaviour by examining the proposed merging banks and rival banks' daily returns surrounding the pertinent dates. These event returns should come out as predicted in Table 1 if product efficiency hypothesis was the appropriate explanation according to our analysis in Section 3.1.

The announcement date for the merger between the Bank of Montreal and the Royal Bank was January 23; the leakage date of the proposed merger between Canadian Imperial Bank of Commerce and Toronto Dominion Bank was April 17. We also take the publication date of Mackay report, September 15 as the event date

for announcement of merger challenge. While for the decline of permission, as the publication dates of the Competition Bureau report (December 11) and the Minister of Finance - Paul Martin's report (December 14) are very close, and Martin's rejection of bank mergers was leaked around December 4 (see *National Post* commentary), so we choose December 4 as the event date for merger decline. We also decided that in order to get reliable estimates of the parameters that will be used in the analysis, it is necessary to have at least sixty successive days of rate of return for stocks before the events dates (Neely, 1987). Thus the four estimation periods are from Oct. 22, 1997 to Jan. 15, 1998, from Feb 4 to April 12, from June 13 to Sept. 9 and from Sept 25 to Nov. 29. Below, the implications of the market power hypothesis are tested in terms of this abnormal performance in response to the four consecutive events dates: the first and the second merger proposal announcement²⁰, the MacKay report and the decline of the merger proposal, each significantly changing the probability that the merger will take place.

4.2 THE REACTION OF STOCK MARKET AND EFFECTS

Papers by Manderlbrot (1966) and Samuelson (1965) show rigorously that successive price changes are consistent with an efficient market, i.e., a market that adjusts rapidly to new information. It is necessary to assume that security markets are efficient, so the announcement period stock price movement represents the market's unbiased assessments of the proposal mergers. As in an efficient market, the net

²⁰ We consider the two-merger announcement proposal separately to consider the influence of the proposal on the stock prices. We suppose the impact of the second proposal was not so strong as the first one. The result proves our hypothesis.

present value of all future expected benefits from the mergers is reflected in the stock price upon the events. Under this theory, when the proposed mergers are initially announced, the market reaction is a quick response of how favourably the market perceives the combination of the two banks. The market reaction as reflected in the valuation by shareholders suggests that the value of the firm have the potential to increase or not.

However, the existence of an efficient capital market introduces problems in interpreting the results of residual analyses. A proposed merger provides a bundle of signals that generate information reflected in the security prices of the merger participants. These signals give information on the event itself and the identity of the merger among others. In addition, the security prices of the firms in the merger may be influenced before it is even announced. Examples would include information leaks, insider trading, and the signal provided by a successful tender offer concerning the likelihood of a future merger offer. To disentangle the impact on the security prices of all of these signals and thereby evaluate the underlying motivation for the merger is very difficult, and that is the limitation of our paper as well.

4.3 THE METHODOLOGY

We examine the association between movements of stock prices in the involved banks and main rivals' on the announcement of the Four Events. An empirical test using the event study methodology will be carried out to test the hypothesis that stock price movements reflect to profitability of the proposed mergers and the hypothesis. In 1970, Gort and Hogary conducted research using the stock

market prices of the merger firms' shares before and after merger plans were announced as a means of evaluating the effects of mergers to test if mergers increase profitability and efficiency (Green, 1987).

Brown and Warner (1985) examined properties of daily stock returns and how the particular characteristics of these data affect event study methodology. The results from simulations with daily data generally reinforce the conclusions of previous work with monthly data: methodologies based on the OLS market model and using standard parametric tests are well specified under a variety of conditions. And they conclude that while explicit recognition of the characteristics of daily data can sometimes be advantageous, for example in cases involving variance increases or unusually high autocorrelation, the characteristics of daily data generally present a few difficulties in the context event study methodologies.

Using the event time methodology, Eckbo (1985) concluded that corporate take-overs are beneficial to shareholders of both firms involved in the transaction. Houston and Ryngaert (1993) demonstrated that the overall gains of bank mergers are slightly positive and showed the characteristics of mergers that the market perceives as most valuable.

For a given merger, define date 0 as the date in which the date of events (the leakage or announcement of merger, the publication of MacKay report, Competition Bureau report and Paul Martin report). Date 1 is then defined as the date immediately following the event day. While date -1 is the day preceding and so on. Our principal tests will involve examining the behaviour of average abnormal returns for t is in the

interval $-5 \leq t \leq 10$. i.e., for the 15 days surrounding the events days. We shall also be interested in examining the cumulative effects of abnormal return behaviour in dates surrounding the events dates.

The reaction of bank common stock prices to the announcement of a merger is examined separately from the announcement of the regulator's decisions. In each case we take a 15 day period that is divided into three subperiods: (1) a 5-day pre-announcement period (from day -5 to day -1); (2) the announcement period or event date (date 0); and (3) a 10-day post announcement period (from day +1 to day +10). This sequence is illustrated in Figure 1.

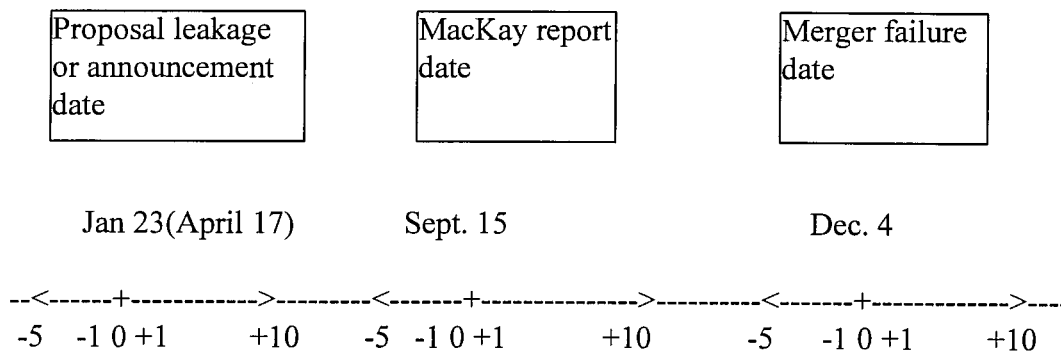


Figure 1. Time line for the events dates

4.4 THE MODEL

The pertinent dates specified (January 23 for the proposed merger announcement date between Royal Bank and Bank of Montreal; April 17 for the leakage date of proposed merger between Canadian Imperial Bank of Commerce and Toronto Dominion Bank; September 15 as the event date for announcement of MacKay report and December 4 for the leakage date of merger decline) are examined

in this study. We assume that the following market model in excess returns is an appropriate representation of the stock return performance (see Desai, 1985).

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \quad (1)$$

Where

R_{it} = rate of return on stock i for the event-day t ,

R_{mt} = rate of return on the value-weighted portfolio of banking industry traded on the stock market on event day t ,

α_i & β_i = the coefficients of the OLS estimates of the intercept and slope of the market model regression,

e_{it} = stochastic error term, assumed to be i.i.d., normal with zero mean and constant variance.

α_i and β_i are parameters that can vary from security to security and e_{it} is a random disturbance term. It is assumed that e_{it} satisfies the usual assumptions of the linear regression model. That is, (a) e_{it} has zero expectation and variance independent of t ; (b) the e_{it} are serially independent; and (c) the distribution of e_{it} is independent of R_{mt} .

The market portfolio is a portfolio that contains all risky assets in proportion to their market value. In choosing R_{mt} , we consider two possibilities the rate of return on the value-weighted portfolio of all stocks traded on the market and the average value of banking industry stocks traded on the market. We find that the choice R_{mt} does not affect the results very much. In practice, we use a stock market index that is a value-weighted index of all stock in TSE. β_i is defined as the ratio of the covariance

of stock i 's returns with those of the market divided by the variance of the market returns. Running an OLS regression of R_{it} on R_{mt} , we estimate the parameters α_i & β_i for each stock in the sample. The estimates of the market model parameters based on equation (1) α_i & β_i after corrections for heteroscedasticity are presented in Table 3. As we could see from the table, the t -test results for β are mostly above the 5% level of significance test. This signifies that the stock of individual bank is very sensitive to the general market movements.

Table 3 Estimates of α_i and β_i from equation (1)

		Proposal 1		Proposal 2		MacKay report		Decline	
		value	t -test	value	t -test	value	t -test	value	t -test
α	BMO	-0.0047	-0.0637	-0.1192	-1.3511	-0.1119	-0.5831	0.2504	1.5838
	BNS	-0.1187	-1.0777	0.0614	0.4880	0.0712	0.3799	0.0795	0.4536
	CIBC	-0.0560	-0.5343	0.0398	0.3239	0.0590	0.3202	0.2292	1.3280
	CWB	-0.0496	-0.1351	0.4787	1.5456	0.5088	1.7064	0.1286	0.3666
	LB	0.1460	0.6500	0.0843	0.3351	0.1081	0.4342	0.2886	1.2171
	NA	0.1540	1.0117	-0.1142	-0.7905	-0.1077	-0.5524	0.4196	1.8655
	RY	0.0513	0.4224	-0.0173	-0.1237	-0.0101	-0.0535	0.2348	1.2783
	TD	0.0436	0.5350	0.0756	0.7341	0.0824	0.4445	0.2687	1.6947
β	BMO	1.0851	27.2814	1.1094	22.5189	1.3974	7.9085	1.3183	11.1004
	BNS	0.8993	15.2607	0.9599	13.6624	1.2576	7.2870	1.0152	7.7133
	CIBC	1.1789	21.0363	1.1083	16.1740	1.5626	9.2204	1.4790	11.4078
	CWB	0.4920	2.5069	0.2838	1.6419	0.7541	2.7475	0.9628	3.6530
	LB	0.5923	4.9284	0.6195	4.4127	1.0566	4.6119	0.7387	4.1475
	NA	1.3665	14.3532	0.8639	10.7106	1.0997	6.1269	1.1685	8.0871
	RY	0.8590	13.2319	0.8546	10.9230	1.0983	6.2929	0.9360	6.7834
	TD	0.9829	22.5668	1.0042	17.4685	1.2665	7.4240	1.1596	9.7342

As the estimated periods of different events are close to each other and especially the estimation period of MacKay report occurred while the world financial market experienced great vibrations, we tested and corrected the heteroscedasticity as follows. First we do the regression analysis on the assumption that there is no heteroscedasticity then examine the residual square e_{it}^2 and we find they exhibit a linear systematic pattern. Then, using EViews, which provides us the option to estimate the equations and compute the variances using White's covariance estimator in place of the standard OLS formula,²¹ we corrected the heteroscedasticity by clicking on the check box labelled Heteroscedasticity Consistent Covariance and click on the White radio button.

Using the available times series on R_{it} and R_{mt} , ordinary least squares have been used to estimate α_i and β_i in (1) for each of the eight securities in the sample. With t_0 as the announcement date, estimates of α and β are obtained from ordinary least squares using returns data from $t_0 - 65$ to -6 days. The abnormal return to individual firm (AR_{it}) is defined as:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (2)$$

²¹ White (1980) has derived a heteroscedasticity consistent covariance matrix estimator, which provides correct estimates of the coefficient covariances in the presence of heteroscedasticity of unknown form.

AR_{it} is the daily abnormal return for i for the event-day t ; we use abnormal returns as the independent variable. Moreover, allowing the coefficient on the portfolio return to vary by bank helps control for bank-specific systematic risk. Using equation (2) results in abnormal returns that are insignificantly different from zero for the entire sample over the 60 days prior to the events, suggesting that risk and size effects have been effectively controlled.

Positive (negative) residuals would indicate a return higher (lower) than expected, i.e., an abnormal return (AR_{it}).

Portfolio average abnormal returns (PAR_t) are computed using:

$$PAR_t = \sum_{i=1}^N AR_{it} / N \quad (3)$$

The average abnormal return (PAR) is calculated as the sum of the abnormal returns at that point in event day divided by the number of banks in the portfolio on day t , which is N .

To examine the effects of these events on stockholder wealth, the Cumulative Abnormal Returns (CAR) analysis over τ days measured relative to the event date is defined as:

$$CAR_t = \sum_{t=K}^L AR_t \quad (4)$$

Where $\tau = L - K + 1$, and the CAR is computed from event day K through event day L .

Significance tests can be constructed for both the average and the cumulative average abnormal returns. To test the significance of these *CAR*'s, the *t*-test statistic is:

$$CAR\tau/\sigma(ARp)\sqrt{\tau} \quad (5)$$

Where $\sigma(ARp)$ is the standard deviation of the daily abnormal return to the portfolio over the estimation period $t_0 = -65$ to $t_0 = -6$.

The reactions of bank common stock prices to merger proposals and the subsequent regulator's decision are best captured by average abnormal common stock returns. Abnormal returns are calculated by deducting expected return from actual return. Expected returns have been estimated with the market model. The model's parameters are estimated with data outside the 15-day test periods. Specifically, they are estimated using a 60 days period beginning in the day -65 and ending in day -6.

5. EMPIRICAL RESULTS

The analyses indicate that there are indeed fairly strong relationships between the banking industry return and returns on individual securities; the mean value of the R^2 is 0.68 with a median of 0.79.²²

The average abnormal returns with day 0 as the announcement of merger proposal for the individual banks as specified in equation (3) are respectively presented in Table 4. The event period will be -5 to +10, with event day 0 is the date of events. We see the positive returns of the second proposal are less significant

²² R is the correlation between daily rates of return on security R_{it} and the approximate monthly rates of return on the banking industry R_{mt} .

compared to the first one. Also at the announcement of the first proposal, the positive returns to the involved banks (Bank of Montreal and Royal Bank) are greater than those of the other two (CIBC and TD bank). While at the second merger proposal, the differences are not obvious though all the four banks gained around the merger proposal announcement.

Table 4 Abnormal Returns for the Four Banks at the two Merger Proposals

Day	Proposal 1				Proposal 2			
	BM	RY	CIBC	TD	BM	RY	CIBC	TD
-5	0.01	-0.67	0.78	0.68	-1.03	-1.00	0.23	1.28
-4	-0.93	1.01	-0.52	1.36	-0.72	-0.60	0.89	-0.41
-3	1.07	0.13	-0.13	-0.48	-1.32	-0.66	-0.93	-1.62
-2	0.02	0.64	-1.04	-0.07	-1.80	-1.90	-1.03	-1.31
-1	1.98	1.34	-5.39	-4.44	2.32	1.73	-0.98	2.26
0	1.37	3.29	0.67	1.49	2.26	2.35	2.09	1.74
+1	-1.47	-1.01	1.38	0.57	1.01	1.16	2.48	1.47
+2	-1.08	-1.04	-0.58	0.26	-1.26	0.64	-0.87	-1.87
+3	1.98	-0.64	-2.15	-3.48	-2.89	-0.41	0.74	1.36
+4	-0.63	1.03	-0.73	-1.99	2.87	-2.47	1.89	-2.49
+5	1.46	-0.84	-2.46	-1.29	-0.81	-0.44	1.88	-0.83
+6	-1.30	1.90	1.40	0.24	-0.47	-0.55	-3.46	2.24
+7	-2.47	2.51	0.58	1.28	2.35	1.99	-1.90	-2.48
+8	1.53	-1.69	-0.21	-1.98	-1.39	-0.73	-1.30	2.90
+9	-0.58	-0.26	0.11	0.75	0.31	0.06	0.99	0.45
+10	0.39	-0.83	0.58	-0.45	-0.43	-0.28	1.02	-0.75

In Table 5 and Table 6 we focus on the average and cumulative values of estimated regression residuals surrounding the events dates to test the hypothesis concerning proposed bank mergers. The estimated coefficient values from equation (2) are used to determine the events' influence on the stock prices. The average abnormal returns can be interpreted as the average deviation (in date t relative to the merger date) of the returns of merger stocks from their normal relationship with the

market. Similarly, the cumulative abnormal returns can be interpreted as the cumulative deviation; it shows the cumulative effects of the wandering of the returns of merger stocks from their normal relationships to market movements.

Table 5
Analysis of Average Abnormal Returns to Proposed Merger Banks

Event	Proposal 1		Proposal 2		MacKay report		Decline	
	PAR* %	t-test	PAR%	t-test	PAR%	t-test	PAR%	t-test
-5	-0.33	-0.39	-0.13	-0.14	0.21	0.22	-0.17	-0.11
-4	0.04	0.05	-0.21	-0.23	0.43	0.44	0.07	0.05
-3	0.60	0.71	-1.13	-1.23	0.00	0.00	0.21	0.14
-2	0.33	0.39	-1.51	-1.64	-0.29	-0.30	-0.04	-0.03
-1	1.66	1.95	1.33	1.45	0.42	0.43	-2.16	-1.39
0	2.33	2.74	2.11	2.29	-3.86	-3.98	-5.30	-3.42
+1	-1.24	-1.46	1.53	1.66	0.41	0.42	2.31	1.49
+2	-1.06	-1.25	-0.84	-0.91	-0.27	-0.28	0.53	0.34
+3	0.67	0.79	-0.30	-0.33	-0.08	-0.08	0.70	0.45
+4	0.20	0.24	-0.05	-0.05	-0.27	-0.28	0.04	0.03
+5	0.31	0.36	-0.05	-0.05	0.18	0.19	-0.41	-0.26
+6	0.30	0.35	-0.56	-0.61	0.05	0.05	-0.32	-0.21
+7	0.02	0.02	-0.01	-0.01	-0.20	-0.21	0.46	0.30
+8	-0.08	-0.09	-0.13	-0.14	0.04	0.04	-0.04	-0.03
+9	-0.42	-0.49	0.45	0.49	0.22	0.23	-0.30	-0.19
+10	-0.22	-0.26	-0.11	-0.12	-0.09	-0.09	0.27	0.17
CAR[-5,-1]	2.30	2.71	-1.65	-1.93	0.77	1.77	-2.09	-3.01
CAR[+1,+10]	-1.52	-5.66	-0.07	-0.80	-0.01	-0.03	3.24	6.60
CAR[-5,+10]	3.11	7.32	0.39	1.47	-3.10	-6.40	-4.15	-5.36

Note: * PAR stands for Average Abnormal Returns.

Table 6

Analysis of Average Abnormal Returns to Rival Banks

Event	Proposal 1		Proposal 2		MacKay report		Decline	
	PAR%	<i>t</i> -test	PAR%	<i>t</i> -test	PAR%	<i>t</i> -test	PAR%	<i>t</i> -test
-5	-0.34	-0.37	0.56	0.66	0.69	0.71	-0.36	-0.23
-4	-0.35	-0.38	-0.43	-0.51	1.04	1.07	-0.20	-0.13
-3	-0.41	-0.45	-0.21	-0.25	-1.32	-1.36	0.54	0.35
-2	-0.19	-0.21	-0.41	-0.48	1.21	1.25	-0.07	-0.05
-1	-0.17	-0.18	1.49	1.75	-1.80	-1.86	0.63	0.41
0	0.09	0.10	-2.59	-3.05	-3.15	-3.25	-3.42	-2.21
+1	1.07	1.16	0.74	0.87	-1.45	-1.49	-0.97	-0.63
+2	-0.13	-0.14	-0.05	-0.06	-1.87	-1.93	1.72	1.11
+3	-0.44	-0.48	-0.17	-0.20	-0.42	-0.43	-0.07	-0.05
+4	-0.53	-0.58	-1.16	-1.36	0.15	0.15	0.56	0.36
+5	-0.37	-0.40	0.69	0.81	1.27	1.31	0.62	0.40
+6	-0.25	-0.27	-0.23	-0.27	0.44	0.45	0.05	0.03
+7	-0.38	-0.41	-0.35	-0.41	-1.14	-1.18	0.39	0.25
+8	-0.01	-0.01	0.17	0.20	0.91	0.94	-0.09	-0.06
+9	-0.29	-0.32	-0.15	-0.18	-0.98	-1.01	-0.17	-0.11
+10	-0.68	-0.74	-0.63	-0.74	0.97	1.00	0.39	0.25
CAR[-5,-1]	-1.46	-1.94	1.00	1.77	0.76	0.31	0.99	1.16
CAR[+1,+10]	-2.01	-2.43	-1.14	-1.04	-0.20	0.12	0.07	0.34
CAR[-5,+10]	-3.38	-3.14	-2.73	-1.99	-0.49	-0.33	-2.36	-1.73

5.1. MERGING BANKS

Focusing first on the merging banks, at the announcement of merger, positive abnormal returns which are +2.33% and +2.11% appear for the first proposal and the second proposal respectively, both of which are above the 5% level of significance test. We also found that the proposed merger banks earned +3.11% ($t=7.32$) cumulative abnormal returns over the day -5 through day +10 period relative to the

first proposal announcement. This result shows that the influence of the second merger proposal to the stock market is not so dramatic compared to the first one. Put in perspective, the magnitude of some of the numbers in Table 5 is remarkable. On the announcement day of merger proposal between Bank of Montreal (BM) and Royal Bank (RY), the stock prices soared up with Royal Bank finishing the day up \$3.90 to \$75.75, while Bank of Montreal jumped \$10.45 to \$67.70 (figures from 'Financial Post' in *National Post*). If these gains indeed are wealth transfers, the shareholders of Bank of Montreal will earn \$731K and Royal Bank will earn \$278K on the announcement day! It is no wonder why we observe extensive government interference in the market for monopoly control.

What happens to the merging banks when the Task Force released its report? The average abnormal returns rise up to the report date, and drop slightly as significant negative abnormal returns occur on the report day (-3.86%). But there is almost no further systematic movement thereafter. We also found that in general, price movements associated with a merger are over by the day after the event is announced. During the period from the day +1 to +10 of the report date, the stock prices mostly decrease. And on average during the merger challenge the stock prices of merging banks drop more sharply than those of rival banks.

For the announcement of Paul Martin report, the substantial negative abnormal returns appear for day -1 (-2.16%) and day 0 (-5.30), though recovered a little bit in the next few days; the cumulative abnormal return (-4.15%) is well below zero for the whole period. The result of *t*-test shows that the cumulative abnormal

return for the period is significantly different from zero. On average, merging banks lose -5.30% on the day 0 for the report publication. It would seem that such a strong degree of decrease could surely be attributed to the Paul Martin's report. In fact, the end of the fifteen-day around post-announcement period negates the positive abnormal excess returns experienced by the mergers on the announcement day. Fortunately the behavior of the average abnormal returns is also representative of the behavior of the abnormal returns for individual securities; over time the abnormal returns for individual securities are also distributed negatively.

5.2. RIVAL BANKS

From Table 6, it is apparent that the rival banks earned significant and negative abnormal returns over the fifteen days surrounding the first merger proposal announcement, with the cumulative average abnormal return is -3.38% ($t=-3.14$). For the second proposal announcements, the cumulative average abnormal return is -2.73% ($t=-1.99$) which is not statistically significant at the 5% level. For the release of MacKay report, the significant negative abnormal returns are on day 0 (-3.15%). Much greater random distribution appears after the report announcement date. For the Paul Martin report, the results in Table 6 indicate that in the merger failure period there was a decrease in the average stock price of rival banks, with significant abnormal return at date 0, which is -3.42% ($t=-2.21$). This denotes that rivals of a proposed merger are almost simultaneously affected by the merger decline giving the estimation and test procedures are identical to the one presented in the proposed merger banks.

It is evident that the results for the rival banks are uniformly not so significant compared with merging banks. This impression is supported by the results for MacKay report. The cumulative average abnormal return to the two challenged mergers is -3.10% ($t=-6.40$) over the day -5 through day $+10$ period, while the abnormal return over the $+1$ through $+10$ interval is -0.01% ($t=-0.03$) relative to the report announcement. In contrast, the proposed rival banks in the sample earn -0.49% ($t=-0.33$) and 0.20% ($t=0.12$) over the same event periods. The abnormal performance over these two periods for rivals are not significantly negative at the 5% level using the standardised abnormal returns t -test. The conclusion is even more apparent when considering the merger decline. We can see this more clearly by comparing the average abnormal returns for merging banks with the rival banks. Note the difference between the performance of rivals and merging banks around the proposal decline announcement emerging from the above tables. Rivals of the challenged mergers earn -2.36% ($t=-1.73$) abnormal returns over the -5 day to 10 day period, while the corresponding returns to the merger banks is -4.15% ($t=-5.36$).

5.3. OVERALL EFFECTS

Glancing at the results, we can conclude that any gains realised by the shareholders of proposed merger banks during the merger proposal period were wiped out by the stock prices' decreases during the subsequent period surrounding the denial announcement.

Several of our earlier statements can now be substantiated. First of all, it is clear that the average abnormal returns during the announcement periods are negative

for the rival banks at the merger proposal announcement, with average abnormal return is -2.59% on the second announcement day alone. This can hardly be attributed to the market power explanation. Alternatively, the results are consistent with the productive efficiency hypothesis, under which the negative proposal related performance shown by the rivals at the announcement date reflects that the resource of the merging banks can be more efficiently employed through merger.

Secondly, for the merger announcement date, the proposed merger banks mostly acquired positive abnormal gains. Following the prediction in Table 1, this performance is consistent with productive efficiency (synergy) hypothesis. Under this hypothesis, the merger proposal announcement signals new information indicating that the market expects the mergers to be positive net present value investments on the merging banks. In light of some of the evidence presented earlier, the conclusion that mergers can be used to increase expected trading profits may seem reasonable. Thus we can conclude that the proposed merger banks are made significantly better off as a result of the proposal announcement and stockholders of merging banks clearly earn large economic benefits from this event.

Thirdly, we do find that the merging banks on average earn significantly negative abnormal returns at the time of the merger challenge (MacKay report), which indicates that the market is most probably expect that the merger could bring substantial value increases. The evidence is also consistent with the proposition that the mergers are the result of investments undertaken by value-maximising firms, which is a necessary condition for both the market power and productive efficiency

hypotheses.²³ We see that the negative average abnormal returns of rivals follow a similar pattern of the proposed merger banks when the MacKay report released. This is clearly consistent with the proposition that the law enforcement agencies systematically challenge the mergers within banking industry that have large impact not only on the merger banks stock returns. This result follows both hypotheses so we cannot draw any conclusion whether the merger will bring the efficiency.

Finally, at the time of merger decline, the average abnormal returns are negative for three days in the period prior to decline and strongly decrease for day zero. Generally, it appears as if stockholders of the merging banks earn larger negative abnormal returns when the mergers are refused. The significantly negative abnormal performance in response to the decision indicates that the refusal is expected to be costly for the merging banks. For each day surrounding the decline, the stock price of the rival banks also decline but to a lesser degree compared with the merging banks. Combined with the results from the previous section, it appears that the anticompetitive decision declined mergers thus caused the merging banks and their competitors earn abnormal returns in response to the merger refusal announcement. And the negative performances of the merging banks and the rival banks at the time of the merger decline are consistent with both market power and

²³ A test of the general validity of the value maximisation hypothesis goes beyond the scope of this paper and would require inclusion of a large fraction of unsuccessful merger proposals in the database. See, for example, Dodd (1980), Malatesta (1983) and Schipper and Thompson (1983) for a more comprehensive examination of this issue in the context of mergers. The above results are similar to the findings of Mandelker (1974), Ellert (1976), and Langetieg (1978), which use monthly security returns and predominately mergers.

productive efficiency hypotheses again. It is impossible to test this policy fully since information concerning a decline often leaks into the market before the merger is announced or even proposed to the shareholders. However, from the above analysis the evidence on the merger decline order announcement does not support the market power (collusion) hypothesis.

Of the merger cases above, the fall in rival stock prices around the merger proposal announcement dates does not provide a reasonable explanation of the market-power hypothesis. Both the proposed merger and rival banks have negative abnormal returns at the merger challenge and decline is consistent with the product efficiency hypothesis. However, the negative abnormal returns for rival banks at these dates can be attributed to market power effects as well. Indeed, suppose that the announced merger is perceived as beneficial to the merging banks because of potential synergetic gains. In this case the stock price of merging banks rise because the merger signals the opportunities of banks to improve their efficiency through synergetic merger (Eckbo, 1983). And though the data in Table 5 & Table 6 provide some weak support for the production efficiency hypothesis, it must be noted that however we cannot conclude this is strong evidence for the market power hypothesis.

6. SUMMARY AND CONCLUSION

In this paper we examine stock price reactions reports to four dates:²⁴ (1) the date of announcement of the first merger proposals (2) the date of announcement of

²⁴ As specified in Section 4.1, the publication dates of Competition Bureau report and Paul Martin report are close and there is information leakage about merger failure on December 4, so we choose the leakage date as the event date.

the first merger proposals (3) the date of MacKay report and (4) the date of Competition Bureau and Paul Martin reports in order to examine whether the merger gains emanate from market power or efficiency hypothesis. The basic proposition is that the proposed merger banks can expect to benefit from the announcement of a merger. Furthermore, subsequent news that the government under Competition Act challenges the merger reverses the expectations of abnormal returns, causing both the proposed merger banks and the rivals to show negative abnormal performance.

A summary of the major findings is found as follows: Firstly, the observed abnormal returns at the merger proposal announcement contradict with the particular pattern predicted by the market power hypothesis. Instead we find that there are negative abnormal returns to the rival banks at the proposal announcement, this appears to follow the production efficiency hypothesis. We do find that the participants of the two mergers on average earn significantly positive abnormal return at the time of the merger proposal announcement. The evidence is consistent with the proposition that the mergers are value maximising investments undertaken by banks.

The results for bank mergers in this study are similar to those findings from the previous literature. The average of the results of these studies shows positive abnormal returns for mergers firms. Both Desai and Stover (1985) and James and Wier (1983) find positive and significant abnormal stock returns for banks that are similar to the returns found in Table 5. Desai and Stover (1985) report a 0.96% abnormal return for their sample of 18 bank mergers, while James and Wier (1983) report a 1.07% abnormal return for a portfolio of 60 bank mergers. However, it would

be difficult to compare their results with the findings of the other studies since there are special factors to Canadian bank mergers that serve to increase bank merger returns in relation to non-financial corporate mergers. Proposed mergers do not appear to affect banking shareholders similarly to the way they affect non-financial firms.

While the subsequent news of the MacKay report and Paul Martin's refusal to allow the merger to proceed cause a substantial reduction in the market value of the merging firms, the rivals on average also show insignificant negative average abnormal return over the 15 days surrounding these events. We also find the performance of the merger banks and rivals at the time of merger decline dropped below original level. This is further consistent with the value maximisation theory, under which the negative denial performance shown by the banks reflects the loss of future benefits made possible by the merger. Concerning the evidence that the merger proposal refusal generated negative abnormal returns to stockholders of the merging and rival banks, we compare the performance of the rivals to the performance of proposed merging banks to provide a perspective on the likely relevance of the market power hypothesis in the context of the MacKay report and merger decline. The conclusion is that both the merging and the rival banks' stock prices decrease and this is consistent with both the market power and synergy hypotheses.

The empirical results of the present study have documented negative stock price reactions to Paul Martin's report, both for proposed merger and rival banks. With respect to the merger banks, the findings are consistent with the evidence from

numerous merger studies in previous study of bank mergers. They universally report that merger restrictions bring negative abnormal returns to proposed merger banks.

Finally, the evidence indicates that the market realises the positive returns gained during the announcement of a merger to re-evaluate the stream of expected income from the shares. The potential benefits and economic value of bank mergers are reflected in the positive reaction of capital markets to the merger proposals. Bank mergers can provide an efficient mechanism for integrating the banking market. For this reason, bank merges should not be restricted by regulators except in the cases where it can be shown that they are anti-competitive and detrimental to bank customers. Moreover, the evidence indicates that on average the market's judgements concerning the information implications of a merger are fully reflected in the price of a share immediately after the announcement date. Thus the results of the study give considerable support to the conclusion that the stock market is "efficient" in the sense that stock prices adjust very rapidly to new information.

Other important conclusions follow from the paper. We find no significant evidence that proposed horizontal mergers can be expected to reduce the value of the merging firms. Thus, if mergers typically take place to realise efficiency gains, we cannot conclude that the 'synergy' effect is expected to produce a significant expansion of the merging firm's share of the market along with an increase in market power. If economies of scales are involved, then it seems on average to be unnecessary to restrict merger occurrence. Furthermore, the same evidence contradicts with the argument that the merging firms were expected to initiate a

monopolistic 'predatory' price war after completion of the merger. To the extent that mergers are unlikely to have market power effects, this is consistent with the proposition that the proposed mergers in the sample were also expected to be efficient.

However, our paper has several limitations and leaves some questions unanswered: First of all, our conclusions are based on only two proposed mergers that occurred in the same year. The relevant events are so near to each other, it is very difficult to choose the estimation period to regress the coefficients α and β . Secondly, we should also note that the performance of proposed merger banks is indistinguishable from the performance of rivals of mergers, given the mergers take place in the same industries. Furthermore, the sample consists of mergers actually found to be in the 'monopolising' market. These conclusions are based on a sample of mergers which, biased towards the market power hypothesis. Given this bias it is difficult to imagine a different merger sample of comparable size and importance that would yield evidence that systematically favours the synergy hypothesis. While choosing the PAR (Average Abnormal Returns), we should consider using the weighted average method. Finally, concerning the abnormal gains from the proposed mergers, we can draw the conclusion that the proposed merger is value increasing and the reaction from the shareholder may be one of the reasons why the proposed merges were failed out later. But we cannot rely strongly on the efficiency hypothesis as the result could also provide some evidence for the market power theory.

We should also note that even if there are abnormal returns to shareholders from the proposed merger, further research could be carried out in the areas of investigating the factors contributed to the gains and the reasons for capital market reactions to merger announcements.

Chronology

January 23, 1998

The Royal Bank of Canada and the Bank of Montreal announce their intention to merge. Martin says the merger will have to wait for approval.

April 17, 1998

Toronto-Dominion Bank and Canadian Imperial Bank of Commerce announce their proposed merger.

July 15, 1998

The Merger Enforcement Guidelines as Applied to a Bank Merger is released. These are the first industry-specific guidelines released by the Bureau, emphasising the importance of the financial services sectors.

September 15, 1998

The Task Force Report was released. Enhancing competition in the financial services sector is a major focus of the Task Force report. The report specified that economic barriers affecting the state of competition in the relevant markets are significant.

December 11, 1998

The Competition Bureau informs the parties and the Minister of Finance of the results of its analysis on the proposed mergers.

December 16, 1998

The Minister of Finance, in his decision to block the two proposed bank mergers.

References

- Amel, D. (1988) *State Laws Affecting Commercial Bank Branching, Multibank Holding Company Expansion, and Interstate Banking*, Board of Governors of the Federal Reserves Systems.
- Amihud, Y. and Lev, B. (1981) "Risk Reduction as a Managerial Motive for Conglomerate Merger", *Bell Journal of Economics*, (autumn), 605-17.
- Benston, J.G. (1980) *Conglomerate Mergers*, Washington: American Enterprise Institute.
- Berger, N.A. (1998) "The Effect of Bank Merger and Acquisition on Small Business Lending" *Journal of Financial Economics* 50. 187-229.
- Broadbudd, J. A. (1998) "The bank merger wave: Causes and consequences" *Economic Quarterly Federal Reserve Bank of Richmond*, 1-11.
- Brown, J. S. and Warner, B. J. (1985) "Using Daily Stock Returns: The case of Event Studies" *Journal of Financial Economics*, 1-30.
- Chant, F. J. (1998) "New Directions in Canadian Financial Policy" *Reforming the Canadian Financial Sector*, 13-41.
- Clemens, J. (1999) "Why isn't Paul Martin Looking out for the Real Shareholders?" *Fraser Forum*. (Jan), 3-4.
- Cornett, M. M. (1991) "Common Stock Returns in Corporate Take-over Bids: Evidence from Interstate Bank Mergers" *Journal of Banking and Finance* 15, 273-95.
- Cornett, M. M. and De, S. (1989) "Bidder Returns in Corporate Takeover Bids: Evidence from Interstate Bank Mergers", *Working Paper Series 89-8, Southern Methodist University*.
- DeCossio, F., Trifts, J. and Scanlon K. (1988) "Bank Equity Returns: The Difference between Intrastate and Interstate Bank Mergers, Proceedings from a Conference on Bank Structure and Competition" *Federal Reserve Bank of Chicago*, 591-600.
- Desai, S.A. and Stover D. R. (1985) "Bank Holding Company Acquisitions, Stockholder Returns, and Regulatory Uncertainty" *The Journal of Financial Research* 8, 145-56.
- Dodd, P. (1980) "Mergers Proposals, Management Discretion and Stock Wealth" *Journal of Financial Economics* 8, 105-38.
- Douglas, S. H. (Dec 1998) "Smooth Post-merger Integration Hinges on Detection of Technology Hurdles" *Bank Systems and Technology*, 56.

- Eckbo, B. E. (1983) "Horizontal Mergers, Collusion, and Stockholder Wealth" *Journal of financial economics* 11, 241-73.
- Eckbo, B. E. (1985) "Mergers and the Market Concentration Doctrine: Evidence from the Capital Market", *Journal of Business*, 58, (July), 325-49.
- Eckbo, B. E. and Wier, P. (1985) "Antimerger Policy under the Hart-Scott-Rodino Act: A Reexamination of the Market Power Hypothesis", *Journal of Law and Economics*, 28 (April), 119-49.
- Eckbo, B. E. (1986) "Mergers and the Market for Corporate Control: the Canadian Evidence" *Canadian Journal of Economics* 19 (2), 237-60.
- Ellert, J. C. (1976) "Mergers, antitrust law enforcement and stockholder returns" *Journal of Finance* 31, 715-32
- Frieder, L. (1988) "The Interstate Banking Landscape; Legislative Policies and Rationale" *Contemporary Policy Issues* 6, 41-66.
- Gordon, J. M. and Yagil, J. (1981) "Financial Gain from Conglomerate Mergers" *Research in Finance* 3, 103-42.
- Gort, M. and Hogarty, T. F. (1970) "New Evidence on Mergers" *Journal of Law and Economics*, 167-84.
- Green, C. (1987) "Industrial Organisation Paradigms, Empirical Evidence, and the Economic Case for Competition Policy." *Canadian Journal of Economics*. 482-505.
- Hassanwalia, H. (1998) "Financial Sector Industrial Organisation - Is Bank Concentration Anti-competitive?" *Reaffirming the Canadian Financial Sector*, 151-82
- Hawawini, G. and Swary, I. (1990) *Mergers and Acquisitions in the U.S. Banking Industry: Evidence from the Capital Markets*.
- Higgins, R. and Schall L. (1975) "Corporate Bankruptcy and Conglomerate Mergers" *Journal of Finance* 30, 93-113.
- Houston, J. F. and Ryngaert, M. D. (1993) "The Overall Gains from Large Bank Mergers." *Journal of banking & finance* 18, 1155-76.
- Houston, J. F. and Ryngaert, M. D. (1997) "Equity Issuance and Adverse Selection: A Direct Test Using Conditional Stock Offers" *Journal of Finance* 52. 197-219.
- Jackson, E. W. (1992) "Is the Market well Defined in Bank Merger and Acquisition Analysis?" *Review of Economics and Statistics* 74 (3), 655-61

- Jarrell, G. and Bradley, M. (1980) "The Economic Effects of Federal and State Regulations of Cash Tender Offers" *Journal of Law and Economics* 23, 371-407.
- James, C. and Wier, P. (1983) "Returns to Acquires and Competition in the Acquisition Market: The Case of Banking," *Journal of Political Economy* 95, 355-70.
- Jensen, M. and Meckling W. (1976) "Theory of the Firm: Managerial Behaviour, Agency costs, and Ownership Structure" *Journal of Financial Economics* 4, 305-60.
- Jensen, M. C. and Ruback.R (1983) "The Market for Corporate Control: The Scientific Evidence" *Journal of Financial Economics* 11, 5-50.
- Langetieg, T.C. (1978) "An Application of a Three-factor Performance Index for Measure Stockholders Gains from Merger" *Journal of Financial Economics* 6, 365-83.
- Madden, P. G. (1981) "Potential Corporate Takeovers and Market Efficiency: A Note" *Journal of Finance* 36, 1191-97.
- Malatesta, P.H. (1983) "The Wealth Effect of Merger Activity and the Objective Function of the Merging Firms" *Journal of Financial Economics* 11, 155-81.
- Mandelbrot, B. (1966) "Forecasts of Future Prices, Unbiased Markets, and 'Martingale' Model." *Journal of Business* 34, 242-55.
- Mandelker, G. (1974) "Risk and Return: The Case of Merging Firms" *Journal of Financial Economics* 1, 603-335
- Neely P. W. (1987) "Banking Acquisitions: Acquirer and Target Shareholder Returns" *Financial Management (winter)*. 66-74.
- Palia, D. (1994) "Recent Evidence on Bank Mergers" *Financial Markets, Institutions & Instruments*. 3, 36-59.
- Prayer, A. R. and Hannan, H. T. (1998) "Do Substantial Horizontal Mergers Generate Significant Price Effects? Evidence from the Banking Industry" *The Journal of Industrial Economics* 46. 433-52.
- Rhoades, A.S. (1996a) "Competition and Bank Mergers: Directions for analysis from Available Evidence" *The Antitrust Bulletin* (Summer), 339-64
- Samuelson, P. A. (1965) "Proof That Property Anticipated Prices Fluctuate Randomly" *Industrial Management Review*, 41-49.
- Schipper, K. and Thompson, R. (1983) "Evidence on the Capitalised Value of Merger Activity for Acquiring Firms" *Journal of Financial Economics*, 86-119.

Simons, K. and Stavins, J. (1998) "Has Antitrust Policy in Banking Become Obsolete?" *New England Economic Review (Mar/Apr)*, 13-26.

Spiegel, J.W. and Gart, A. (1996) "Acquisition Frenzy?" *Business Economics*, 47-53

Steiner, P. O. (1975) "Mergers: Motives, Effects, policies" *University of Michigan Press*

Stigler, G. J. (1950) "Monopoly and Oligopoly by merger" *Paper and Proceedings, American Economic Review* 40, 23-34

Stigler, G. J. (1964) "A Theory of Oligopoly" *Journal of Political Economy* 72, 44-61

Stillman, R. (1983) "Examining Antitrust Policy towards Hypothesis Mergers" *Journal of Financial Economics*, 225-40

Trifts, J. and Scanlon K (1987) "Interstate Bank Mergers: The Early Evidence" *Journal of Financial Research* 10, 305-11.

Weston F. & Halpern P. (1983) "Corporate acquisitions: A theory of special cases? A review of event studies applied to acquisitions" *Journal of Finance* 38, 297-317.

Wier, P. (1983) " The Costs of Antimerger Lawsuits: Evidence from the Stock Market" *Journal of Financial Economics* 11, 207-24