

# Timing of Mergers and Acquisitions: Evidence from the Canadian Stock Market

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## Timing of Mergers and Acquisitions: Evidence from the Canadian Stock Market

**Abstract:** This paper provides evidence of merger timing induced by investors' overoptimism. The aggregate number of mergers is used to search for periods that could be more favourable for acquisitions and thus to distinguish between hot and cold merger markets. We examine the movements of bidding firms' stock prices, around, before and after mergers and acquisitions announcements. Our results provide strong evidence that mergers are driven by stock market valuation and that these events occur during periods when investors are highly overoptimistic and react irrationally to a merger announcement. Using, firm, transaction and market specific variables, we find evidence that bidders' managers manipulate the market by timing their mergers and paying with stock. The market can however, correct itself when merger results start to appear, that is one year after the event.

The literature has defined a number of motives behind mergers and acquisitions, including for example, efficiency, agency costs, regulation and diversification. This literature sustains that mergers and acquisitions create value. In practice these synergies are not reflected in the long-term post-merger stock returns, especially for those firms making stock acquisitions.

An idea dating back to Nelson (1959) could probably better explain the underperformance of acquirers in the long run. Nelson (1959) studies the merger waves in the U.S and proposes that: “merger expansion was not only a phenomenon of prosperity, but that it was also closely related to the state of the capital market. Two reference cycle expansions, unaccompanied by a strong upswing in stock prices were marked by the absence of merger revival.” In other words, the author suggests that stock market valuation is a key driver of the market for corporate control. This theory has not been among the leading theories of mergers.

More recently, academics have turned to this hypothesis and considered the role of investors’ misvaluation in the acquisition process. Dong, Hishleifer, Richardson and Teoh (2003) show that when the stock market is overvalued, stock is more likely to be used as a means of payment rather than cash. If managers do think that the market misvalues their firms, then the informational and allocative role of equity markets is distorted. For example, Baker and Wurgler (2000) suggest that the initial public offerings and capital structure changes may not be motivated by investment opportunities and need for funds, but instead by the opportunity to take advantage of misvaluation. Shleifer and Vishny (2003) analyze how irrational shifts in investor sentiment can affect the takeover market. They argue that mergers and acquisitions may occur for the sole reason that overpriced equity can be used as means of payment. Negative

net present value projects may be undertaken when equity is perceived as "cheap" and positive net present value projects may be foregone when equity is perceived as "expensive". This mispricing is suggested as an explanation of the long-run performance of acquiring firms. Rau and Vermaelen (1998) find that the long-run underperformance of acquirers is driven by the post-acquisition performance of low book-to-market acquirers. These acquirers earn superior returns around the announcement, however, their long-run performance is worse than the high book-to-market acquirers. Loughran and Vijh (1997) also suggest that the long-run underperformance of stock acquisitions reflects the overvaluation of the acquirers around the acquisition announcement.

Our goal is to study if there is a form of merger timing. We aim to examine the reasons why and when acquisitions occur and to understand the sources of merger timing. We test three competing theories that could explain the merger timing: (1) investors' sentiment, (2) managerial motivations and hubris hypothesis, and (3) economic shocks.

Our analysis has the originality to distinguish between the different merger market status: hot and cold and focus on the stock patterns during each market status. To understand the merger timing process, we control for the acquirer performance in the periods of one year before and one year after the merger announcement, and over the three days surrounding the announcement. This procedure allows us to control for the information dissemination that could occur before and even after a merger announcement and completion. We use firm, transaction and market specific variables to come up with a set of common variables that could be associated to hot and cold cycles.

We base our empirical analysis on a data set of acquisitions made by publicly traded Canadian acquirers. The sample includes 462 transactions involving

public and non-public targets, between January 1988 and December 2002. The data are drawn from the SDC Mergers and Acquisitions database.

Our results provide strong evidence on the existence of merger timing. Our results demonstrate that investors' overoptimism is a key driver of the acquisition process. These transactions occur during periods when investors are highly overoptimistic and react irrationally to a merger announcement. Consistent with Shleifer and Vishny (2003) arguments, we find evidence that the bidders' managers are aware of the overvaluation of their firms and act rationally by timing their mergers and paying with stock.

During hot merger markets, acquirers significantly outperform the market benchmarks during the pre-merger year. The outperformance is even higher for firms paying with majority stock (more than 50% stock is used in payment). Moreover, there is a dramatic reversion in performances in the year following the announcement, especially for majority stock payers. This reversion is high enough to wipe out the prior gains for this category of acquirers.

Another finding is that in hot markets and even when stock is used in payment, the announcement stock reaction is positive. This result suggests that in hot markets investors have unrealistic expectations about the synergies from the merger.

The remainder of this work is structured as follows. Section I summarises the literature on the possible origins of merger timing and expose the assumptions on which we build our study. Section II presents our data, methodology and results, the final section concludes.

## **Section I: Literature Review on the possible sources of mergers and acquisitions timing**

The timing of a merger could have three causes: investors' sentiment and asymmetric information, economic shocks, and managerial motivations.

### **1- Investors' sentiment and asymmetric information**

This concept dates back to Hickman (1953), and was more developed by the literature on initial public offerings (IPOs) and seasoned equity offerings (SEOs), which suggests that in hot markets<sup>1</sup>, investors may be overly optimistic. Choe, Masulis and Nanda (1993) discuss the clustering of equity issues in certain time periods. They also suggest that certain periods offer "windows of opportunity"<sup>2</sup> in which capital raising can be done at a lower cost. In the same context, Myers and Majluf (1984) argue that managers can time their equity issues for periods when the level of asymmetric information is low. This is the best way to reduce the information costs. Bayless and Chaplinsky (1996) suggest that periods of relatively high issue volume should correspond to periods of reduced information costs and find evidence of over-optimism in hot markets. Loughran, Ritter and Rydqvist (1994) report that issuing in hot markets may be worse than average for the investors. Since managers are able to time their issues, they profit from investors' optimism<sup>3</sup>.

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<sup>1</sup> Hot markets are defined by Bayless and Chaplinsky (1996) as periods of high equity volume.

<sup>2</sup> Bayless and Chaplinsky (1996) define windows of opportunity to be "time periods when information costs are reduced for all firms. Therefore, hot issue markets constitute windows of opportunities only to the extent that the observed variations in announcement date prediction errors are independent of the characteristics of the issuing firm."

<sup>3</sup> Loughran and Ritter (1995) suggest that high returns on SEOs are also due to investors' over-optimism.

In line with the arguments on SEOs/IPOs, mergers and acquisitions are likely to be financed with equity in hot periods. Recently, literature turned to these arguments. A small and growing literature started applying the timing concept to M&As. In the context of mergers and acquisitions, Shleifer and Vishny (SV) (2003) argue that stock market valuation drives mergers and acquisitions. Since a special story was developed to explain different takeover waves, SV proposed that the theory of stock market valuation can be a unified theory for these different stories. The authors propose a model based on the financial market inefficiencies, in the sense that some firms are misvalued. They suggest that “managers are completely rational, informed, understand stock market inefficiencies and take advantage of them in part through merger decisions” (page 296). In a way, their main idea is the opposite of the hubris hypothesis developed by Roll (1986) who suggests that in corporate takeovers, stock markets are rational while managers are not.

Since managers are rational, informed and operate in a less rational market, they understand the stock market mechanism and can evaluate the deviation, from efficiency in the short run, of their stock and the target's. They are also able to estimate the perceived synergies and they employ their knowledge to maximize their own wealth. The markets can correct themselves in the long-run but in the short-run, investors can be fooled and do not react to manipulation. SV argue that when market or industry inefficiencies are high, most of the acquisitions are made for stock. They suggest that earning manipulation and insider selling are some of the operations done by the bidders in stock acquisitions, which provide support for the overvaluation of these bidders. In other words, investor's sentiment affects stock market valuation. This misvaluation can be attributed to entire industries, sectors or group of firms with the same characteristics. According to SV (2003), the perceived synergy is “just the lubricant that greases the wheels of the mergers and acquisitions (M&A) process - it might be invented

by investment bankers or academics and have little to do with the reality of what drives actual acquisitions” (page 298).

SV suggest that short-run market perceptions may lead at least in part, the takeover activity. In fact, they argue that if the market believes that the acquisition can drive positive synergy without being over-optimistic, bidding shareholders can realise some gain from its higher valuation. These gains will be diluted in the long-run, when the long-run prices return to efficiency.

SV also suggest that in the long-run, bidding firms can gain, even when the observed stock returns are negative, if the price they pay to the target is lower than the perceived synergy from the acquisition. They argue that without the acquisition, returns would have been more negative. This result will especially prevail when the initial returns observed are important.

Rhodes-Kropf and Viswanathan (RKV) (2002) also propose that high market valuations (period of time when average book-to-market ratios are at their highest) drive stock mergers and cause intense merger activity. SV derive the same conclusion by assuming that acquirer managers are rational evolving in an irrational stock market. However, RKV put a link between valuation errors and stock merger activity and attribute this correlation to a rational theory based on a process in which the target and the acquirer have private information that tells them whether they are under- or over-valued, but they are not able to distinguish the sources of this misvaluation. RKV propose that if the market-wide overvaluation is high, managers will be able to estimate the synergies that could result from the merger. With this reasoning, RKV theory can be distinguished from SV's, since in the latter proposition there is no place for synergies. However, both SV and RKV theories of misvaluation agree that the

valuation error can be attributed to adverse selection, behavioural bias or to asymmetric information.

RKV also consider the two components of misvaluations: a firm-specific component and a market-wide component. Moreover, they consider the possibility of a sector specific mispricing and suggest that this component could explain the diversifying mergers. This idea supposes the existence of one or more mispriced factors that are common to firms in the same industry. RKV suggest in this context, that mergers are more likely to cluster in overvalued markets industries/sectors. They propose that bidders in overvalued industries buy firms in less overvalued industries and this could provide an explanation to the diversifying mergers.

Jensen (2004) suggests that high equity valuations may cause suboptimal action, that could take the form of mergers. In fact, CEOs take advantage in maintaining unreasonably high stock prices, even if their strategies could destroy value, at the end.

The foundation of these theories are in part rooted in the asymmetric information arguments (Myers and Majluf, 1984), which suggest that informed managers will use stock as a currency if they believe that their shares are over-valued and thus may accomplish the takeover at a bargain price. Thus, if managers have information not held by the market, mispricing could occur even in an efficient market. This theory suggests that managers time their merger transactions in a way that allows them to acquire with stock when the stock price is at its lowest. RKV suggest that this will contaminate the B/M, which will not only reflect the growth opportunities but also the mispricing.

Another possible foundation for SV and RKV theories is that the same mechanism could arise from irrational markets, which suppose that financial markets are inefficient and value firms incorrectly. Under this view, managers manipulate inefficient markets by acquiring firms with an overvalued currency.

Rhodes-Kropf, Robinson and Viswanathan (RKRV) (2003) build on RKV and SV models and model the misvaluation to explore the correlation between valuation, merger activity and the method of payment in merger transactions. Using a panel study and accounting variables, RKRV (2003) break down the market-to-book (M/B) into firm specific error, time-series sector error and long-run value-to-book. They find a strong support to the idea that mergers are caused by the deviation from fundamental values which is captured by the two first components that result from the decomposition of the M/B.

RKRV add a third explanation to the correlation above, that could compete with the explanation provided by the asymmetric information theory and the behavioural theory. In fact, they proposed that from a q-theory perspective, mergers occur when firm-specific discount rates are low or when expected growth opportunities are high. This result supports Martin (1996) and demonstrates that high q-firms use stock.

Dong et al (2002) also provide evidence that irrational market misvaluation influences different aspects of the takeover market. They argue that stock market misvaluation affects the volume and characteristics of takeover transactions. Moreover, they report that the misvaluation of bidders and targets influences the method of payment, the bid premium, hostility of the target to the offer, the offer success, the announcement and the long-run abnormal returns. They build their hypothesis on the behavioural model discussed by SV (2003) and supported by Brealy and Myers (2000) who discuss what they call “bootstrap game”; they consider that the bidder takes advantage of the tendency of investors to interpret

price/earnings ratio naively. Dong et al. (2002) use the analysts' estimates of future earnings and M/B to make their analysis. However, they find mixed support for the idea that market misvaluation is a key driver to merger activity since they did not address the fact that analysts' estimates could reflect expected future merger activity.

Ang and Cheng (2003) provide empirical evidence supporting the market-driven acquisition theory proposed by SV (2003). In particular, their results suggest that acquiring firms are more overvalued than non-acquiring firms, acquirers are more overvalued than their targets, and successful acquirers are more overvalued than unsuccessful acquirers. Moreover, their results show that the overvaluation increases the probability of firms of becoming acquirers and using their own stocks as a medium of exchange.

Friedman (2004) suggest that one of the consequences of the stock market driven acquisitions hypothesis of SV, is that overvaluation increases the premium paid to the target in equity mergers but not in cash mergers. This effect can be obtained for two reasons. The first is that the acquiring firm gains from paying with an overvalued currency to target in an equity deal. The second is that the buyer is less patient since the deal must be concluded before the overvaluation collapses. Friedman (2004) exploit this asymmetry to test SV hypothesis. His methodology consists in regressing merger premia on proxies of overvaluation. The author demonstrate that acquirer overvaluation, has a differentially positive effect on target premia in equity mergers.

### **Hypothesis H1:**

If managers are able to time their mergers when investors are over-optimistic, the announcement abnormal returns should be higher than at other periods. If hot

markets are characterized by over-optimism and if investors' optimism encourages firms to make bad acquisitions, then post merger performance should be worse in hot markets than in cold markets. The stock prices reaction should reverse on a longer run, when the results of the merger will be evident. This can be a proof that, periods of mergers clustering do not create more synergies than mergers done in other periods. This correlation between merger and over-optimism can be evidence of merger timing.

## **2- Managerial motivations**

Managerial motivations can also be a source of merger timing. Some researchers suggest that the fear of takeovers may drive managers to be short-sighted, to behave myopically and to privilege short term benefits rather than long-run benefits by making investments that undervalue future cash-flows while overvaluing current cash-flows.

Jensen (1988) suggests that this phenomenon could occur for example, when managers hold little stock in their companies and when their compensation encourages them to make decisions to increase accounting earnings rather than the value of the firm. This phenomenon could also occur when managers do not understand the mechanisms that determine the stock values and therefore do not make the right investment decisions.

Morck et al (1990) argue that if making an acquisition prevents a company from being a target and being acquired, managers may make such investments to preserve their positions and private benefits. These decisions are defensive strategies and could occur even if the acquisition is not profitable.

Gorton (2000) argues that defensive mergers can result from economic shocks. If this is the case, managers' motivations can possibly be the key to timing the mergers and drive bad acquisitions.

Managerial motivations are examined from two perspectives. First, the conflict of interest hypothesis predicts that bidder managers knowingly engage in acquisitions that will profit them personally even if their actions will result in stock price decline and consequently decrease shareholders wealth. By making such operations, managers can take advantages from greater job security. Moreover, expanding the firm beyond its optimal size (size that maximizes shareholder wealth), managers can benefit from greater power by increasing the resources under their control, and changes in management compensation are positively related to growth (as measured by sales growth).

Another factor that can give incentives to managers to have a bias toward growth is the tendency of firms to reward middle managers through promotion instead of year-to-year bonuses. Growth can afford these managers with better positions that will make them benefit from the reward that goes with the promotion.

Hubris hypothesis is a second hypothesis that can determine managers' motivations. This hypothesis predicts that managers tend to overestimate their ability to manage the target firm. Thus, they mistakenly believe that the takeover will increase the stock price of the bidder firm. Therefore, they overpay the target. Roll (1986) argues that the premium paid to the target is a transfer from the bidder firm. Under a strong market efficiency hypothesis, Roll (1986) suggests that the target market price reflect the full value of the firm. If the bidder overestimates the target, this results from hubris, i.e. the excessive self-confidence (arrogance, pride) of the managers. Hubris results in overpaying for the target. In fact, acquirer managers make this mistake because they overrate the

synergistic gains from acquisition. This is due to their high confidence in their own managerial abilities.

Some studies suggest that the potential competition can cause the winning bidder to pay too much. However, Roll (1986) hypothesizes that even without the competition, hubris managers, can commit errors due to their over-optimism in evaluating merger opportunities. Roll (1986) assumes that the managers' arrogance is linked to the fact that they are controlling a high valued, successful firm, which is bidding for a lower-valued firm. If the target is poorly performing, bidder managers can create value by improving the management quality and by introducing new business projects, since they have already caused the success of the bidder firm in the past. However, the past success they have realized may cause high self-worth of managers in their abilities and the supremacy feeling can lead them to overestimate the possible synergies created by the takeover and result in overpayment.

Gulgler et al. (2004) build on Galbraith (1961, p. 8) to understand the link between managerial motivations and merger waves. The authors suggest that during stock market bubbles investors are overoptimistic, and tend to accept any news as good news, which changes the cost to managers from announcing unprofitable mergers. Gulgler et al. (2004) suggest that announcing the same mergers in normal conditions would result in a fall in the acquiring firm's share, which is large enough to prevent the managers from undertaking the merger. However, announcing the transaction during bubbles would result in a positive stock market reaction. Investors' overoptimism is combined with managers incentives since this optimism frees managers to finance unprofitable mergers by issuing shares and also frees their hands to use more of their cash-flows to finance mergers.

**Hypothesis H2:** If mergers are driven by managers' hubris, we should observe a stock price increase in the year prior to the merger announcement.

If managerial discretion motivates mergers, we also would expect positive announcement reaction (or at least not negative) since managers are supposed to time their transaction in periods of investors' overoptimism. The positive reaction will be followed by a reversion after the merger completion.

### **3- Industry effects**

The neoclassical theory suggests that mergers generate synergies. A recent strand of literature builds on this theory. Mitchell and Mulherin (1996) analyze two different issues observed in mergers in the last decade. The first is that mergers occur in waves and the second is that there is an industry clustering within a wave. Mitchell and Mulherin (1996) argue that the observation of industry-specific merger waves occur as a response to regulatory, technological and economic shocks. This gives support to the assumption that industries have a tendency to restructure in concentrated periods of time. The authors studied mergers during 1982-1989 and show that high merger activity can occur at an industry level and are associated to economic shocks. Moreover, Mitchell and Mulherin (1996) suggest that industry shocks are hard to predict which explains the merger clustering within an industry and in a certain period of time. The composition of industries, which are restructuring and showing high merger level, change from one wave to another. This change is also unpredictable. Mitchell and Mulherin show that takeover activity in the 1980's can be explained in a large proportion by deregulation, oil price shocks, foreign competition and financial innovations.

Andrade, Mitchell and Stafford (2001) build on Mitchell and Mulherin (1996) study and study merger waves from the 1970's to the 1990's. They conclude that shocks involving deregulation played a determinant role in the creation of the phenomenon of merger clustering within some industries, especially in the late 1980's and in the 1990's.

However, as mentioned by Gugler et al (2004) the industry shock hypothesis ignores the correlation between merger waves and the stock market booms. Gugler et al (2004) suggest two hypotheses to associate these events together. Either a single exogenous event causes both series of industrial merger waves and the stock market boom. The other suggestion is that the stock market itself causes a series of industry merger waves.

**Hypothesis H3:** If shocks tend to increase the synergies from takeovers, then we could expect bidder gains to increase. Consequently, mergers occurring in shock periods should correspond to periods of hot markets and result in a positive correlation between announcement returns and hot merger markets. In this case, the increase in stock prices should not reverse over the subsequent periods. In fact, if mergers are made to exploit synergies, then they should add value to the firm. However, if mergers are motivated by managers' objectives then mergers occurring in hot periods will be worse than those occurring in cold periods. At least after mergers that are completed in hot markets, we should observe weak performance.

## **Section II: Data and methodology**

### **1- Data**

We obtain our data sets of mergers and acquisitions from the Securities Data Corporation Worldwide Mergers and Acquisitions database (SDC). The data meets the following criteria:

- 1- We consider only transactions made by Canadian firms;
- 2- The announcement date is from 1988 to 2002 inclusively;
- 3- The acquirer must be a public company traded on the Toronto Stock Exchange (TSE);
- 4- The percent of shares acquired in the transaction should be greater than 50% of the target;
- 5- The deal must have been completed;

This selection gives us an initial sample of 3069 transactions. As a second step, only the transactions classified as: mergers or acquisitions of majority interest are kept. We exclude all the cases defined as an acquisition of assets, an acquisition of certain assets, a buyback, or a recapitalization. This results in a sample of 1111 transactions.

Financial information and daily stock returns are extracted from Compustat and the TSE Western Database respectively. We retain only the companies with data in both databases. The final sample comprises 462 transactions involving 253 acquirers.

Please insert Table 1

Panel A of table 1 reports the annual numbers of acquisitions completed over the 1988-2002 period. Panel B categorizes the sample by different characteristics. 361 out of 462 transactions in our sample are mergers. We also note that the presence of competing bidders is rare (only 4% of the cases). We classify the relatedness of bidder and target activities by their SIC codes. More than 60% of the transactions are between related businesses, i.e between firms having the same primary SIC code (2-digit, 3-digit or 4-digit SIC codes in common).

Panel C gives the statistical properties of the transactions. Mergers and acquisitions values vary highly; the average is 202.96 million USD, while the median is 23.64 million USD. The mean percentage of shares acquired is 89.45%.

Panel D presents acquisitions by primary SIC code. In Canada, over 23% of the 462 transactions are in the resources industry (SIC 1000). The rest of the transactions are distributed across several industries.

Finally, panel E presents the distribution of local and cross-sectional mergers and acquisitions in our sample, and panel F gives the distribution by target nation. We note the presence of 165 cross-border transactions, out of which, 96 involve a U.S. target.

## **2- Methodology**

### **2-1 Identification of hot, cold and normal markets:**

We define hot and cold mergers and acquisitions (M&A) markets using the aggregate number and value of M&A occurring during the period from January 1988 to December 2002 obtained from Crosbie and Cie monthly releases.

We use two definitions of aggregate value: nominal dollar and real dollar. Real dollar value is monthly nominal value of M&A deflated by the monthly Consumer Price Index (CPI).

We rank a three-month moving average of M&A value (number) into quartiles. We define hot periods as at least three consecutive months where the value (number) of M&A exceeds the upper quartile. The cold periods are at least three consecutive months where the value (number) of M&A stands below the lower quartile. The M&A that fall between the upper and the lower quartiles are classified in the normal period<sup>4</sup>.

More than 78% of our sample receive the same classification into the hot, cold and normal markets, whether we use a rank based on the number or value (nominal and real) of the aggregate M&A in Canada. Consequently, the remainder of this paper focuses on results using a classification based on the aggregate number of M&A.

Please insert Figure 1 and Table 2

Figure I plots the classification of hot and cold merger markets as measured by a three month moving average of the aggregate number of mergers and acquisitions.

Table 2 shows that while hot markets are concentrated in a five-year period (between 1996 and 2000), cold markets occur at both the beginning and the end of the sample period. In our sample, 159 of 462 transactions occur during hot markets and are concentrated in 36 months out of 168 months that compose the

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<sup>4</sup> This procedure was used by Bayless and Chaplinsky (1996)

total period of study. 53 mergers and acquisitions occur in cold markets during 34 months. The remaining 250 transactions take place in normal markets.

## **2-2 Abnormal returns for M&A in hot, cold and normal markets**

Table 4 presents the average cumulative daily abnormal returns for the total sample of M&A in hot, cold and normal markets, for the period of 1 year prior to the announcement (-366, -2), the three days around the announcement (-1,1) and a period of 1 year following the announcement (2, 366). We consider day t=0, as the announcement date.

In fact, if we choose a short-window of study, around the announcement date, as it is done in the existing literature (Fuller et al. (2002), Rosen (2003)), we will not be able to capture the information dissemination prior to the announcement and after the merger completion. In this context, Foerster and Karolyi (1998) report that there may well be information dissemination (to the market participants), prior to the announcement of an event, around an event and even after its completion<sup>5</sup>. For that reason they don't recommend the use of short-window study around announcement dates and suggest the use of a window of one-year prior and one year subsequent to the event. They argue that this methodology allows deriving an overall picture that cannot emerge from a short-window study.

The abnormal returns are computed using the market model, which assumes a linear relationship between the return of any security to the return of the market:

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

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<sup>5</sup> Foerster and Karolyi (1998) study non-US firms cross-listing shares on U.S. exchanges (American Depositary Receipts). They use a window of study one year prior to listing and one year following the listing.

where  $t$  is the time index,  $i=1,\dots,N$  stands for security,  $R_{it}$ , and  $R_{mt}$  are the returns on security  $i$ , and the market respectively during period  $t$ , and is  $\hat{e}_{it}$  the error term for security  $i$ .

The event windows are defined as the period from 1 day prior to 1 day after the announcement, a second period, which runs between 2 and 366 days prior to the announcement day, and a third period that runs between 2 and 366 days after the announcement. Equation (1) is estimated over an interval of (-485; -120) days before the beginning the each event period. With the estimates of  $a_i$  and  $\beta_i$  from equation (1), we can predict a "normal" return. The prediction error referred to as the abnormal return (AR), is then calculated:

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

In order to test for the persistence of the impact of the event during a period  $T_2-T_1$ , the abnormal return is added to obtain the cumulated abnormal returns ( $CAR_i(T_2-T_1)$ ) for security  $i$  over the period  $T_2-T_1$ :

$$CAR_i(T_1, T_2) = \sum AR_{it} \quad ; t= T_1 \dots T_2 \quad (3)$$

This calculation is done for three event windows (-366 ; -2), (-1 ; 1), (2 , 366) and is followed by a calculation of the mean cumulative abnormal returns<sup>6</sup>.

Moreover, for additional robustness, we estimate the abnormal returns using the buy-and-hold abnormal returns. The index returns are used as a benchmark:

$$\sum [\prod (1+R_{i,t}) - \prod (1+R_{index,t})] ; t= T_1 \dots T_2 \quad (4)$$

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<sup>6</sup> Results of the tests conducted in the remaining paper are robust to the use of the capital asset pricing model and to the use of the equal-weighted and value-weighted market indexes.

Results of both models converge. In the remaining of this paper we comment the results from the market model measured toward the equal-weighted market index<sup>7</sup>.

Please insert Table 4

The observation of the bidder performance in the year preceding the announcement shows that bidders in all markets register an important run-up in prices that is significantly higher in hot markets compared to cold and normal markets. The average CAR(-366 ; -2) is 22.99% for hot bidders, 6.82% for cold bidders and 14.19% for the full sample. Dong et al. (2003), Rhodes-Kropf et al. (2003) argue that firms have incentives to make acquisitions when their stocks are overvalued. If this is the case, a rational stock market should react to a merger announcement in a hot market as a sign of the bidder overvaluation. The announcement stock movement should be negative in hot markets and positive or at least less negative in cold markets.

Results in table 4 demonstrate that the opposite phenomenon occurs, the reaction to mergers announced during the cold and hot markets are positive and higher (but not significantly different) during hot markets compared to cold ones. On average, the CAR (-1 ; 1) is 2.20% for hot market acquirers, 0.93% for cold market acquirers and 0.41% for normal market acquirers. The announcement returns are significantly different between hot and normal markets. These results indicate that hot market acquirers receive a more favourable response on average to an acquisition announcement.

The average CAR (-1 ; 1) for the full sample is consistent with the literature. Eckbo (1983) finds positive and significant abnormal returns around merger

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<sup>7</sup> We report only results obtained with the market model and the equal weighted market index.

announcements. Our results show a significant and positive abnormal return of 1.20%, which is comparable to the results of Eckbo (1983).

In the post-announcement year, the returns reverse and hot market acquirers underperform significantly cold market acquirers. CAR (2 ; 366) is significantly different between hot and cold markets and hot and normal markets. CAR (2 ; 366) is -20.29% in hot markets compared to -1.66% in cold markets and -12.21% in normal markets. The reversion of the post-announcement abnormal returns is dramatic compared to those reported in studies that used US data.

The post-merger abnormal returns for the overall sample in our study are -15.05% as a mean and -7.46% as a median. Ang and Cheng (2003) report one-year abnormal returns of -3.76%. Bradley and Sundaran (2004) report one-year abnormal returns of -2.48%. Our results are however, comparable to the one of Friedman (2004) who found a one-year post merger abnormal return of -15.01%. Moreover, the level of run-up in our sample (14.19%) is comparable to the results of Bradley and Sundaram (2004) (the run-up is 19.01%).

The positive reaction to the merger announcement in hot market followed by a high negative and significant performance corroborates the theory of investors' overoptimism. This reversion phenomenon occurs when bidders' results replace optimism. This could shed light on stock overvaluation in hot cycles. Our results are also consistent with the hubris hypothesis (Roll, 1986). Managers of firms that registered good performance may believe that they can create value in situations that the markets judges to be negative net present value, this should also lead to the reversion observed. Moreover, since merger decisions are made by managers who could have personal interests, the results could also be in favor of the managerial motivations hypothesis. In fact, managerial motivations may exacerbate the effect of investors' overoptimism on the abnormal returns

following the announcement. Even if these theories give different explanations of why mergers occur, they have the same predictions toward the stock price movements.

To this point, our results allow rejecting only the neo-classical theory of mergers, which predicts that hot merger markets occur following shocks and allow creating common synergies. This theory suggests that mergers during hot periods should be better than mergers at other times, which is not confirmed by our results since post-merger performance is significantly worse in hot markets compared to the cold ones (z-test significant at 1% level) and to what we called 'normal' periods (t-test and z-test significant at 1% level).

### **2-3 The means of payment**

If hot markets are characterized by stock overvaluation then stock is more likely to be used as a means of payment in these periods. Table 3 demonstrates a more intensive use of equity as a transaction currency in hot markets, more than 40% of the acquirers in hot periods pay the transaction value with more than 50% stock, compared to 18% in cold markets.

To investigate properly the link between the bidders stock movements and the mean of payment, we study the cumulative abnormal returns in each period. As in table 3, we distinguish between firms that use stock to pay more than 50% of the transaction (we define this category as paying with majority stock, for the rest of the paper) and firms that pay with less than this percentage<sup>8</sup>.

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<sup>8</sup> Our results hold for any cut-off between 50% and 70% stock paid in the transaction since most observations are concentrated either between 0 and 30% or between 60% and up.

Results in table 5 confirm the reversion phenomenon that occurs in the post-merger year compared to the pre-merger year. Results for the full sample do not reveal any significant difference between the abnormal returns of firms paying with majority of stock and firms paying with less stock. Bidders seem to register highly significant positive abnormal returns in the pre-announcement period, the mean CAR is higher than 8% whatever the proportion of stock used. This performance reverses in the year following the announcement, the mean CAR is -10.41% if majority stock is used and -10.15% if less than 50% stock is paid. These underperformances are highly significant.

Results on the announcement reaction suggest that investors do not seem to perceive better the transactions paid with less stock<sup>9</sup>. In fact, the mean cumulative abnormal return surrounding the announcement is 1.26% in the case of majority stock payment and 0.96% otherwise. There is no significant difference between these performances.

This lack of difference in the performances of the full sample, according to the proportion of stock used and since the results are robust to any cut-off in the proportion of stock between 50% and 70%, proves the importance of distinguishing between the hot and cold markets and to analyse the acquirers' performances in each market separately. Therefore, to investigate the consistency of this result, we consider each period individually.

The hot market reveals that acquirers paying with majority stock register higher over-performances in the pre-announcement period (35.38%) compared with acquirers paying with less stock (13.45%) and higher underperformances in the

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<sup>9</sup> Results hold for any cut-off in the proportion of stock used in payment, between 50% and 70% of the total amount of the transaction.

post-announcement year (-43.73% compared to -15.94%). These differences are statistically significant<sup>10</sup>.

Surprisingly, average announcement abnormal returns do not vary with the proportion of stock (average CAR (-1 ; 1) is 2.42% when majority stock is used and 2.17% otherwise). There is no significant difference in the market reaction based on the percentage of stock used and this result is robust to any variation in the proportion of stock used in payment, between 50% and 70% of the total amount of the transaction. For this reason, the Myers and Majluf (1984) signalling hypothesis does not seem to hold in hot markets. Results for the cold market also do not support Myers and Majluf (1984). The announcement reaction is much higher when the payment is made with majority of stock (2.85% compared to 0.26% for the means and 4.78% compared to -0.15% for the medians).

While results in table 4 reveal that announcing acquisitions in cold markets leads to lower price reactions, results in table 5 prove that paying with minority stock drive low positive reactions not significantly different from 0 and even negative reactions (the median is -0.15%). Results demonstrate that investors are more sceptical in cold periods.

Results on the cold cycles indicate that abnormal returns in the pre-merger announcement are much higher when the payment is made with stock, the mean is 12.29% compared to 4.11%. The spread in the median is even higher, 20.35% compared to 1.29%. However, the statistical tests do not reveal any significant difference, which is due to the relatively small sample size.

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<sup>10</sup> Results hold for any cut-off in the proportion of stock used in payment, between 50% and 70% of the total amount of the transaction.

In the post-announcement year, stock market reacts in the same way to acquirers paying with majority of stock in the cold period as to the ones in hot periods. They register a high and significant underperformance (-16.88% as a mean and -25.35% as a median). Acquirers paying with less than 50% stock register negative abnormal returns, not significantly different from zero.

Comparing results for the two means of payment, within the cold period does not reveal any statistical difference. The lack of significance in the cold period tests is as mentioned above due to the small size of the sub-samples. Firms paying with more than 50% stock register performances not significantly different from bidders in hot markets paying with the same proportion of stock.

The presence of such a category of acquirers in the cold market could be due to the presence of an overvalued industry in the cold market. In fact, 6 of the 8 companies that paid with more than 50% stock belong to the mining industry. However, further exploration on industry valuation has to be done to allow concluding, if all the industry is overvalued or if the firms are individually overvalued. This test goes beyond the scope of this study.

While the results for the overall sample does not reveal any significant difference when we compare the two means of payment, results for the hot market reveals highly significant differences. The lack of difference inside the cold market is due to the relatively small size of the sample. We also note a significant difference between the run-up and the post-merger performance (mark-up), with the z-test, when less than a proportion of 50% stock is used in payment. This evidence proves that distinguishing only between the means of payment as it is done in the literature is not enough, and proves that distinguishing between the merger cycles is as much important.

Our results provide support for the investors' overoptimism hypothesis since, in hot markets, announcement abnormal returns do not differ with the proportion of stock used to pay the transaction.

The previous tests document that Canadian acquirers time their acquisitions in periods when investors' overoptimism is high. Market and macroeconomic conditions at the acquisition time can affect investors' reaction to the announcement, since they influence their estimates of the acquirer valuation. To better explain the results of the previous section, we investigate the possible determinants of the performances realised in the pre- and post-announcement periods. We also try to find a characteristic set that could be associated with each cold and hot market. For this purpose we introduce market, transaction and firm-specific characteristics as explanative factors for the abnormal returns measured.

#### **2-4 Characteristics of hot and cold merger markets and determinants of bidder performances**

To determine the characteristics of hot and cold markets, we include the variables defined below, related to bidder, target, transaction characteristics, and macroeconomic variables, that might influence the market reaction to a merger.

##### **Bidder specific variables:**

An important characteristic that is present in our sample is that many bidders make a series of acquisitions while others make only a single takeover. Some researchers report that frequent acquirers are different from occasional acquirers (Shipper and Thomson (1983) and Fuller et al. (2002)), for that reason we will include a dummy for whether the bidder has made a single merger or if he has made other mergers in the year prior to the announcement or in the year after.

Moreover, we control for certain events that could occur during our window of study. Those events could be acquisitions of assets, acquisitions of certain assets or buybacks that are reported in SDC database but are not defined as mergers or acquisitions. However, as many bidders in our sample make such transactions in the same period when they engage in mergers and acquisitions, these events could bias our results. For this reason, we include a dummy variable to control for those parallel events; this dummy will take a value of 1 if the bidder makes acquisitions of certain assets or acquisitions of assets or buybacks during our window of study. To our knowledge, most of the earlier studies that report mergers and acquisitions short and/or long-run performance do not control for the presence of those confounding events.

We also control for certain ratios that are of major importance in the determination of the financial strength of the bidder. In fact, we will control for the Tobin's Q and the ratio of return on assets. Servaes (1991) among others has proven that a low Tobin's Q is associated with a high short-run reaction to the merger announcement. The ratio of return on assets (ROA) proxies for the financial performance of a firm. Morck et al. (1990) suggest that firms with better prior performance make better acquisitions.

Transaction related variables:

We control for the forms of acquisition financing. We call financings made with more than 50% stock as made with majority stock.

Many studies document that diversifying mergers result in lower returns to the acquiring firm. For this reason, we control for merger is diversification by using a dummy variable, which takes 1 if the acquirer and target have 3-digit sic code in common.

We also control for the ratio of target size to acquirer size. In fact, when the target involved in the acquisition is much smaller than the acquirer, we do not expect the acquisition to have an important impact on the future earnings of the bidder, and thus, the acquirer's stock price movements should be small.

To measure the relative size, we use the ratio of total market equity of the target to the total market equity of the acquirer. Wherever it is not available we use the ratio of total assets instead.

#### Target specific variables:

Since the market reaction to a merger is different among the target type as suggested by Fuller et al. (2002), we distinguish between two groups of targets: public firms, in one hand, and private firms and subsidiaries, in the other hand.

#### Macroeconomic variables:

We control for whether the merger or acquisition occurred in hot, cold or normal periods. Moreover, since reaction to a merger may be affected by the stock market conditions, we proxy for the general level of stock prices in the market by calculating and using the change in the TSE equal-weighted and value-weighted indexes.

### **Univariate analysis**

In table 6, we examine variables related to bidder-specific and market-specific characteristics, in each of the individual hot and cold markets to try to uncover a characteristic set among firm, transaction and market characteristics that can be reliably associated with each type of merger market.

Table 6 gives strong support to the existence of merger timing. It indicates that the market performance measured by the equal-weighted and value-weighted index returns, in the year prior to announcements, are significantly higher in the hot markets compared to the cold ones. The market equal-weighted performance reverses in the year following the merger. The equal-weighted index performance is significantly lower (at 5% level both in t-test and z-test) in hot merger markets compared to the cold ones. The value-weighted index performance is not significantly different between the two merger markets.

This result sheds light on the fact that mergers are affected by conditions in the broader stock market and is consistent with the previous studies that tend to associate hot investment markets to business cycle expansions and cold markets to recessions (Hickman (1953), Moore (1980) and Choe, Masulis and Nanda (1993)).

The percentage of shares acquired and the number of acquisitions announced in the years prior and following the announcement are significantly higher in hot markets. This is evidence that the hot periods are seen as favourable to larger investments programs.

The number of acquisitions of assets in the years prior and following the announcement are also higher in hot cycles although only the number of acquisition of assets is significant (weakly) with the z-test. This is another evidence confirming the idea that acquirers are more active in hot markets. The sign of the statistical tests on the relative value of the target to the bidder even if it is not significant, is also consistent with the same idea.

Concerning the variables controlling for the financial strength of the bidding firm, Tobin's Q and ROA in the pre-announcement year prove that acquirers are

not significantly overvalued and do not register better financial performances. However, these factors become significantly higher during the year of the announcement, a phenomenon that reverses in the post-announcement year<sup>11</sup>.

Since the Tobin's Q does not only control for overvaluation, we calculate the market-to-book equity ratio, for additional robustness. Our results on this ratio confirm the previous conclusion<sup>12</sup>.

The choice of making an acquisition at a time when overvaluation and the financial performance, are at their highest, is a strong evidence in favour of the merger timing and is consistent with the theory proposed by Shleifer and Vishny (SV) (2003) suggesting that during hot cycles, the financial market proves to be inefficient and some firms are valued incorrectly. Their model predicts that mergers are conducted by rational managers operating in less rational markets (inefficient).

Even if our results are consistent with SV (2003), we cannot reject, to this point, Roll's (1986) hubris hypothesis, which proposes that managers are irrational while the market is not, since in this case, we should also observe high performance prior to a merger and a reversion after.

Tests on the percentage of stock used in payment show highly significant t-test and z-test, which indicate a more intensive use of stock in hot markets. This evidence confirms Martin (1996) and Rau and Vermaelen (1998) findings that glamour bidders (firms with high market-to-book ratio) pay more frequently

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<sup>11</sup> T-tests and z-tests conducted on the difference between Qtobin (0) and Qtobin(-1) (not reported in table 5) are consecutively -0.44 and -0.51. The same tests conducted on the difference between Qtobin (0) and Qtobin(1) are consecutively 2.33 (significant at the 5% level) and 3.55 (significant at the 1% level)

<sup>12</sup> T-tests and z-tests conducted on the difference between M/B (0) and M/B (-1) (not reported in table 5) are consecutively -0.21 and -0.42. The same tests conducted on the difference between Qtobin (0) and Qtobin(1) are consecutively 3.19 and 2.61 (both significant at the 1% level)

with stock than do value bidders (firms with low market-to-book ratio). Judging by the statistical tests, we can add new evidence that the bidders' managers are aware of the overvaluation of their firms and act rationally by timing their mergers and paying with stock. This new evidence allows rejecting the hubris hypothesis with more confidence.

### **Multivariate analysis of the determinants of bidders performance for the full sample and during the hot and cold merger markets**

To investigate the possible determinants of bidders performance in our windows of study, we conduct a multivariate cross-sectional analysis designed to explain the cumulative abnormal returns around the announcement of an acquisition and in the post-merger year, across the full sample, the hot and cold markets. The regressions include as independent variables all the variables introduced in the beginning of this section, with the exception of the variable percentage of stock that we replace by a dichotomous variable that takes 0 if the percentage of stock is comprised between 0 and 50, and 1 if it is over 50%.

We add the variable relatedness that we define as a dichotomous variable that controls for the relatedness of the target and acquirer activities. Relatedness takes the value 1 if the firms have 3-digit sic code in common and 0 otherwise. Target public status takes the value of 1 if the target is private or subsidiary and 0 if it is public. Hot is a dichotomous variable that equals 1 if the merger announcement takes place in a hot market and 0 otherwise. Cold is a dichotomous variable that equals 1 if the merger announcement takes place in a cold market and 0 otherwise.

Panel A of table 7 shows that announcing acquisitions in a rising market has a positive effect on the announcement abnormal returns. The variable Mkt\_ew is

positive even if it is not significant. In hot market, the CAR (-1 ; 1) is 4.507 basis point higher, for each percentage point increase in the equally-weighted stock market index in the year prior to the announcement. This result is consistent with Michell and Mulherin (1996) who suggest that unexpected economic shocks lead to higher stock performances in the whole market or in some industries, which creates higher merger activity. This positive effect also supports investors' overoptimism theory, which predicts a positive correlation between announcement abnormal returns and recent returns in stock market. These two theories explain also the positive and significant correlation between the CAR(-1 ; 1) and the existence of program of mergers controlled for, by the variable `multi_acq`.

During the announcement three-day window, we introduce the variable CAR(-366; -2), as an explanative variable in our regression, to test the effect of the run-up preceding the announcement, on the announcement abnormal returns. Our results demonstrate that the coefficient on this variable is negatively related to the announcement abnormal returns in the cold markets. The run-up on the bidder stock is however, positively correlated with announcement abnormal returns in hot markets and in for the overall sample. This result is also consistent with the hot market overoptimism and with the irrationality in hot markets. The higher the run-up is, the better is the announcement reaction. This is also consistent with the finding of Bradley and Sundaram (2004) who suggest that acquisitions are the cause of past good performance. This is especially true in our case, for the hot market, since the coefficient is the highest at this period.

The negative coefficient associated with the use of stock in hot markets, is also consistent with Myers and Majluf (1984) factors, but surprisingly, this factor is not significant, in all markets, which suggests that during the announcement of a merger the means of payment is not necessarily the most important factor that

allows valuing the merger. Moreover, a positive coefficient on the acquisitions of private and subsidiaries is consistent with the literature (Fuller et al. (2002), Bradley and Sundaram (2004)). In fact, this positive coefficient on non-public targets can be explained by Rock (1996) arguments who suggests that since there are greater information asymmetries between the buyer and the seller of a non-public target, the buyer will seek to obtain an adverse selection discount, in order to be compensated for information asymmetry.

Coefficients of hot and cold dummies are positive but not significantly different from zero. The coefficient on hot is higher which proves that announcing in hot markets leads to higher abnormal returns than announcing in other times. This evidence is also consistent with the hot market attributes.

Surprisingly, the Q-ratio which proxy for firm quality is not significant in all periods. Investors do not seem to place weight on this factor, even if it gives certification of project quality and management competence. However, more weight is placed on ROA in the hot markets. Investors seem to be more interested in the earnings realised by the bidder than in the whole quality of the firm. This result is consistent with the overoptimism in hot markets.

Panel B proves that the higher the stock market performances are, the worse the firm post-acquisition performance is, all else equal. This is true especially for the hot market since each percentage point increase in the equally-weighted stock market index in the year prior to the announcement is followed by 33 basis points of post-acquisition underperformance.

During the announcement window, the sign of the coefficient of the means of payment is consistent with the literature, although it is not significant in all markets. However, in the post-merger year, the coefficient on this variable

becomes negative and significant for the full market and during hot markets, which proves that mergers where majority stock is used are worse, especially in the hot markets since the coefficient is higher.

The observation of the payment dummy in the post-merger year gives another evidence on the inability of the market to value the bidder and the transaction. Investors are overoptimistic during the acquisition announcement especially in hot cycles. However, the market is able to correct itself on a longer term.

Not surprisingly, coefficients on the number of acquisition of assets and on the multiple acquisitions programs following the announcement are positive. This is consistent with the literature that suggests that firms having good performances make more acquisitions. Results demonstrate that firms acquiring public targets perform better following the acquisition, which is also consistent with the existing literature.

Coefficient of hot dummy is negative and significant, while the coefficient of cold dummy is negative but not significantly different from zero. Consequently, the post-merger underperformance is higher in hot markets compared to other times.

## **Conclusion**

Using a sample of 462 Canadian acquisitions between 1988 and 2002, we investigate the existence of timing process for mergers and acquisitions. To produce our results, we use the aggregate number of mergers to search for periods that are more favourable for mergers (i.e. to distinguish between hot and cold merger markets).

Our methodology consists on studying acquirer abnormal returns over three windows, pre-, post- and around the announcement of the acquisitions, in each market cycle (hot markets versus cold markets). Our results provide evidence that mergers are driven by stock market valuation and that these events occur during periods when investors are highly overoptimistic and react irrationally to a merger announcement. In fact, acquirers in hot markets register significantly higher abnormal performances than acquirers in cold markets; investors react better to the acquisitions announced during the hot markets even if the payment is made with stock. Our evidence suggests that short-run market perceptions may lead to takeover activity. This evidence is consistent with SV arguments.

The evidence that the stock returns reverse in the post-merger announcement year and the fact that the means of payment is highly explanatory variable of the post-merger underperformance proves that the market can correct itself in the longer term.

Our results allow rejecting the synergy hypothesis and the economy-wide shocks, since these hypotheses do not predict the performance reversion that we observe.

We also find evidence that the bidders' managers are aware of the overvaluation of their firms and act rationally by timing their mergers and paying with stock, since they choose to announce their acquisition when the overvaluation is at its highest. This evidence allows rejecting the hubris hypothesis.

However, if investors have unrealistic expectations about the synergies from a merger, managers would not make these acquisitions unless they are rewarded from the short-term performance. This proves that managerial motivations are associated to investors' sentiment to explain better the timing of mergers and acquisitions.

## References

- Andrade G., Mitchell, M., Stafford, E., Spring 2001. New evidence and perspectives on mergers. *Journal of Economic Perspectives* 15 (2), 103–120.
- Ang, J. S. and Y. Cheng, 2003, “Direct Evidence on the Market Driven Acquisition Theory,” Working Paper
- Baker, M. P., J. C. Stein, and J. Wurgler, 2003, When does the market matter? stock prices and the investment of equity-dependent firms, *Quarterly Journal of Economics* 118, 969–1005.
- Baker, M. P. and J. Wurgler, 2002, Market timing and capital structure, *Journal of Finance* 57, 1–32.
- Baker, M. and J. Wurgler, 2000, The equity share in new issues and aggregate stock returns, *Journal of Finance* 55, 2219–2257.
- Bayless M., Chaplinsky S., 1996, Is There a Window of Opportunity for Seasoned Equity Issuance?, *Journal of Finance* 51(1).
- Bradley M. and A. Sundaram, 2004, Do acquisitions drive performance or does performance drive acquisitions?, Working Paper
- Brealey, R. A. and S. C. Myers, 2000, *Principles of corporate finance* (6th ed.).(McGraw-Hill, New York).
- Choe H., Masulis R., and Nanda V., 1993, Common stock offerings across the business cycle. *Journal of Empirical Finance*, 1, 3-31.
- Dong, M., Hirshleifer, D., Richardson, S., Teoh, S. H., September 2002. Does investor misvaluation drive the takeover market? Working Paper, Ohio State University.
- Erickson, M. and S. Wang, 1999, Earnings Management by Acquiring Firms in Stock for Stock Mergers, *Journal of Accounting and Economics*, 27(2), 149-176.
- Foerster S.R., Karolyi G.A., 1999, The Effects of Market Segmentation and Illiquidity on Asset Prices: Evidence from Foreign Stocks Listing in the US, *Journal of Finance*, 54(3), 981-1014.

Fuller, Kathleen, Jeffrey Netter, and Michael Stegemoller, 2002, What Do Returns to Bidding firms Tell Us? Evidence from Firms That Make Many Acquisitions, *Journal of Finance*, 57(4), 1763-93.

Gorton, G., Kahl, M., Rosen, R., 2000. Eat or be eaten: A theory of mergers and merger waves, Working Paper, Wharton School.

Gulger K., D. Mueller and B. Yurtoglu, 2004, The determinants of merger waves, Working Paper.

Harford, J. 2003, Efficient and Distortional Components to Industry Merger Waves, Working Paper.

Holmstrom, B., Kaplan, S. N., 2001. Corporate governance and merger activity in the united states: Making sense of the 1980s and 1990s. *Journal of Economic Perspectives* 15, 121-144.

Jensen, M., 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323-329.

Jovanovic, B., Rousseau, P., 2001. Mergers and technological change: 1885-2001. Unpublished working paper, New York University.

Jovanovic, B., Rousseau, P., Fall 2002. The q-theory of mergers. *The American Economic Review, Papers and Proceedings* 92 (2), 198-204.

Loughran, Tim and Jay R. Ritter, 1995, The New Issues Puzzle, *Journal of Finance* 50(1), 23-51.

Loughran, Tim, Jay R. Ritter, and Kristian Ryndqvist, 1994, Initial Public Offerings: International Insights, *Pacific Basin Finance Journal* 2, 165-199.

Maksimovic, V., Phillips, G., December 2001. The market for corporate assets: Who engages in mergers and asset sales and are there efficiency gains? *The Journal of Finance* LVI (6), 2019-2065.

Martin, K., 1996. The method of payment in corporate acquisitions, investment opportunities, and managerial ownership. *Journal of Finance* 51, 1227-1246.

Mitchell, Mark L. and J. Harold Mulherin, 1996, The impact of industry shocks on takeover and restructuring activity, *Journal of Financial Economics* 41, 193-229.

Mitchell, Mark L. and Erik Stafford, 2000, Managerial Decision and Long-Term Stock Price Performance, *Journal of Business* 73(3), 287-329.

Moeller, Sara, Frederik Schlingemann, and Rene Stulz, 2004a, Do shareholders of acquiring firms gain from acquisitions? *Journal of Financial Economics* (forthcoming).

Moeller, Sara, Frederik Schlingemann, and Rene Stulz, 2004a, Wealth destruction on a massive scale? A study of acquiring firm returns in the recent merger wave, *Journal of Finance* (forthcoming).

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1990, Do Managerial Objectives Drive Bad Acquisitions?, *Journal of Finance*, 45, 31-48.

Myers, Stewart C. and Nicholas S. Majluf, 1984, Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have, *Journal of Financial Economics* 13(2), 187-221.

Nelson, Ralph L., 1959, *Merger Movements in American Industry*, Princeton University Press: Princeton, N.J., 1959.

Rau, P. Raghavendra and Theo Vermaelen, 1998, Glamour, value and the post-acquisition performance of bidding firms, *Journal of Financial Economics* 49(3), 223-253.

Rhodes-Kropf, Matthew, David T. Robinson, and S. Vishanathan, 2003, Valuation Waves and Merger Activity, *The Empirical Evidence*, working paper.

Rhodes-Kropf, M., Viswanathan, S., forthcoming. Market valuation and merger waves. *Journal of Finance*.

Ritter, J., Warr, R., March 2002. The decline of inflation and the bull market of 1982-1999. *Journal of Financial and Quantitative Analysis* 37 (1), 29-61.

Roll, Richard, 1986, The Hubris Hypothesis Of Corporate Takeovers, *Journal of Business* 59, 197-216.

Rosen, Richard J., 2003, Merger Momentum and Investor Sentiment: the Stock Market Reaction to Merger Announcements, working paper.

Rossi, S. and P. Volpin, 2004, Cross-Country Determinants of Mergers and Acquisitions, *Journal of Financial Economics* 74, 277-304.

Schipper, Katherine and Rex Thompson, 1983, The Impact of Merger-Related Regulations on the Shareholders of Bidding firms, *Journal of Accounting Research* 21(1), 184-221.

Servaes, Henri, 1991, Tobin's Q and the Gains from Takeovers, *Journal of Finance* 46(1), 409-419.

Shleifer, Andrei and Robert W. Vishny, 2003, Stock Market Driven Acquisitions, *Journal of Financial Economics*, 70, 295-311.

Schwert, G.W., 2000, Hostility in Takeovers: In the Eyes of the Beholder?, *Journal of Finance*, 55 (6), 2599-2640.

Travlos, Nickolaos, 1987, Corporate Takeover Bids, Method of Payment, and Bidding Firms' Stock Returns, *Journal of Finance* 42(4), 943-963.

Weston, J. Fred, Kwang S. Chung, and Juan A. Siu, 1998, *Takeovers, Restructuring, and Corporate Governance*, Upper Saddle River, NJ, Prentice Hall.

Table 1

**Panel A: Distribution per year**

Year	Number of cross-border acquisitions	Number of local acquisitions	Total number of acquisitions
1988	0	5	5
1989	2	12	14
1990	1	9	10
1991	1	9	10
1992	5	5	10
1993	2	13	15
1994	16	7	23
1995	15	14	29
1996	13	19	32
1997	16	23	39
1998	13	27	40
1999	16	40	56
2000	29	42	71
2001	21	43	64
2002	15	29	44
Total	165	297	462

**Panel B: Frequency distribution**

<b>Form</b>	Acq. Maj. Int.	101
	Merger	361
<b>Multiple Bidders</b>	Yes	19
	No	443
<b>Total number of acquisitions</b>		462
<b>Number of companies involved</b>		253

**Relatedness of acquisitions**

Related	2-digit SIC codes	80
	3-digit SIC codes	34
	4-digit SIC codes	167
	less than 2-digit SIC codes	
Unrelated		181

**Panel C : Statistical properties of the sample**

	Transaction value (in millions of USD)	Percentage of shares acquired
average	202.96	89.45
median	23.64	100
minimum	0.100	50
maximum	4905.54	100

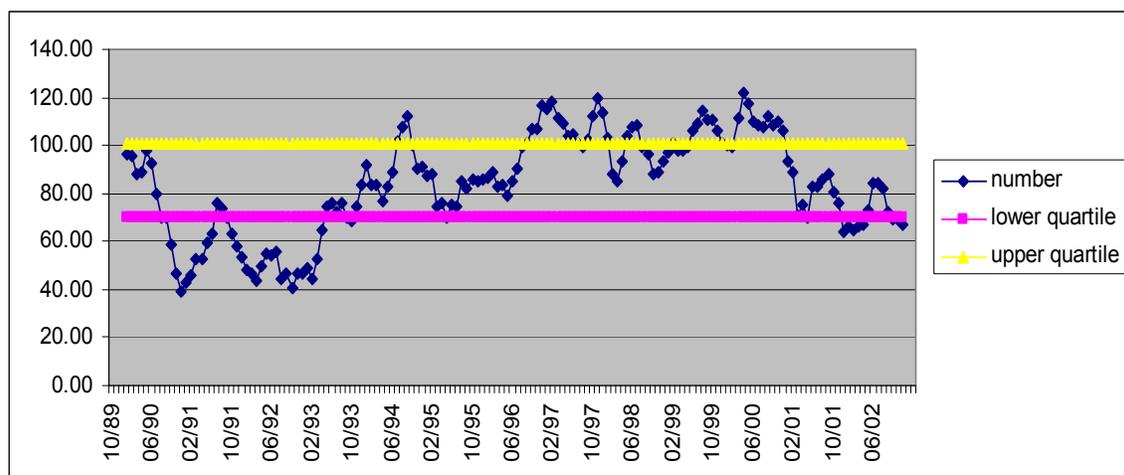
**Panel D: Sample frequency of bidders by primary SIC code**

<b>SIC Codes</b>	<b>Number</b>	<b>Percentage of total</b>
10 Minerals	152	32.90%
20-39 Manufacturing	112	24.24%
40 Communications	53	11.47%
50 Trade	14	3.03%
60 Financial	53	11.47%
70-89 Services	68	16.86%
	462	100.00%

**Panel F: Distribution by Target Nation**

<b>Target country</b>	<b>Nb. of acquisitions</b>	<b>Percentage</b>
Canada	297	64.29%
United States	96	20.78%
Argentina	7	1.52%
Chile	6	1.30%
South Africa	6	1.30%
United Kingdom	6	1.30%
Germany	4	0.87%
China	3	0.65%
France	3	0.65%
Sweden	3	0.65%
Norway	2	0.43%
Peru	2	0.43%
Poland	2	0.43%
Singapore	2	0.43%
South Korea	2	0.43%
Spain	2	0.43%
Switzerland	2	0.43%
Venezuela	2	0.43%
Others (1 acq per country)	15	3.25%
	462	100%

**Figure 1 : Hot and Cold Markets classified by the number of transactions:** Hot and Cold markets classifications are based on quartile ranking of a three-month moving average of the aggregate number of mergers and acquisitions in Canada, obtained from Crosbie and Cie. Hot markets are at least three contiguous months where the number of mergers and acquisitions exceeds the upper quartile. Cold markets are at least three contiguous months where the number of mergers and acquisitions falls below the lower quartile.



**Table 2: Market classification and duration (in months) based on the number of mergers and acquisitions**

Cold	09/90-06/91	9
	10/91-04/93	19
	12/01-05/02	6
Hot	09/96 - 01/98	17
	06/99 - 12/00	19

**Table 3: Summary statistics of the mean of payment in the cold and hot markets**

Percentage of stock in payment	Less than 50% stock	More than 50% stock	Total
<b>Period</b>			
<b>HOT</b>			
Number of firms	94	65	159
Percentage	49.12%	40.88%	100.00%
<b>COLD</b>			
Number of firms	43	10	53
Percentage	81.17%	18.83%	100.00%

**Table 4**

**Abnormal returns, for mergers and acquisitions in Hot, Cold and Normal markets.**

The abnormal returns are computed for day t, as the return on stock I minus the return on the market, where day 0 is the announcement date of the merger or acquisition. Hot and Cold markets classifications are based on quartile ranking of a three moving average of the aggregate number of mergers and acquisitions in Canada, obtained from Crosbie and Cie. Hot markets are at least three contiguous months where the number of mergers and acquisitions exceeds the upper quartile. Cold markets are at least three contiguous months where the number of mergers and acquisitions falls below the lower quartile. Normal markets are defined as the periods that fall in between the upper and lower quartiles.

**Panel A : Cumulative abnormal returns**

01/88 - 12/02	Full Sample	HOT	COLD	NORMAL
<b>CAR (-366 ; -2)</b>				
Mean	14.19%	22.99%	6.82%	9.72%
Median	8.67%	15.51%	1.55%	7.46%
t: Mean=0	6.55***	5.44***	1.54	3.50***
t: Hot - Cold = 0			2.73***	
Z: Hot - Cold =0			2.77***	
t: Hot - Normal = 0				2.74***
Z: Hot - Normal =0				2.55**
N	439	154	46	239
<b>CAR (-1 ; 1)</b>				
Mean	1.20%	2.20%	0.93%	0.41%
Median	0.28%	0.55%	0.06%	0.07%
t: Mean=0	2.74***	2.88***	1.14	0.66
t: Hot - Cold = 0			1.15	
Z: Hot - Cold =0			0.67	
t: Hot - Normal = 0				1.83*
Z: Hot - Normal =0				1.42
N	396	148	42	206
<b>CAR (2 ; 366)</b>				
Mean	-15.05%	-20.29%	-1.66%	-12.21%
Median	-7.46%	-14.98%	-0.05%	-7.43%
t: Mean=0	-8.12***	-6.10***	-0.54	-4.67***
t: Hot - Cold = 0			-1.11	
Z: Hot - Cold =0			-2.48***	
t: Hot - Normal = 0				-2.93***
Z: Hot - Normal =0				-2.33**
N	462	159	53	250

\* significant at the 10% level

\*\* significant at the 5% level

\*\*\* significant at the 1% level

**Table 5**

**Abnormal returns, for mergers and acquisitions in Hot, Cold and Normal markets, decomposition based on the percentage of stock used in payment.**

The abnormal returns are computed for day t, as the return on stock I minus the return on the market, where day 0 is the announcement date of the merger or acquisition. Hot and Cold markets classifications are based on quartile ranking of a three moving average of the aggregate number of mergers and acquisitions in Canada, obtained from Crosbie and Cie. Hot markets are at least three contiguous months where the number of mergers and acquisitions exceeds the upper quartile. Cold markets are at least three contiguous months where the number of mergers and acquisitions falls below the lower quartile. Normal markets are defined as the periods that fall in between the upper and lower quartiles.

**Panel A : Cumulative abnormal returns**

01/88 - 12/02	Full Sample		HOT		COLD	
	Stock<50%	Stock>=50%	Stock<50%	Stock>=50%	Stock<50%	Stock>=50%
	(1)	(2)	(1)	(2)	(1)	(2)
CAR (-366 ; -2)						
Mean	8.65%	11.12%	13.45%	35.38%	4.11%	12.29%
Median	6.07%	9.61%	8.67%	22.99%	1.29%	20.35%
t: Mean=0	3.91***	3.35***	3.25***	4.49***	0.78	1.00
t: Hot - Cold = 0					1.31	0.71
Z: Hot - Cold =0					1.87**	0.32
t: (1)-(2) = 0		-0.68		-2.62***		-0.63
Z: (1)-(2) = 0		-1.37		-2.20**		-1.31
N	283	140	87	67	39	8
CAR (-1 ; 1)						
Mean	0.96%	1.26%	2.17%	2.42%	0.26%	2.85%
Median	0.33%	-0.33%	0.64%	-0.01%	-0.15%	4.78%
t: Mean=0	2.30**	1.33	2.56**	1.36	0.26	1.24
t: Hot - Cold = 0					1.03	-0.10
Z: Hot - Cold =0					1.11	-0.46
t: (1)-(2) = 0		0.92		-0.16		-1.06
Z: (1)-(2) = 0		0.44		0.53		-0.81
N	248	138	83	60	35	7
CAR (2 ; 366)						
Mean	-10.15%	-10.41%	-15.94	-43.73%	-4.39%	-16.88%
Median	-4.38%	-12.58%	-6.67	-25.70%	-0.01	-25.35%
t: Mean=0	-4.61***	-3.86***	-3.64***	-4.28***	-0.72	-2.28**
t: Hot - Cold = 0					-1.34	-0.70
Z: Hot - Cold =0					-1.96**	-0.15
t: (1)-(2) = 0		0.07		2.74***		-1.28
Z: (1)-(2) = 0		1.41		2.48***		-1.45
N	295	138	93	69	34	8

\* significant at the 10% level

\*\* significant at the 5% level

\*\*\* significant at the 1% level

**Table 6 : Firm-specific and market-specific characteristics in the hot and cold markets and the full sample.**

Mkt\_ew is the cumulative returns on the TSE equal-weighted index in the 366 days prior to the announcement (t-366) or post-announcement (t+366); t=0 is the announcement day. Mkt\_vw is the cumulative returns on the TSE value-weighted index in the 366 days prior to the announcement (t-366) or post-announcement (t+366). Shares acquired is the percentage of target shares acquired in the transaction. Multi-acq is the number of mergers and acquisitions of majority interest made by the same acquirer in the year preceding the announcement (t-366) or following the announcement (t+366). Nb of acq of assets is the number of acquisition of assets made by the same acquirer in the years preceding and following the announcement ((t-366) and (t+366)). Relative value is the ratio of target-to-bidder size. QTobin is the sum of market value of equity, book value of debt and preferred stock by total assets. M/B is the market-to-book equity ratio. ROA is the ratio of the return on assets measured at the end of the year of the merger announcement (0), the end of the year prior to the announcement (-1) and the end of the year following the announcement (1). % stock is the percentage of stock used in the transaction payment.

Variable	ALL		COLD		HOT		t-test (hot-cold)	Z-test (hot-cold)
	Mean	Median	Mean	Median	Mean	Median	t-stat	Z-stat
Mkt_ew (t-366)	0.5615	0.4856	0.6109	0.5305	0.8227	0.8487	6.34***	6.19***
Mkt_vw (t-366)	0.1231	0.1269	-0.0126	0.0022	0.3103	0.3185	17.8***	10.37***
Mkt_ew (t+366)	0.5141	0.4312	0.5851	0.4473	0.4621	0.3716	-2.52**	-2.38**
Mkt_vw (t-366)	0.0786	0.0649	0.0245	-0.0629	0.0393	-0.0108	0.38	-0.18
shares acquired	89.4598	100	85.2517	100	92.3163	100	2.64***	2.18**
multi-acq (t-366)	0.3384	0	0.2264	0	0.4750	0	1.87*	1.37
multi-acq (t+366)	0.3550	0	0.1509	0	0.5500	0	2.89***	2.86***
Nb of acq of assets (t-366)	0.5621	0	0.5660	0	0.7405	0	1.07	0.37
Nb of acq of assets (t+366)	0.4314	0	0.3962	0	0.6076	0	1.21	1.85*
relative value	24.9880	9.2608	18.0115	6.9747	26.2380	11.3474	1.42	1.08
QTOBIN (-1)	1.5017	1.0669	1.4588	1.1221	1.8842	1.1952	1.21	0.24
QTOBIN (0)	1.3725	1.0107	0.9360	0.9202	1.7773	1.0926	1.82*	2.78***
QTOBIN (1)	1.1393	0.9463	1.0673	0.9516	1.0899	0.8624	0.14	-1.42
M/B (-1)	2.0478	1.6688	2.0662	1.8085	2.2582	1.6693	0.78	0.70
M/B (0)	1.9805	1.6492	1.6561	1.3838	2.3000	1.9553	2.75***	2.97***
M/B (1)	1.9540	1.7207	1.6603	1.7180	1.7347	1.5582	0.38	0.03
ROA (-1)	0.0030	0.0369	-0.0049	0.0380	0.0042	0.0280	0.34	-0.40
ROA (0)	-0.0237	0.0284	-0.0725	0.0188	-0.0059	0.0288	2.17**	1.65*
ROA (1)	-0.0390	0.0214	-0.0178	0.0207	-0.0639	0.0216	-1.26	-0.48
% stock	36.9921	0	23.0203	0	43.1592	37.5391	2.08***	2.96***

\* Significant at the 10% level

\*\* Significant at the 5% level

\*\*\* Significant at the 1% level

**Table 7: Determinants of abnormal returns for the hot and cold acquisition markets and for the full sample.**

Independent variables are : Mkt\_ew is the cumulative returns on the TSE equal-weighted index in the 366 days prior to the announcement (t-366) or post-announcement (t+366); t=0 is the announcement day. Mkt\_vw is the cumulative returns on the TSE value-weighted index in the 366 days prior to the announcement (t-366) or post-announcement (t+366). Shares acquired is the percentage of target shares acquired in the transaction. Multi-acq is the number of mergers and acquisitions of majority interest made by the same acquirer in the year preceding the announcement (t-366) or following the announcement (t+366). Nb of acq of assets is the number of acquisition of assets made by the same acquirer in the years preceding and following the announcement ((t-366) and (t+366)). Relative value is the ratio of target-to-bidder size. QTobin is the sum of market value of equity, book value of debt and preferred stock by total assets. ROA is the ratio of the return on assets measured at the end of the year of the merger announcement (0), the end of the year prior to the announcement (-1) and the end of the year following the announcement (1). relatedness is a dichotomous variable, which controls for the relatedness of the target and acquirer activities. Relatedness equals 1 if the firms have 3-digit sic code in common et takes 0 otherwise. Target public status is a dichotomous variable that equals 1 if the target is public and 0 otherwise. Hot is a dichotomous variable that equals 1 if the merger announcement takes place in a hot market and 0 otherwise. Cold is a dichotomous variable that equals 1 if the merger announcement takes place in a cold market and 0 otherwise.

<b>Panel A: CAR (-1 ; 1)</b>									
	<b>ALL</b>		<b>ALL</b>		<b>COLD</b>		<b>HOT</b>		
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat	
Intercept	-0,01822	-1,17	-0,01591	-1,00	0,0001866	0,00	-0,01977	-0,43	
CAR (-366 ; -2)	0,00205	0,19	0,00176	0,17	-0,05659	-1,45	0,00929	0,61	
Dummy Payment	-0,0073	-1,18	-0,00778	-1,25	0,02192	1,48	-0,01469	-1,32	
Nb Assets (-366 ; -1)	-0,000678	-0,1	-0,000896	-0,13	-0,02025	-1,25	0,01948	1,56	
Multi-acq (-366 ; -1)	-0,00716	-0,39	-0,00575	-0,31	-0,13743	-1,35	0,13754	2,29**	
Mkt_ew (-366 ; -1)	0,02816	1,52	0,01858	0,81	-0,00104	-0,02	0,04507	1,04	
QTOBIN (-1)	0,00322	0,89	0,00291	0,8	-0,00167	-0,19	0,0001749	0,04	
ROA (-1)	0,0153	0,43	0,01444	0,41	-0,05184	-0,72	-0,1027	-1,77*	
Relatedness (SIC 3)	-0,00438	-0,41	-0,00461	-0,43	-0,02315	-1,15	-0,01695	-0,87	
Relative value	3,682E-05	0,29	3,764E-05	0,29	0,0012	1,59	-3,19E-06	-0,01	
Target public status	0,01386	1,99**	0,01417	2,02**	0,01113	0,80	0,00642	0,49	
Hot			0,01080	0,73					
Cold			0,00234	0,14					
R sq	0,0481		0,0503		0,2974		0,1867		

**Panel B: CAR (2 ; 365)**

	ALL		ALL		COLD		HOT	
	coeff	t-stat	coeff	t-stat	coeff	t-stat	coeff	t-stat
Intercept	0,00225	0,03	-0,02943	-0,37	0,07323	0,3	0,04885	0,21
Dummy payment	-0,0798	-2,43**	-0,07635	-2,32**	-0,03417	-0,35	-0,13077	-2,16**
Nb Assets (1 ; 366)	0,04886	1,57	0,05195	1,67	0,0514	1,09	0,07374	1,26
Multi-acq (1 ; 366)	0,05335	1,35	0,05707	1,43	-0,30307	-1,69*	0,05456	0,89
Mkt_ew (-366 ; -1)	-0,23878	-2,44**	-0,08331	-0,67	-0,02447	-0,07	-0,33754	-1,44
QTOBIN (-1)	-0,02266	-1,14	-0,01885	-0,95	-0,09537	-1,84*	0,0081	0,28
ROA (-1)	0,24761	1,37	0,24452	1,35	-0,20929	-0,68	0,69306	1,89*
Relatedness (SIC 3)	-0,00378	-0,07	-0,0064	-0,11	0,15709	1,35	0,0001462	0,00
Relative value	0,0009823	1,32	0,0009806	1,32	-0,00478	-1,61	0,00147	1,10
Target public status	0,03657	1,01	0,03428	0,94	-0,00193	-0,02	-0,05144	-0,71
Hot			-0,16052	-2,02**				
Cold			-0,05312	-0,59				
R-sq	0,0864		0,098		0,3066		0,1545	

\* Significant at the 10% level

\*\* Significant at the 5% level

\*\*\* Significant at the 1% level