

OUTING Insiders

A look at price and volume dynamics ahead of Canadian merger announcements.

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Last year set a record for mergers and acquisitions activity in Canada, with close to 2,000 takeover announcements valued at more than \$250 billion Canadian dollars in 2006. This volume tops the recent peak in 2000 and represents a doubling of activity over the past two years. With all this takeover activity, it is not surprising that investors and regulators are concerned about the possibility of illegal insider trading. In August 2006 a study of U.S. takeovers found that 41% of the target companies experienced suspicious trading in the days and weeks before the deals became public.¹ While the source of these price and volume dynamics is not known, the suspicion is that illegal trading by insiders may be responsible. The alternative explanation is that sophisticated investors, such as merger arbitrageurs, are able to anticipate which companies will be the targets of a takeover, and this anticipation gets reflected in the target company's share price.

This paper examines these competing explanations using a sample of 420 Canadian takeovers that took place from 1985 to 2002. Existing studies of takeovers in Canada and abroad consistently document a run-up in the target firm's shares before the takeover bid is made public (pre-bid run-up). We document the size and extent of these pre-bid run-

ups for Canadian targets and describe the price and volume dynamics of the target firm's shares ahead of the first public announcement.

Illegal insider trading is an important policy issue facing Canadian capital markets. Insider trading is defined as trading by managers and board members in the stock of their own firms. Over the 1990s, regulators in 53 countries adopted securities laws restricting when and how corporate insiders may trade in a firm's shares (Bhattacharya and Daouk 2002). These laws make it illegal for insiders to trade while in possession of material, non-public information, or to share this information selectively with other investors. Instead companies are required to disclose material information through a press release so that all investors have an equal opportunity to trade on this information. Illegal insider trading may undermine investor confidence, increase the rate of return demanded by less-informed investors, reduce liquidity in secondary markets, raise the cost of capital for firms, and ultimately hurt public welfare by reducing economic growth.

Enforcement lacking

While the United States has pursued a number of high-profile cases under insider trading laws that have generated large penalties and even jail terms, similar evidence of enforcement has been lacking in Canada. McNally and Smith (2003) detail the enforcement record of insider trading prosecutions in Canada, and find the number of cases is small, the

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average case takes four years to be settled, and the penalties are generally far below the profits earned. This lack of enforcement has contributed to the impression among both domestic and foreign investors that illegal insider trading is a problem in Canadian capital markets (Canada 2003; Insider Trading Taskforce 2003). A 2004 survey of Canadian equity trading practices conducted by Market Regulation Services Inc., the independent regulator for Canadian equity markets, listed illegal insider trading and manipulative and/or deceptive trading as the top two risks facing Canadian markets.² The report of the Task Force to Modernize Securities Regulation raised similar concerns about Canada's enforcement record.³

Pre-bid run-ups may be caused by market anticipation, illegal insider trading, or some combination of both (Jabbour et al 2000). The market anticipation hypothesis argues that investors anticipate a takeover bid for a company based on rumours in the press, an analysis of industry trends, or factors specific to a company, such as financial distress. This market anticipation—whether accurate or not—becomes incorporated into prices through trades, leading to a run-up ahead of the takeover announcement. The alternative hypothesis is that pre-bid run-ups are due to information leakage associated with illegal insider trading. In this scenario, the increase in the stock price ahead of the bid announcement is caused by insiders—either the firm's managers, its controlling shareholders, or its advisers—who trade illegally to profit from the price jump when the takeover is announced. U.S. studies of prosecuted cases of illegal insider trading support this view. These studies document that illegal insider trades are accompanied by abnormal returns and abnormal trading volume on the same day (Cornell and Sirri 1992; Meulbroek 1992). Court evidence further suggests that illegal insider trading typically takes place far ahead of the announcement, as insiders seek to avoid the period shortly before the announcement when regulatory

scrutiny is highest.

We examine 420 takeover bids of publicly listed Canadian firms from 1985 to 2002. We describe and quantify the extent of pre-bid run-ups, and benchmark the Canadian results against results from studies of U.S. takeovers. We propose a test to differentiate between competing explanations of run-ups based on the coincidence of abnormal returns and abnormal volume, and the timing of the pre-bid run-up relative to the first public announcement. On average we find that the price and volume dynamics are more consistent with market anticipation for the average takeover target in our sample, although we cannot dismiss the possibility of illegal insider trading in any individual deals that we study. We also find that the timing and magnitude of pre-bid run-ups are similar in Canada and the United States, suggesting that markets are behaving in the same way on both sides of the border.

Sample and methodology

We purchased data on all takeover bids of Toronto Stock Exchange (TSX)-listed firms that were completed or withdrawn between January 1985 and December 2002. We exclude spin-offs, transactions that did not involve a purchase of a controlling stake, and privatizations. We collected market data on total returns and trading volume from the TSX-Canadian Financial Markets Research Centre (TSX-CFMRC) database. After removing transactions where the stock was illiquid or basic data on the target was not available, the final sample size is 420 transactions.

We used news searches of major newspapers and newswires to identify the “news-adjusted” announcement date, which represents the first date at which reliable information about the takeover bid was made public. About one-quarter of the bids have an announcement date prior to the

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formal takeover bid disclosed in a press release. We also identified media stories about rumoured takeover deals, where rumours are stories that name the target but do not provide any specific information about the acquirer or the terms of the transaction. On average about one in seven takeovers are rumoured in the press prior to the announcement, with the number increasing noticeably through the late

1990s, reaching a peak of one in four deals in 1999.

The average market capitalization of a takeover target in our sample is \$537 million, with a median value of \$92 million, and a standard deviation of \$1,589 million. The average share price is \$9.60, with a median price of \$5.40. Only 12% of the firms in our sample are penny stocks, with an average closing share price of less than \$1. Our results are robust if we exclude these firms. In 77 out of the 420 takeovers, the acquiring firm purchased a toehold in the target firm's shares. In these cases, the mean (median) toehold in the target firm's shares was 22% (15%).

To differentiate between the causes of pre-bid run-ups, we examine trading patterns ahead of the

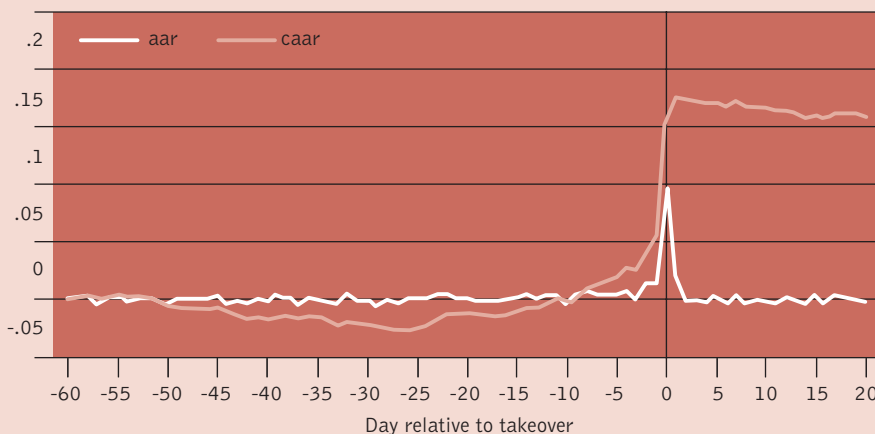
announcement consistent with the approach used by regulators when monitoring markets around major corporate events. We outline what price and volume dynamics we would expect to find if the pre-bid run-up is due to market anticipation. Our expectations are based on a review of theoretical models of informed trading, and empirical studies of trading volume ahead of scheduled and unscheduled events. These studies find that trading volume increases ahead of earnings announcements, dividend changes, or takeovers, without generating a price reaction due to the contrasting expectations of investors. By comparison, studies of prosecuted U.S. cases of illegal insider trading consistently find illegal insider trades are associated with abnormal returns and abnormal volume on the days when insiders trade. Provided that the Canadian and the U.S. markets have similar market structures and institutions, illegal insider trades may be expected to generate the same effects in Canada as they do in the United States. These characteristics may allow us to differentiate between market anticipation and illegal insider trading.

We conduct a standard event study of abnormal returns and trading volume in the target firm's shares ahead of the first announcement of a takeover. The aim is to determine how the event affected the stock by comparing actual stock price movements to what changes might have been expected if the event had

not taken place. For each takeover in our sample, we set the date of the first public announcement of the takeover as day 0. We then study trading over the 250 trading days prior to and the 60 trading days following the takeover announcement, denoted [-250,60]. For each day, we calculate a daily abnormal return (AR), which represents the portion of the daily stock return that is not related to movements in either the S&P/TSX Composite Index or the industry sub-index to which a company belongs. While any firm may exhibit abnormal returns on a given day as news reaches the market, these abnormal returns should follow a random walk and exhibit both positive and

fig. 1

AVERAGE ABNORMAL RETURNS (AARS) AND CUMULATIVE AVERAGE ABNORMAL RETURNS (CAARS) IN PERCENT FOR 420 CANADIAN TAKEOVER BIDS FROM 1985 TO 2002



negative returns. Abnormal returns for a given bid are aggregated and averaged across the 420 takeovers in our sample to generate an average abnormal return (AAR). By summing these average abnormal returns over different windows, we calculate a cumulative average abnormal return (CAAR) that can be used to identify whether this group of takeover bids systematically outperformed or underperformed the stock market. We test to see whether these average and cumulative average abnormal returns are statistically different from zero using both the average and the median of the sample distribution. We conduct a similar analysis of trading volume using average abnormal share turnover for each of the 420 takeover announcements in our sample.

Magnitude of run-ups

Figure 1 plots the average abnormal returns (AARs) and the cumulative average annual returns (CAARs) for the 420 takeovers in our sample. On average the target firms underperform the market, as seen by the CAAR dipping below 0 over the period [-60,-25]. The CAAR then rises in the five trading days before the announcement and jumps noticeably at the announcement date. When we analyze the price and volume dynamics underlying this graph, we find that both positive and statistically significant abnormal returns accompanied by positive abnormal volume only occur shortly before the first public announcement. Increases in share turnover in the target firm's stock begin far ahead of the announcement, although this high abnormal volume is not associated with high abnormal returns until close to the announcement date. In the weeks ahead of the announcement, we find a pattern of return reversals with abnormal returns that fluctuate around zero, consistent with a random walk. The target's stock price reacts significantly to the actual announcement, exhibiting both positive and negative abnormal returns accompanied by very high abnormal volume. On average, one-third

ABNORMAL RETURNS FOR 420 CANADIAN TAKEOVERS FROM 1985 TO 2002

Average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) are estimated using a market model where the CFMRC Equal Weighted Index is the proxy for the stock market. Natural resource firms consist of target firms engaged in exploration, production and transportation of oil, gas, minerals, metals and other commodity-related products. The Run-Up Index is the percentage of the total run-up that occurred before the announcement day, equal to CAAR [-20,-1] / CAAR [-20,1]. Statistical significance is based on a 1-tailed z-test.

Period	(1) Main sample	(2) Natural resource firms	(3) Non-natural resource firms	(4) Deals announced 1985-1997	(5) Deals announced 1998-2002
AARs (%):					
-1	1.55***	1.13***	2.09***	1.43***	1.66***
0	9.76***	8.48***	11.42***	8.40***	11.03***
1	2.11***	1.96***	2.29***	2.25***	1.97***
CAARs (%):					
[-60,20]	15.90***	12.78***	19.86***	10.07***	21.41***
[-20,-1]	6.95***	5.80***	8.39***	4.77***	9.05***
[-10,-1]	5.62***	4.79***	6.68***	5.24***	6.00***
[0,1]	11.87***	10.42***	13.71***	10.65***	13.00***
[2,20]	-1.62	-0.8	-2.68*	-2.24*	-1.03
Run-Up Index	32.3	23.1	39.2	13.5	42.1
*** indicates significance at 1% and * at 5% from a one-tailed z-test.					

of the price reaction to the takeover announcement occurs prior to the announcement.

Table 1 provides results for different event windows and different groupings of firms. Column (1) covers the whole sample, and shows that the average takeover has an abnormal return of 9.76% on the day of the announcement, with an abnormal return of approximately 2% on the day before and the day after the announcement. When we accumulate abnormal returns over the window [-60,20], we find that an investor with perfect knowledge could have outperformed the market by 15.90%. About one-third of this pre-bid run-up occurs in the final two weeks before the announcement, as shown in the graph in Figure 1. The final row in Table 2 presents the "run-up index," which measures the size of the run-up prior to the announcement to the period including the announcement. The run-up index confirms that about one-third of the pre-bid run-up occurs prior to the takeover announcement.

As a sensitivity analysis, we divide our sample into

COMPARISON OF CANADIAN AND U.S. STUDIES

This table compares the cumulative average abnormal returns (CAARs) across Canadian and U.S. studies. CAAR [i,j] is the cumulative average abnormal return from day i through day j relative to the announcement day (day 0). "Total CAAR" is calculated over the window [-20,1]. "Pre-event CAAR" is calculated over the window [-20,-1]. "Announcement CAAR" is calculated over the window [0,1]. The Run-up Index is the percentage of the total run-up that occurred before the announcement day, equal to CAAR [-20,-1] / CAAR [-20,1].

	This study	Jabbour et al. (2000)	Keown and Pinkerton (1981) ¹	Jarrell and Poulsen (1989) ^{1,2}	Sanders and Zdanowicz (1992) ³	Meulbroek (1992) ⁴	Ascioglu et al. (2002) ⁵
Country	Canada	Canada	U.S.	U.S.	U.S.	U.S.	U.S.
Sample Period	1985-2002	1985-1995	1975-1978	1981-1985	1978-1986	1980-1989	1995
Sample Size	420	128	194	172	30	145	50
Total CAAR [-20,1]	18.9	12.7	25.7	28.3	29.5	30.6	20.6
Pre-event CAAR [-20,-1]	7.0	5.5	12.2	11.0	8.1	13.0	14.2
Announcement CAAR [0,1]	11.9	7.1	13.5	17.3	21.4	17.6	6.4
Run-up Index	37.0	43.8	47.6	38.9	27.5	42.5	68.9

1. Successful takeovers only.

2. Cash offers only.

3. Deals with identifiable takeover initiation date. The total CAAR is calculated from the takeover initiation date to the announcement date (day 0), the pre-event CAAR is from the takeover initiation date to day -2, and the announcement CAAR is [-1,0].

4. Alleged cases of insider trading only. The total CAAR is calculated over the window [-20,0], the pre-event CAAR is [-20,-1], and the announcement CAAR is [-1,0].

5. Takeovers of firms cross-listed on NYSE and another U.S. exchange only.

various sub-samples to investigate the impact of industry membership and the time period when the takeover bid occurred. Previous studies suggest that a clustering of takeovers in one sector or during one time period increases the ability of the market to anticipate future potential takeovers. Given the high number of takeovers in the natural resource sector, and a clustering of bids over a few key years, we expect that takeover bids in this sector might be easier for the market to anticipate. If this were the case, we would expect to find that the CAARs for natural resource takeovers should be higher than for non-resource bids that are more heterogeneous. Table 1 shows the results with oil and gas, metals, mining and forestry takeovers in column (2) and manufacturing and service sector bids in column (3). Contrary to our expectations, the run-ups for natural resource firms are much smaller—almost half the comparable run-ups for non-resource firms.

We also consider the impact of institutional changes on pre-bid run-ups. If illegal insider trading is the source of pre-bid run-ups, increased resources devoted to supervision and enforcement, together with advances in technology, should discourage this behaviour by making it easier to detect illegal trading activi-

ty ex-post. The resources devoted to monitoring and enforcement increased significantly in 1998 after the Ontario Securities Commission became self-funded. At the same time, the TSX closed its trading floor and moved all stocks to an electronic trading system. Both changes lead us to expect that pre-bid price run-ups may be smaller post-1997 than during the earlier period. Table 1 splits the sample between deals announced from 1985 to 1997 in column (4) and deals announced from 1998 to 2002 in column (5). We find that both the pre-bid price run-ups and the price jump over the event window were larger for takeovers announced after 1997. This finding, together with the finding that more media rumours are observed over this period, suggests that market anticipation has increased—possibly due to improvements in market transparency and information dissemination.

Canada versus U.S.

Table 2 compares the results for this sample against other studies of U.S. and Canadian takeovers. The U.S. studies span different periods and include various types of transactions, but the figures reported are relatively consistent. The U.S. takeovers increase in value by 20% and 30%, including the announcement

date, while the Canadian bids are below 20%. The run-up index for the U.S. deals range from 28% to 69%, while the Canadian studies are around 40%. The magnitude and timing of pre-bid run-ups for the Canadian sample are very similar in magnitude to run-ups documented for U.S. takeovers, suggesting that stock prices react in the same manner in both countries.

Conclusion

We find evidence of pre-bid run-ups in a sample of 420 Canadian takeovers, consistent with similar studies of U.S. takeovers. In our study pre-bid run-ups occurred shortly before the first public announcement and were of comparable magnitude to run-ups ahead of U.S. takeovers. The size of price run-ups increased in our sample for deals announced after 1997, during a period when greater resources were devoted by regulators to the monitoring of markets and the enforcement of insider trading regulations. Contrary to our expectations, run-ups were lower for firms in the natural resource sector, despite the clustering of deals in this sector.

Based on the pattern of run-ups, the absence of abnormal volume on days with abnormal returns, and the timing of the run-up shortly before the announcement date, we conclude that pre-bid run-ups for the average Canadian takeover in our sample are consistent with market anticipation, and reject an explanation based on illegal insider trading. While this conclusion applies to the average takeover bid in our sample, we cannot dismiss the possibility of illegal insider trading in any of the individual takeovers in our sample. Our results depend on the assumption that illegal insider trading in Canada follows patterns that have been documented using prosecuted cases of illegal insider trading from the United States. We have not studied prosecuted Canadian cases, but plan to look at this question in future research. If the Canadian institutional setting or behaviour of insiders in Canada is very different than from the United States, then the most our results can show is that price and volume dynamics ahead of an announcement are not a reliable mechanism for identifying illegal insider trading. As one knowledgeable Canadian institutional investor wrote

us, “To believe that the run-up of stocks two to three weeks before an announcement is just the result of intelligent investors, private or institutional, strikes me as naïve. Sometimes it may possibly occur, but I would rather call that an exception”. This scepticism may be warranted given the enforcement record in Canada, but this research has not found concrete evidence to support it. ■

Endnotes

1. Gretchen Morgenson, “M&A study shows suspicious trading spikes; Shares of acquired companies see flurry of activity before deals become public” *New York Times*, 28 August 2006.
2. Market Regulation Services Inc. Notice, “Results of the RS survey on Canadian equity trading practices”, October 22, 2004, 3 pages.
3. The full report can be downloaded at: <http://www.tfmsl.ca/>.

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