

**Stock Market Performance of  
Cross-Border Mergers and Acquisitions:  
The Canadian Evidence**

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**Abstract**

Our study follows in the wake of scientific research that traces the impact of international mergers and acquisitions (M&As) on the acquiring firm's shareholders. Our study makes a unique contribution to evaluating both the short- and long-term financial performance of acquiring firms and to detecting the determinants of their long-term success.

Our short-term study is based on 598 M&As. It reveals that Canadian acquiring firms generate significant positive abnormal returns of 1.39% from the day of an M&A announcement up to two days thereafter, which indicates that Canadian financial markets react favourably to this type of activity.

With regard to long-term performance, we use a sample of 315 events. Our sample shows no sustained gain or losses during the post-acquisition period. Sub-dividing our sample into sub-groups, we find evidence in favor of the internalization theory. Furthermore, we find that large firms and those who show high book-to market values and the ones that have had prior acquisition experience tend to outperform their counterparts. On the other hand, contrary to popular findings in domestic M&A research, we find that cash payment results in poor performance.

## Introduction

Cross-border mergers and acquisitions (M&As) have become a growing trend in recent years. According to the 2001 report on international investments published by the United Nations Commission on Trade and Development (UNCTAD), Canada ranked fifth in foreign investment growth for the 1995- 2000 period. Table 1 presents the ten countries with the most foreign growth for 2000. Canada showed far more geometric foreign investment growth than did the United States, i.e. 30.9% compared to 8.6%. It should also be noted that, at 26.5%, Canadian growth outstripped average world growth. The total value of Canadian investments abroad peaked at over \$44 billion in 2000. According to Kang and Johansson (2001), over 85% of foreign investments stemmed from M&As. Since the mid-80s, cross-border M&As, not greenfield-type<sup>1</sup> investments, have been the means favoured by companies to establish themselves in foreign markets.

**Table 1**  
**Foreign Investment Growth<sup>2</sup>**

	In \$ Millions US						Growth
	1995	1996	1997	1998	1999	2000	
<b>Spain</b>	4 076	5 397	12 626	18 926	42 084	53 716	67.5%
<b>France</b>	15 756	30 420	35 583	48 612	120 617	172 478	61.4%
<b>Belgium and Luxemburg</b>	11 603	8 026	7 252	28 675	122 304	82 977	48.2%
<b>U.K.</b>	43 562	34 047	61 590	121 794	205 795	249 794	41.8%
<b>Canada</b>	11 464	13 097	23 066	34 584	18 415	44 047	30.9%
<b>Netherlands</b>	20 201	32 115	24 607	37 424	61 264	73 054	29.3%
<b>Switzerland</b>	12 210	16 152	17 732	18 767	35 952	39 623	26.5%
<b>China</b>	27 000	28 645	26 970	19 607	21 114	65 360	19.3%
<b>Other countries</b>	78 289	88 425	119 037	163 940	125 891	181 040	18.3%
<b>United States</b>	92 074	84 426	95 769	131 004	142 551	139 257	8.6%
<b>Germany</b>	39 049	50 804	41 798	88 581	109 795	48 557	4.5%
<b>World</b>	355 284	391 554	466 030	711 914	1 005 782	1 149 903	26.5%

<sup>1</sup> The term *greenfield* refers to the purchase of land and the construction of buildings when a firm is established.

<sup>2</sup> Taken from the report on world investment (2001), published by the United Nations Conference on Trade and Development (UNCTAD).

In addition to generating efficiency gains, cross-border M&As may enable firms to meet international competition and to increase the value of their intangible assets (trademarks, specialized labour and technologies, etc.) in foreign markets. Despite this growth in cross-border M&A activity, many researchers are struck by the lack of studies which examine their impact on the wealth of shareholders.

Our initial samples are comprised of 607 M&A events for short-term financial performance and 315 M&A events for long-term financial performance. The temporal horizon of events was spread over sixteen years, i.e. from 1985 to 2000 inclusively. Several methodologies are used to ensure robustness of the results.

Our document is organised as follows: the first section presents the conceptual framework of our study; the second section presents the data and methodologies we used; and subsequent sections present our empirical results and conclusions.

## **Conceptual Framework**

The first conceptual framework of our study involves multinational firms. According to this theory, cross-border M&As may help create value for acquiring firms if such firms tap into their expertise and know-how on international markets (internalization theory of Buckley and Casson, 1976 and Rugman, 1981); benefit from financial market imperfections which lower investment and operating costs, such as exchange rates, (Aliber, 1970, 1978); and reduce their risk of business failure through greater income diversification (Agmon and Lessard, 1977; French and Poterba, 1991).

Conversely, for agency and hubris theorists, such operations may destroy value. From this perspective, M&As are a way for managers to expand their empire, and thus, their remuneration or non-cash benefits, which are often associated with the size of the firms managed (Jensen and Meckling, 1976). Furthermore, some managers carry out M&As to entrench themselves in the firm. Even if such projects are not profitable from a financial perspective, such managers invest in areas that make their specific skills indispensable, in order to obtain higher remuneration and to diminish the likelihood of being replaced (Shleifer and Vishny, 1989). According to the hubris theory, too much confidence, pride and arrogance on the part of some decision-makers may lead them to overestimate synergistic gains and to place excess value on the target firm (Roll, 1986; Hayward and Hambrick, 1997).

The results of scientific studies on intranational M&As tend to indicate that the lion's share of potential gains will go to the target rather than the acquiring firms (Jensen and Ruback 1983; Bhagat, Shleifer and Vishny, 1990 and Eckbo and Thorburn, 2000). Generally, the latter firms either realize no gains or show a significant reduction in value. Given the current M&A trend, this phenomenon is a true enigma.

Yet, despite the growing increase in such events, relatively few researchers have looked into the financial performance of cross-border M&As. Moreover, the results of U.S. studies on the short-term financial performance of cross-border M&As are contradictory. Specifically, studies by Doukas and Travlos (1988), Kang (1993), Markides and Ittner (1994) and Markides and Oyon (1998) reveal that cross-border M&As generate significant announcement gains, but, according to Cakici et al. (1996), Seth et al. (2000) and Eckbo and Thorburn (2000), this is not the case. These studies identify a few specific factors that shape this type of M&A: the level of intangible asset internalization; entry into a new country and new industry; relative strength of the dollar of the acquiring firm's country; the level of economic development and taxation in the target country.

It would appear that research in this area is at an exploratory stage. There does not seem to be a clear consensus on what impact cross-border M&As may have on the wealth of the acquiring firm's shareholders or on key factors determining the financial performance of such operations. Nor are we aware of any study on the long-term financial performance of cross-border M&As.

Studies on long-term financial performance are aimed at evaluating the extent to which gains reported by financial markets when the M&A is announced are later maintained. In theory, the market value of these firms should not fluctuate abnormally, i.e. notwithstanding their respective risk and in a manner comparable to similar firms that have not carried out an M&A.

Several U.S. studies have examined the long-term financial performance of acquiring firms for intranational M&As. The long-term returns are estimated with stock market data for the three- to five-year period after the M&A announcement. The results obtained are contradictory, which tends to demonstrate that efficiency and synergistic gains are not always fully realized. Jensen and Ruback (1983) and Agrawal, Jaffe and Mandelker (1992) suggest that acquiring firms undergo losses, while Loderer and Martin (1992), Loughran and Vijh (1997), and Mitchell and Stafford (2000) obtain virtually no abnormal returns. Furthermore, Franks, Harris and Titman (1991) and Rau and Vermaelen (1998) obtain different results depending on the methodologies used or the subsets considered.

Do shareholders increase their wealth when their corporate managers carry out cross-border M&As? Are the value gains or losses recorded by financial markets around the announcement date maintained during the post-acquisition period? What key factors determine the success of the acquiring firm's financial performance in a cross-border M&A? The purpose of this study is to attempt to answer these questions within the context of cross-border M&As initiated by Canadian firms. Our study helps fill the void on cross-border M&A studies by evaluating the short- and long-term financial performance of acquiring firms and by identifying factors that determine their long term success.

## **Data and Methodology**

Our data set of cross-border Canadian M&As is obtained from the Securities Data Corporation (SDC) Worldwide M&A database run by Thomson Financial. The stock market returns are obtained from the Canadian Financial Markets Research Center (CFMRC) database. This organization provides the historical daily and monthly returns for firms listed on the Toronto Stock Exchange (TSX). Two market indices are also calculated: an Equal Weighted Index and a Value Weighted Index. Both indices regroup all common shares listed on the TSX issued by Canadian-based firms.

Our accounting data are obtained from the Stock Guide database, a monthly publication of raw accounting data and financial ratios taken from the latest financial reports of firms listed on the TSX. This database also lists the market value and the number of outstanding shares as of the end of the last fiscal period. We used the product of the latter two data as a substitute for firm size within the framework of our long-term study.

In our sample, 53% of the transactions involved the acquisition or exchange of shares and 47%, the acquisition of the target's assets. Of the share transactions, 30% consisted in takeovers and 23%, partial participations. Furthermore, the Thomson Financial database listed only one event from our sample as a tender offer.

With regard to the target firm managers's reactions to M&A announcements, 91% were qualified as friendly, 8% as neutral and 1% as hostile. Furthermore, 39% of the transactions were paid for in cash, 8% in shares and 9% in cash and shares. In 44% of the cases, the mode of payment was categorised under "other mode of payments." Our sample features M&As carried out in 63 countries, with a heavy concentration in the U.S.

Table 2 shows the selection process used for our short- and long-term study. Our short-term study covers 607 M&As carried out by 385 acquiring firms from January 1985 to December 2000. We extracted 2,060 cross-border M&A events carried out by firms listed on the TSX from the SDC database. Of this number, we eliminated 125 events for which the stock symbols were incorrect. We also eliminated 1,047 events whose estimation period overlapped with a prior event period for the same firm. When an estimation period overlaps with a prior event period for the same firm, a part of the returns that would be used to estimate the market model parameters are said to be contaminated by the prior event. In such cases, we only kept the first event of an overlapping series. Finally, we eliminated 281 events for which the number of available returns in the CFMRC database was insufficient. When the closing price is not available for a given period, returns for this period are reported missing in the CFMRC database. We eliminated all cases where the estimation period did not include at least 100 valid returns or where there were no valid returns during the event period.

Our long-term study involves 315 M&As carried out by 292 acquiring firms from January 1985 to December 1999. Of these 292 firms, 190 were still listed on the TSX as of December 1999 while the others had been delisted. We extracted 2,060 events involving firms listed on the TSX from the Thomson Financial database. Of this number, we eliminated 125 events for which we could not find a valid stock symbol. We also removed 1,337 events whose event period overlapped a later event period for a same firm. When an event period overlaps with a prior event period for the same firm, a part of their long-term returns are said to be contaminated by the latter event. In such cases, we only kept the last event of an overlapping series. Event periods begin the month following the M&A announcement month and end 60 months later. We excluded all events, 133 in all, that took place after November 1999, in order to keep only cases where we could calculate annual returns for the first year following the M&A announcement month. We also removed 117 events for which there was no accounting data available in the Stock Guide database. Finally, we eliminated 33 events that were reported by Thomson Financial as not completed following the announcement.

**Table 2**  
**Selection of Events**

	<b>Short Term Study</b>	<b>Longt Term Study</b>
Number of events extracted from the SDC data base	2 060	2 060
Not found in CFMRC data base	(125)	(125)
Estimation period overlapping with a prior event period for the same firm	(1 047)	
Events overlapping a latter event for the same firm		(1 337)
Number of available returns in the CFMRC data base is insufficient	(281)	(133)
Financial data not available in Stock guide data base		(117)
M&As not completed		(33)
Valid Events	607	315

### **Short-Term Study**

With regard to short-term financial performance, we evaluate expected returns with the market model, using the TSX Equal Weighted Index supplied by CFMRC. Barber and Lyon (1997a) favour the use of an equal weighted market portfolio. Attributing equal weight to each observation helps to better identify abnormal returns by balancing the effects arising from small and large firms. The market model, the most commonly used event study method for pinpointing abnormal returns, can be described as follows:

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

The market model attributes a stock return to two components: the systematic risk represented by the linear relationship between stock returns and market returns as measured by the beta coefficient  $\beta_i$ , and the specific or abnormal risk to the firm represented by the  $\varepsilon_i$  error term.



We calculate abnormal returns for several periods over a span of some 30 days around the M&A announcement date. We use 255 day/returns from the 31<sup>st</sup> day before the announcement date to estimate the parameters of our benchmark model. This estimation period more or less represents the number of days in which the financial markets were open in a year and it corresponds to what is generally used in event studies<sup>3</sup>.

We reserve the 30-day period before the announcement date up to 30 days thereafter to evaluate the abnormal returns generated by the events in our sample. This 61-day event period minimises the impact of abnormal returns on the estimation period while maximizing the probability of capturing the total short-term effects of the events.

We perform several statistical parametric tests that alleviate some possible statistical biases. The time series standard deviation method considers eventual covariances between abnormal share returns. Used by Brown and Warner (1980 and 1985), this method consists in building a statistical test using the mean abnormal return standard deviation observed during the estimation period.

The cross-sectional standard deviation method proposed by Charest (1978b) considers the eventual variance shift during the event period. Beaver (1968) suggests that the variance observed during the event period is usually higher than that observed during the estimation period. This method consists in building a statistical test using the cross-sectional mean abnormal return standard deviation of firms observed at time t during the event period. This method considers the eventual variance shift during the event period as compared to the estimation period.

The standardized abnormal returns method proposed by Patell (1976) treats the heteroscedastic nature of the firms' abnormal return variances, so that shares with high variances do not unduly influence the statistical tests. This measurement consists in standardizing abnormal share returns using their respective standard deviations during the event period, before grouping them.

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<sup>3</sup> We use Eventus to calculate and test short term abnormal returns. This software was developed by Cowan Research, L.C. Professor Arnold Cowan, a well known researcher in corporate finance and event study methods, is founder of Cowan Research, L.C.

In addition to considering heteroscedasticity between shares, the standardized cross-sectional abnormal returns method enables variance increases to be controlled during the event period. Brown and Warner (1980 and 1985) note that variance shifts during the event period occur unevenly between firms. Abnormal share returns are affected differently by the event under study, which creates event-induced heteroscedasticity. Boehmer, Musumeci and Poulsen (1991) offer a solution to this problem with the standardized cross-sectional abnormal returns method. These authors first standardise the abnormal returns as Patell does (1976) and then use the cross-sectional standard deviation of these standardized returns to conduct their statistical tests. This way, the presumed variance increase during the event period is considered proportionally for each share.

The methods presented so far are said to be parametric because they are based on precise hypotheses with regard to the statistical distribution of abnormal returns. The abnormal returns must follow a normal distribution in order to optimise the previously presented tests. Non-parametric tests help measure the significance level of abnormal returns without requiring that they follow a specific statistical distribution. This type of test usually serves to verify the robustness of the results stemming from parametric-type analyses. We perform a non-parametric test: the generalized sign test (GST) recommended by Cowan (1992). This test verifies if the number of shares with positive CAARs during the event period is greater than the rate observed during the estimation period.

### **Long-Term Study**

The methodology of short-term event studies is relatively old (Fama et al., 1969), well known and mastered by accounting and finance researchers; the same is not true for long-term studies aimed at evaluating the extent to which gains reported by financial markets at the time of an M&A announcement are later maintained. In their methodological works, Kothari and Warner (1997), Barber and Lyon (1996, 1997a), Lyon, Barber and Tsai (1999) and Mitchell et Stafford (2000) specifically question the validity of the usual parametric tests for detecting abnormal long-term returns. According to Barber and Lyon (1997a), the results obtained through these methods are very sensitive to financial performance calculation and benchmark methods. Lyon, Barber and Tsai (1999) recommend using and comparing several methods to ensure robust results.

We use two methodologies to calculate the long-term financial performance of our sample firms. We evaluate annual abnormal returns for up to five years after the M&A's announcement. We calculate annual abnormal returns using the BHAR method for a period of five years from the month following

the announcement month. First, we use the control firm in the event-time approach proposed by Barber and Lyon (1997a) and Lyon, Barber and Tsai (1999). As recommended by these authors, we use the size and the book-to-market (BM) ratio to select and match similar firms. We also use the industry as an additional criterion to obtain more precision in our matching. As proposed by Brock, Lakonishok and LeBaron (1992) and Ikenberry, Lakonishok and Vermaelen (1995), we perform an empirical bootstrap of abnormal returns generated by these methods to determine the level of statistical significance. Moreover, in accordance with Jaffe (1974), Mandelker (1974), Fama (1998) and Mitchell and Stafford (2000) we use the calendar time - Fama & French Three Factor Model to minimize problems related to the cross-sectional dependence of the returns.

### **Determinants of Long-Term Performance**

In a recent meta-analysis, King et al. (2004) conclude that “empirical research has not consistently identified antecedents for predicting post-acquisition performance” and that “there is very little overlap across studies in the variables used to explain post-acquisition performance.” Using the two methodologies described above, we shall try to address these two questions. We divide our sample into subgroups in order to identify the factors that significantly influence the abnormal returns observed during the post-acquisition period. Our financial factors are taken from the latest financial reports before the M&A announcement. The variables that we use are the following:

*Target Country Level of Development.* This variable refers to the economic development level of the target countries. We divide our sample between M&As where the target firm is in a developing country or in a developed country. The level of development of countries is drawn from the World Investment Report, (UN, 2001). According to Doukas and Travlos (1988), the acquiring firms’ abnormal returns are higher when they carry out M&As in developing countries.

*Level of Intangible Assets and Level of Research.* Level of intangible assets is the ratio of intangible assets to total assets. Level of research is the ratio of research expense to total revenue. These factors aim at verifying the relevance of the internalization theory in Canada. The empirical studies of Morck and Yeung (1992) and of Markides and Oyon (1998) reveal that acquiring firms with high levels of intangible assets generate value for their shareholders in cross-border M&As. These results are in accordance with the internalization theory of Buckley and Casson (1976) and Rugman (1981).

*Prior Acquisition Experience.* This variable identifies firms that have made at least one cross-border M&A between 1985 and 2000, prior to the one included in our sample. Prior acquisition experience may enhance the managers ability to evaluate potential synergies, deal with cultural differences and avoid integration problems. As noted by King et al (2004), “consistent findings on the relationship between acquisition experience and post-acquisition performance does not exist.”

*Related Firm.* This variable captures the similarities between the acquirer and the target. Firms are said to be related when the target firm operates in the same industry as the acquiring firm. We use the first two numbers of the SIC code from the Thomson Financial database to identify the industry. According to Markides and Ittner (1994), horizontal cross-border M&As positively influence the abnormal returns generated by U.S. acquiring firms.

*Q Ratio.* This ratio consists of the book value of the long-term debt and the preferred shares, combined with the market value of the common shares, divided by total assets. According to Chung and Pruitt (1994), this ratio has a 97% correlation rate with the more formal method of calculating Tobin’s Q as per Lindenberg and Ross (1981). This factor is an indicator of the quality of management. A ratio greater than 1 indicates that the firm’s investment decisions are favourably perceived by financial markets. According to Doukas (1995), acquiring firms with strong Q ratios obtain returns that are substantially higher than those with low Q ratios.

*BM Ratio.* According to Rau and Vermaelen (1998), the post-acquisition performance of value firms (high BM ratio) is better than that of glamour firms (low BM ratio). Both the market and management tend to over-extrapolate the acquiring firm’s past performance when assessing the benefits of an acquisition. This overvaluation results in a poor post-acquisition performance once the market becomes aware of the error. The opposite reasoning applies to value firms.

*Cash on Hand.* This factor is obtained by dividing the cash on hand by sales. Firms which hold major cash amounts are sheltered from effects of the discipline imposed upon them by financial markets. According to Jensen’s free cash flow theory (1986), such firms tend to make bad investments to the detriment of shareholders.

*Method of Payment.* Acquisitions fully paid in cash or with a mix of shares and a cash payment are classified as cash payment, otherwise they are considered non cash payment. Loughran and Vjih (1997) conclude that the cash payment method has a positive impact on the value of acquiring firms.

*Size of Acquiring Firm.* We measure the size of the acquiring firm by the magnitude of its revenue as measured by the natural logarithm of total revenues. Following Markides and Ittner (1994), we use this variable to identify the impact of the acquiring firm's size on the abnormal returns generated. Eckbo and Thorburn (2000) suggest that the gains obtained are highly diluted when the size of the acquiring firm is relatively large compared to the target firm.

## **Results and Analysis**

### **Short-Term Study**

Table 3 shows the cumulative average abnormal returns (CAAR) we calculated using the market model as benchmark and the results of the statistical tests for different periods around the announcement date.

**Table 3**  
**Short-Term Study**  
**Cumulative Average Abnormal Returns and Statistical Tests**

Abnormal Returns			Statistical Tests				
Periods	N	CAAR	TSSD	CSSD	SAR	SCS	GST
(-5,-5)	559	-0.66%	-2.070*	-0.952	-0.666	-0.606	0.412
(-4,-4)	561	0.39%	1.221	1.639\$	1.401\$	1.189	1.267
(-3,-3)	562	-0.02%	-0.049	-0.055	2.067*	1.775*	1.058
(-2,-2)	569	0.44%	1.383\$	1.381\$	-0.186	-0.159	0.277
(-1,-1)	567	0.32%	0.997	1.394\$	0.687	0.474	-0.067
(0,0)	567	0.80%	2.500**	2.897**	3.301***	2.360**	2.800**
(0,+1)	588	1.35%	2.993**	2.996**	6.584***	4.503***	3.446***
(0,+2)	598	1.39%	<b>2.520**</b>	<b>2.325*</b>	<b>6.165***</b>	<b>3.937***</b>	<b>4.192***</b>
(0,+3)	599	0.88%	1.388\$	1.311\$	3.501***	2.093*	2.592**
(0,+4)	601	0.52%	0.731	0.637	2.884**	1.916*	2.677**
(0,+5)	603	0.47%	0.597	0.673	2.425**	1.535\$	2.189*

CAAR : Cumulative average abnormal returns  
TSSD: Time series standard deviation  
CSSD : Cross-sectional standard deviation  
SAR: Standardized abnormal return  
SCS: Standardized cross-sectional  
GST: Generalized sign test  
Significance levels of unilateral tests: \$ = 0.10, \* = 0.05, \*\* = 0.01, \*\*\* = 0.001.

Based on 598 events, our statistical tests show, with a very high significance level for several tests, that Canadian acquiring firms generated significant positive abnormal returns of 1.39% from the day of the announcement up to two days thereafter. Our results indicate that Canadian financial markets react favourably to this type of activity. Figure 2 illustrates the evolution of CAAR around the announcement date.

## **Long-Term Study**

We use two methodologies to evaluate long-term abnormal returns: first, the control firm in event time approach; second, the calendar time - Fama & French Three Factor Model.

### **Event Time - Control Firm Method**

We calculate annual abnormal returns using the BHAR method for five years from the month following the announcement month. We consider only years/firms for which no returns are missing. For each of the firms/months in our sample, we select, from our control group, a similar firm in terms of industry, size, and BM ratio. We use the monthly return obtained by the firm whose BM ratio is closest to that of a sample firm and whose size is  $\pm 30\%$  that of a sample firm operating in the same industry. Unlike Barber and Lyon (1997a), who only use size and BM ratio to select control firms, we add the industry criterion to increase the precision of our matches. For a specific industry, when our control group does not contain a firm whose size is within our prescribed range, we select, from among all firms in the industry, the firm with the BM ratio that is closest to that of our sample firm.

We perform the bootstrap procedure proposed by Brock, Lakonishok and LeBaron (1992) and Ikenberry, Lakonishok and Vermaelen (1995) to evaluate statistically any abnormal returns from the control firm method. To create our control firm group, we first collect the monthly returns of all shares listed on the TSX from January 1985 to December 2000, whose size values and BM ratios are found in the Stock Guide database. We then remove from this control group all firms having carried out M&As during the twelve preceding months, as well as during the 60 months following the announcement of the event. As a result, our control group has 64,623 firms/monthly returns that are not affected by M&A activities.

We create 1,000 portfolios by randomly selecting 500 firms/monthly returns from among the firms of our control group. We apply the control firm method to determine the mean abnormal returns of each of the 1,000 pseudo-samples that we randomly created. We reject the nil hypotheses stating that BHARs are nil when results are below the 2.5th percentile or above the 92.5th percentile of the bootstrap.

Table 4 illustrates the results obtained by using the control firm method. Our results show that our sample firms do not generate any abnormal returns over a period of five years after a cross-border

M&A announcement. Although the average BHARs are negative for all years, they are not significant when compared to our bootstrap results.

**Table 4**  
**Long-Term Study**  
**Control Firm Method**

	<b>Buy-and-Hold Abnormal Returns (BHAR)</b>				
	<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
	<b>Bootstrap</b>				
<b>Median</b>	-0,0316	0,0833	0,0419	-0,0413	-0,0254
<b>Average</b>	-0,0261	0,0342	0,0800	-0,1106	-0,0632
<b>Standard Deviation</b>	0,1318	0,4315	0,6506	0,5460	0,6785
<b>Skewness</b>	0,2821	-3,8485	3,1193	-1,9505	-1,0745
<b>Kurtosis</b>	3,8165	24,2784	28,3521	11,0485	7,5457
<b>Prob. - Jarque-Bera</b>	0,0000	0,0000	0,0000	0,0000	0,0000
<b>Minimum</b>	-0,4748	-3,0650	-2,6927	-4,0921	-4,0904
<b>Maximum</b>	0,5392	1,1742	7,5932	1,1295	1,6764
<b>Lower bound</b>	-0,2676	-0,8376	-0,9214	-1,5047	-1,4316
<b>Upper bound</b>	0,2678	0,5742	1,7017	0,6629	1,1368
	<b>Sample Firms</b>				
<b>Average</b>	-0,1149	-0,3790	-0,5682	-0,2979	-0,4391
<b>Percentile</b>	0,240	0,054	0,071	0,278	0,237
<b>N</b>	166	103	69	42	30



## Calendar Time - Fama & French Three Factor Model

For each calendar month in the period from January 1990 to December 2000, we calculate the abnormal returns of all sample firms having announced an M&A in the 60 preceding months. The calendar-time portfolio return is calculated on an equally weighted basis and market return is value weighted. We use the following regression to detect abnormal returns:

$$R_{pt} - R_{ft} = a_p + b_p (R_{mt} - R_{ft}) + s_p \text{SMB}_t + h_p \text{HML}_t$$

where  $R_{pt} - R_{ft}$  is the monthly excess return of the calendar-time portfolio over the risk free rate;  $R_{mt} - R_{ft}$  is the excess return required by the market over the risk free rate, as used in the CAPM; SMB (Small Minus Big), the excess return required for small firms and HML (High Minus Low), the excess return required for value firms (high BM ratios). The intercept “a” indicates the monthly average abnormal return of our M&A sample. We use weighted least squares regressions to control for the heteroskedacity potentially induced by the fact that the number of firms in our monthly portfolios varies over time. Our weights are the reciprocal of the square root of the number of firms in each month. We only consider portfolios composed of at least five firms.

Following Fama and French (1992,1993), b, s and h factors were obtained by taking all the Toronto Stock Market firms for which we found values in the Stock Guide data base and sorting them into 6 portfolios. Stocks were ranked based on their size and BM ratios. The stocks were subsequently sorted into two size groups and three BM subgroups. Firms above median size were designated “big” and firms below median, “small”. Firms in the bottom 30% in terms of BM ratio were designated “low” and those in the top 30% were designated “high”. The SMB factor (Small minus Big) represents the average excess return of small firms over big firms. The HML factor (High minus Low) represents the average excess return of value firms (high BM ratios) over glamour firms (low BM ratios).<sup>4</sup>

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<sup>4</sup> In order to validate our parameters, for every month from January 1988 to December 2000, we formed 25 portfolios using size and book-to-market ratios of all the Toronto Stock Market firms for which we found values in the Stock Guide data base. Every month, we ranked and sorted all firms into five groups based on size and into 5 subgroups based on BM ratio. Every month, we ran 25 regressions of the Fama & French three factor model. We used 91-day Canadian Government Treasury Bills as a proxy for the risk free rate (Rf). Our results show that the SMB and HML factors that we use are significant drivers of excess returns for Canadian firms.

Table 6 illustrates the results obtained by using the calendar time - Fama & French three factor model. We obtain significant negative alpha coefficients for the first four years and a non significant negative alpha for the full period of five years. These negative abnormal returns are somewhat low, when compounded over 12, 24, 36, 48 and 60 months respectively, we obtain cumulative returns of -3.17%, -5.42%, -5.54%, -4.91% and -4.29%.

**Table 5**  
**Long-Term Study**  
**Calendar Time Fama & French Portfolio Method**

	12 months	24 months	36 months	48 months	60 months
Alpha	-0,0026	-0,0022	-0,0015	-0,0010	-0,0007
t Stat	-2,805	-3,293	-2,910	-2,076	-1,523
P-value	<b>0,006</b>	<b>0,001</b>	<b>0,004</b>	<b>0,040</b>	0,130
R square	0,522	0,564	0,637	0,616	0,621
N	104	123	123	123	123

Looking at the abnormal returns year by year after the acquisition, our results are mixed. Our event time – control firm test shows no significant cumulative abnormal returns for any of the five years after a cross-border merger. Under the calendar time - Fama & French three factor model approach, we obtain significant negative alpha coefficients for the first four years and a non significant negative alpha for the full period of five years.

### **Determinants of Long-Term Performance**

The following tables show a summary of our results for a series of sub-samples that possess the characteristics that we described in the previous section. We divide each sub-sample into two sub-groups using the median as the cut-off point. We apply both the event time and the calendar time methods to evaluate their specific performance. Moreover, we test for any significant differences between the two sub-groups. Under the control firm method, we perform a bootstrap of all differences between every pseudo-sample produced by our previous bootstrap. From 1,000 pseudo-samples, we generate a distribution of 499,500 differences which we use to test the difference between our sub-groups. To test for differences under the calendar time method, we regress the returns on the two sub-groups on the Fama and French three factor model.

*Level of Intangible Assets and Level of Research Expense.* Our test of the internalization theory for acquiring firms in Canada comes out negative when we use the level of intangibles as a proxy but positive when we use the level of research expense. This later result is in accordance with the internalization theory of Buckley and Casson (1976) and Rugman (1981). Research expense in Canada seem to be a better proxy than level of intangibles to forecast the relative success of cross-border M&As. Tables 6 and 7 show our results. Our calendar time method shows significant negative monthly alphas for all years after an acquisition for high intangible firms. Low intangible firms do not show any significant abnormal returns. Moreover, our test of the difference between the alphas of these two groups shows significant negative alphas for the high intangibles group starting two years after the acquisition through the fifth year. Our event time approach show the same type of results, although only the fifth year BHAR is significant.

**Table 6**  
**Long-Term Study**  
**Level of Intangible Assets**

<b>LOW INTANGIBLES (1)</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	0,0416	-0,1332	-0,9002	0,0090	0,9056
	Percentile	0,715	0,163	0,026	0,546	0,938
	Nb of firms	73	45	33	18	14
CT-FF3FM	Alpha	0,0016	-0,0014	-0,0004	-0,0002	0,0002
	P-value	0,470	0,225	0,663	0,789	0,803
	R Square	0,177	0,427	0,449	0,483	0,525
	Nb of months	84	110	124	123	122
<b>HIGH INTANGIBLES (2)</b>						
Control Firm	BHAR	-0,2272	-0,8336	-0,3882	-0,7242	-2,4070
	Percentile	0,056	0,025	0,117	0,078	<b>0,008</b>
	Nb of firms	64	40	21	13	9
CT-FF3FM	Alpha	-0,0052	-0,0072	-0,0059	-0,0045	-0,0040
	P-value	<b>0,002</b>	<b>0,000</b>	<b>0,000</b>	<b>0,000</b>	<b>0,000</b>
	R Square	0,348	0,385	0,414	0,486	0,516
	Nb of months	86	97	98	97	96
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	-0,2688	-0,7004	0,5120	-0,7332	-3,3127
	Percentile	0,071	0,047	0,832	0,123	<b>0,004</b>
CT-FF3FM	Alpha	-0,0008	-0,0034	-0,0041	-0,0046	-0,0052
	P-value	0,772	<b>0,024</b>	<b>0,003</b>	<b>0,002</b>	<b>0,000</b>
	R Square	0,021	0,022	0,097	0,112	0,135
	Nb of months	76	90	97	100	98

On the contrary, high level research firms tend to perform better than low research ones. Low research firms show significant losses for post-acquisition years while high research firms experience negative alphas in year two and three only. Our control firm approach shows positive differences between the two groups in favor of the high research firms, with years one and three showing significant percentile and year five barely missing the upper bound level.

**Table 7**  
**Long-Term Study**  
**Level of Research Expense**

<b>LOW RESEARCH (1)</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	-0,3019	-0,4651	-2,1234	0,0330	-0,8457
	Percentile	<b>0,011</b>	0,042	<b>0,000</b>	0,574	0,091
	Nb of firms	44	27	12	3	2
CT-FF3FM	Alpha	-0,0058	-0,0072	-0,0059	-0,0055	-0,0065
	P-value	<b>0,012</b>	<b>0,000</b>	<b>0,000</b>	<b>0,000</b>	<b>0,000</b>
	R Square	0,305	0,343	0,443	0,439	0,400
	Nb of months	73	87	87	89	88
<b>HIGH RESEARCH (2)</b>						
Control Firm	BHAR	0,1141	-0,0541	-0,1108	0,1576	0,6751
	Percentile	0,868	0,271	0,320	0,694	0,882
	Nb of firms	49	30	23	17	10
CT-FF3FM	Alpha	-0,0022	-0,0043	-0,0035	-0,0024	-0,0019
	P-value	0,453	<b>0,019</b>	<b>0,028</b>	0,111	0,225
	R Square	0,408	0,488	0,552	0,535	0,509
	Nb of months	66	80	81	80	86
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	0,4160	0,4110	2,0126	0,1246	1,5207
	Percentile	<b>0,984</b>	0,876	<b>0,978</b>	0,581	0,953
CT-FF3FM	Alpha	0,0051	0,0029	0,0024	0,0020	0,0035
	P-value	0,110	0,208	0,218	0,307	0,091
	R Square	0,111	0,145	0,188	0,172	0,142
	Nb of months	59	76	78	80	83

*Prior Acquisition Experience.* Table 8 shows our results for this variable. Multiple acquirers do better than single acquirers. Firms that do not have prior M&A experience show negative alphas for all years following an acquisition. These firms experience a significant negative five year BHAR during post-acquisition. Our control firm approach also show that firms with prior M&A experience generate significant excess returns compared to their counterpart. This result suggests that managers get

better at evaluating potential benefits and at negotiating and realizing the synergies of cross-border M&As once they have made at least one cross-border deal.

**Table 8**  
**Long-Term Study**  
**Prior Acquisition Experience**

<b>NO PRIOR ACQ EXPERIENCE</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	-0,2346	-0,3487	-0,4096	-1,0512	-2,5217
	Percentile	0,046	0,061	0,109	0,050	<b>0,008</b>
	Nb of firms	52	35	25	16	11
CT-FF3FM	Alpha	-0,0062	-0,0050	-0,0032	-0,0028	-0,0019
	P-value	<b>0,004</b>	<b>0,002</b>	<b>0,007</b>	<b>0,006</b>	<b>0,044</b>
	R Square	0,447	0,272	0,460	0,469	0,448
	Nb of months	77	110	121	121	121
<b>PRIOR ACQ EXPERIENCE</b>						
Control Firm	BHAR	-0,0604	-0,3945	-0,6584	0,1656	0,7666
	Percentile	0,400	0,051	0,054	0,704	0,913
	Nb of firms	114	68	44	26	19
CT-FF3FM	Alpha	-0,0022	-0,0019	-0,0012	-0,0007	-0,0003
	P-value	0,196	0,055	0,137	0,316	0,638
	R Square	0,289	0,433	0,509	0,527	0,547
	Nb of months	89	113	123	123	123
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	0,1743	-0,0458	-0,2488	1,2168	3,2883
	Percentile	0,833	0,444	0,297	0,955	<b>0,995</b>
CT-FF3FM	Alpha	0,0004	0,0015	0,0002	0,0016	0,0012
	P-value	0,872	0,270	0,850	0,111	0,201
	R Square	0,049	0,048	0,107	0,104	0,104
	Nb of months	73	104	116	118	120

*BM Ratio.* Our results are in accordance with those of Rau and Vermaelen (1998): the post-acquisition performance of glamour firms (low BM ratio) is worse than that of value firms (high BM ratio). Both the market and management tend to over-extrapolate the acquiring firm's past performance when assessing the benefits of an acquisition. This overvaluation results in a poor post-acquisition performance once the market becomes aware of the error. Table 9 shows that glamour firms experience systematic significant negative alphas during the post-acquisition period while value firms show significant negative alphas only for years two and four. Looking at the differences, we can see that value firms show significant excess returns over glamour firms starting two years after the acquisition and continuing through the fifth year.

**Table 9**  
**Long-Term Study**  
**BM Ratio**

<b>GLAMOUR FIRMS (1)</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	-0,1277	-0,5024	-0,2930	-0,2193	0,0338
	Percentile	0,207	0,041	0,168	0,352	0,542
	Nb of firms	87	56	35	20	14
CT-FF3FM	Alpha	-0,0048	-0,0043	-0,0044	-0,0045	-0,0040
	P-value	<b>0,003</b>	<b>0,003</b>	<b>0,002</b>	<b>0,000</b>	<b>0,000</b>
	R Square	0,553	0,460	0,331	0,479	0,523
	Nb of months	81	89	94	95	99
<b>VALUE FIRMS (2)</b>						
Control Firm	BHAR	-0,1052	-0,2319	-0,8516	-0,3694	-0,8530
	Percentile	0,268	0,102	0,029	0,227	0,089
	Nb of firms	78	47	34	22	16
CT-FF3FM	Alpha	-0,0029	-0,0032	-0,0016	-0,0014	-0,0008
	P-value	0,085	<b>0,009</b>	0,067	<b>0,047</b>	0,263
	R Square	0,443	0,372	0,492	0,556	0,565
	Nb of months	89	115	122	121	122
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	0,0225	0,2705	-0,5586	-0,1502	-0,8868
	Percentile	0,550	0,788	0,145	0,401	0,153
CT-FF3FM	Alpha	0,0030	0,0025	0,0026	0,0019	0,0015
	P-value	0,141	<b>0,050</b>	<b>0,015</b>	<b>0,032</b>	<b>0,030</b>
	R Square	0,109	0,193	0,082	0,075	0,041
	Nb of months	71	84	87	91	92

*Method of Payment.* Contrary to the findings of Loughran and Vijh (1997) we find that cash payments result in better post-acquisition performance than non-cash ones. Table 10 shows that our calendar time approach results in systematic post-acquisition losses for cash-paid deals, while non-cash payments show no abnormal return, except for years two and four. Moreover, our control firm tests show significant negative five year BHAR and significant negative excess return for cash-paid M&As. The context of cross-border deals differs from the sample of mainly intranational M&As used by these authors. Our sample contains practically no tender offers, and over 90% of the deals are qualified as friendly. The discipline effect is less likely to act in such a context.

**Table 10**  
**Long-Term Study**  
**Method of Payment**

<b>NO CASH PAYMENT (1)</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	-0,0037	-0,1065	-0,7735	0,1462	0,9345
	Percentile	0,594	0,193	0,039	0,677	0,944
	Nb of firms	82	47	36	24	15
CT-FF3FM	Alpha	-0,0015	-0,0028	-0,0016	-0,0016	-0,0008
	P-value	0,399	<b>0,012</b>	0,053	<b>0,021</b>	0,193
	R Square	0,425	0,424	0,509	0,529	0,560
	Nb of months	89	119	122	121	123
<b>CASH PAYMENT (2)</b>						
Control Firm	BHAR	-0,2236	-0,6076	-0,3443	-0,8901	-1,8128
	Percentile	0,059	0,035	0,139	0,061	<b>0,012</b>
	Nb of firms	84	56	33	18	15
CT-FF3FM	Alpha	-0,0045	-0,0039	-0,0028	-0,0033	-0,0030
	P-value	<b>0,026</b>	<b>0,002</b>	<b>0,016</b>	<b>0,005</b>	<b>0,011</b>
	R Square	0,224	0,348	0,503	0,400	0,383
	Nb of months	89	97	102	106	106
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	-0,2199	-0,5011	0,4293	-1,0362	-2,7473
	Percentile	0,112	0,088	0,797	0,063	<b>0,007</b>
CT-FF3FM	Alpha	-0,0020	-0,0007	0,0002	-0,0019	-0,0015
	P-value	0,409	0,572	0,829	0,062	0,059
	R Square	0,023	0,019	0,193	0,043	0,079
	Nb of months	80	94	96	99	97

*Size of Acquiring Firm.* Contrary to Eckbo and Thorburn (2000), we find that the size of the firm, as measured by the relative magnitude of revenues, has a distinct positive effect on post-acquisition performance. Table 11 shows that small firms systematically show significant negative alphas during the whole post-acquisition period, whereas large firms show significant negative alphas only during years two, three and four. Furthermore, our test of the difference between the alphas of these two groups shows significant positive alphas for the large firms, starting two years after the acquisition continuing through the fifth year.

**Table 11**  
**Long-Term Study**  
**Size of Acquiring Firm**

<b>SMALL FIRMS (1)</b>		<b>12 months</b>	<b>24 months</b>	<b>36 months</b>	<b>48 months</b>	<b>60 months</b>
Control Firm	BHAR	-0,0728	-0,5540	-1,0783	-0,4353	-1,0978
	Percentile	0,367	0,036	<b>0,019</b>	0,181	0,056
	Nb of firms	69	45	30	17	11
CT-FF3FM	Alpha	-0,0057	-0,0059	-0,0043	-0,0034	-0,0029
	P-value	<b>0,009</b>	<b>0,000</b>	<b>0,002</b>	<b>0,007</b>	<b>0,035</b>
	R Square	0,313	0,438	0,484	0,532	0,497
	Nb of months	79	95	95	97	99
<b>LARGE FIRMS (2)</b>						
Control Firm	BHAR	-0,1476	-0,2432	-0,1758	-0,2045	-0,0578
	Percentile	0,158	0,093	0,259	0,360	0,483
	Nb of firms	95	58	39	25	19
CT-FF3FM	Alpha	-0,0024	-0,0021	-0,0017	-0,0011	-0,0009
	P-value	0,052	<b>0,009</b>	<b>0,007</b>	<b>0,042</b>	0,071
	R Square	0,497	0,534	0,604	0,660	0,643
	Nb of months	91	113	123	123	122
<b>DIFFERENCE (2 - 1)</b>						
Control Firm	BHAR	-0,0748	0,3108	0,9025	0,2308	1,0400
	Percentile	0,337	0,818	0,916	0,648	0,883
CT-FF3FM	Alpha	0,0025	0,0031	0,0030	0,0025	0,0019
	P-value	0,282	<b>0,025</b>	<b>0,008</b>	<b>0,010</b>	<b>0,038</b>
	R Square	0,079	0,119	0,268	0,309	0,336
	Nb of months	68	91	92	95	95

The other factors, namely the target country level of development, the relatedness of firms, the Q ratio and the cash on hand, do not show any specific impacts on the post-acquisition performance.



## Conclusion

This study is aimed at evaluating the stock market performance of Canadian acquiring firms involved in cross-border M&As during the period from 1985 to 2000. We tested short-term and long-run performance and brought out the long term determinants of success of these operations.

The empirical results obtained from a sample of 598 M&As reveal that Canadian acquiring firms generate significant positive abnormal returns of 1.39%, from the day an M&A is announced up to two days thereafter, which indicates that Canadian financial markets react favourably to this type of activity.

With regard to long-term performance, we use a sample of 315 events. We use the latest methodologies to avoid statistical biases, and our results converge. Despite a possible period of reduction in value in the first years after the month of the M&A announcement, our study reveals that Canadian firms carrying out cross-border M&As do not generate significant abnormal returns in the five year period after the announcement month. Therefore, the value of the shares increases when such M&As are announced, and the value is also maintained during the post-acquisition period required to realize efficiency gains. Canadian firms having carried out cross-border M&As are able to generate sufficient values to keep up to par with the requirements of the stock market (in accordance with their level of risk as determined by the Fama & French three factor model) and with the level of return generated by their peers within their main industrial sector.

We have identified factors of long-term success for cross-border M&As. Our results are in accordance with the internalization theory of Buckley and Casson (1976) and Rugman (1981). Cross-border M&As help create value for acquiring firms by tapping into their expertise and know-how on international markets. Multiple acquirers do better than single acquirers. Managers of Canadian firms become better at evaluating potential benefits and at negotiating and realizing the synergies of cross-border M&As, once they have made at least one cross-border M&A. We show that low book-to-market value firms do worse than counterparts. This result can be explained by Roll's 1986 hubris theory and by Rau and Vermaelen's 1998 over-extrapolation theory as applied, respectively, to glamour and value firms.

Contrary to the views of Loughran and Vijh (1997), cash payment results in systematic losses during the post acquisition period while equity deals do better in the long-run. We explain this result by the

fact that over 90% of the deals in our sample are qualified as friendly. The discipline effect is less likely to act in such a context.

Finally, contrary to Eckbo and Thorburn (2000) we find that the size of the firm has a positive effect on post- acquisition performance. Large firms tend to get better post-acquisition results than small ones.

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