TSX Stock Repurchase Announcements and the Impact of TSX Disclosure Requirements

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Abstract

This paper examines the market reaction to Toronto Stock Exchange (TSX) stock repurchase announcements. The findings indicate that TSX stock repurchase announcements result in a significant market reaction and provide mixed support for the TSX requirements to disclose the reason(s) for a stock repurchase program and to report actual share repurchases on a timely basis.

Keywords: repurchases, event study, credibility, disclosure

1. Introduction

Prior studies on stock repurchase announcements have consistently documented positive abnormal returns around the announcement. These findings are consistent with repurchase announcements conveying favorable information about future prospects. Most prior studies focus on firms listed on U.S. exchanges. In this paper, I examine the market reaction to repurchase announcements made by Toronto Stock Exchange (TSX) traded firms.

This study consists of two phases. The first phase examines the market reaction to repurchase announcements by TSX firms during the period 1995 to 2005. The results indicate that repurchase announcements result in a noticeable market reaction, as measured by cumulative abnormal returns and cumulative abnormal volume surrounding the announcement. The second phase of my study develops and tests an explanatory model of the abnormal returns surrounding repurchase announcements. Following Jennings (1987) I argue that investor reaction to a management disclosure, such as a repurchase announcement, is likely to be determined by the information in the disclosure and the credibility of the disclosure. Credibility is particularly important in the case of repurchase announcements since they give management the option, but not the obligation, to repurchase the shares specified in the announcement.

The results indicate that higher announcement returns are associated with firms who followed through on their previous repurchase announcements and who have cash on hand to fund their repurchase programs. The reasons provided by firms for their repurchase programs are not value relevant. The findings provide limited support for the additional disclosures that are required by the TSX.

The findings of this study may be of interest to regulators. The TSX may wish to consider the findings of this study in the course of reviewing their own regulations. Other exchanges may wish to consider these findings when considering their own disclosure regulations. This study contributes to the literature on reputation by examining whether management's follow-through on previous repurchase announcements affects the market reaction to subsequent announcements. This study contributes to the literature on stock repurchases by examining whether the additional information provided by TSX firms (timely reports, disclosure of the reason for the repurchase program) is useful to the market. Finally, this study contributes to the repurchases literature by introducing volume testing into the study of repurchase announcements, applying Cready and Hurtt's (2002) finding that volume tests are more powerful than return tests when investigating investor response to an information event.

This paper proceeds as follows. Section 2 describes TSX repurchase requirements and identifies some unique TSX requirements that are examined in this study. Section 3 provides support for the prediction of a positive market reaction to repurchase announcements. Section 4 develops an explanatory model of the market reaction. Section 5 describes TSX repurchase activity during the years 1994 to 2005 and discusses the sample to be used for empirical

testing. Section 6 reports and discusses the results of empirical tests including controls for sample selection. Section 7 concludes.

2. TSX Repurchase Trends and Requirements

Table 1 reports a summary of TSX repurchase program announcements during the period 1994 to 2005. Table 1 indicates that the number of repurchase programs peaked in 2000 with 346 equity securities announcing repurchasing programs, representing 22.4% of total listed TSX securities. Table 2 reports the completion rates for these programs and indicates that most firms do not repurchase the maximum number of shares indicated in their repurchase announcements. The mean repurchase rate is 31.9% and the median repurchase rate is 15.7%.

An overall comparison of the requirements of Canadian and U.S. regulations for stock repurchases is provided in Appendix 1.

I focus on the effects of two unique TSX requirements, the requirement to disclose actual repurchases and the requirement to disclose the reason for the repurchase. Most research focuses on U.S. firms. However, U.S. firms are not required to report their repurchases on a timely basis. The SEC is only now considering a quarterly reporting requirement. At this time, U.S. firms are only required to provide detailed information on their repurchases in their annual financial statements. Quarterly reports typically only disclose total shares outstanding. A decrease in a firm's total shares outstanding is an imperfect proxy for repurchases since the firm may also have issued shares during the period. Even if a firm voluntarily discloses repurchases in its quarterly report, it could take up to four months for investors to learn about the repurchases. As a result, investors of NYSE or Nasdaq firms are often unable to see on a timely basis if the firm has followed through on its repurchase announcements unless the firm is cross-listed on the TSX. These reporting differences result in investors of U.S. traded and TSX traded firms having different information sets at the time of a repurchase announcement. I focus on TSX firms to investigate whether the market uses the historical information provided by TSX firms to assess the credibility of subsequent repurchase announcements. In addition, the ready availability of Canadian repurchase data has practical research advantages. Research on the repurchases of U.S. firms has been hampered by the lack of actual repurchase data since researchers need to use a variety of estimation techniques to approximate actual repurchases. For example, Lie (2005) is forced to throw out a large number of observations where actual repurchases are difficult to determine. Use of Canadian data alleviates such problems since I am able to determine the exact number of shares repurchased each month by consulting the TSX daily record. Sample size is an issue. As Ikenberry, Lakonishok and Vermaelen (2000, p.2374) point out, Canada is the only other country that has a reasonable sample of repurchases.

Additionally, the TSX requires firms to disclose the reason(s) for their repurchase program. This requirement exists in Australia, but not in the US or UK. This further differentiates the information set available to investors of U.S. and Canadian firms. These reasons include preventing dilution due to stock options, utilizing excess funds, indicating that the firm feels its shares are undervalued and increasing the proportionate interest of remaining shareholders. Table 3 shows the percentage of firms citing various reasons for their repurchase programs during the period 1994 to 2005.

3. The Market Reaction to TSX Repurchase Announcements

The announcement of a stock repurchase program potentially conveys information to investors about the firms' payout policy, financial position, future prospects and expected cash flows. Prior studies (Note 1) have consistently documented abnormal returns around the announcement of repurchase programs providing empirical evidence that the market considers repurchase program announcements to be favorable news. Several non-mutually exclusive theories have been forwarded to explain these abnormal returns. The most often cited theories explaining the positive market reaction to repurchase announcements are signaling theory and free cash flow theory. Under signaling theory, if a firm is able to credibly communicate an intention to repurchase shares, a positive market reaction to the announcement is predicted since it is presumed that repurchase announcements convey positive information since a rational firm would not normally repurchase shares unless management had non-public information that they were undervalued. Free cash flow theory based on Jensen (1986) also predicts a positive market reaction to repurchase announcements. Under free cash flow theory, a repurchase announcement is considered good news since it represents a commitment to reduce agency costs. Distributions of cash reduce agency costs because they limit the potential for management to spend cash on perks or to invest in low yielding investments. Given the results of prior studies and the predictions of signaling and free cash flow theory, **I predict (H1) that announcing firms will have a significant market reaction.**

4. Explanatory Model of Market Reaction to TSX Repurchase Announcements

In this section, I explore factors that are likely to impact the amount of new information provided in a repurchase announcement. Consistent with Jennings (1987), I expect a greater market reaction where the repurchase announcement contains favorable new information and where the announcement is credible.

4.1 Size of Repurchase Announcement

Comment and Jarrell (1991) and Ikenberry and Vermaelen (1996) find that, for U.S. firms, announcement returns are increasing in the announced number of shares to be repurchased implying that the size of the repurchase program is important information. However, as noted by Li and McNally (2007), most Canadian firms choose to announce the maximum number of shares that will be repurchased in their open market repurchase programs. TSX regulations restrict the maximum number of shares that can be repurchased to the greater of 5% of total shares outstanding and 10% of the public float. U.S. firms do not face similar restrictions, since Rule 10b only restricts the number of shares that can be repurchased on a daily basis. As a result, given that very few Canadian firms (approximately 15% of my sample) announce less than the maximum, the number of shares to be repurchased in Canada is unlikely to be a significant variable affecting the market reaction to a repurchase announcement. However, I include it as a control variable in light of the findings of prior research.

4.2 Reasons for the Repurchase Program

Unlike U.S. firms, TSX firms are required to cite the reason(s) for their repurchase programs. Some firms (<5%) ignore the TSX requirement to state the reason for their repurchase programs. Many firms provide multiple reasons. Prior studies only focus on the undervaluation explanation and do not differentiate between firms who claim that their repurchase programs are being put in place due to current undervaluation or potential future undervaluation. I extend the repurchases literature by developing predictions for other explanations and including them in my empirical models.

Many firms (40.9% as subsequently documented in Table 3) cite current undervaluation as a reason for their repurchase program. If the claim of current undervaluation is credible, there should be a positive market reaction. Othchere and Ross (2002) and Li and McNally (2007) studying Australian and TSX firms respectively find that firms citing undervaluation enjoy greater announcement returns. Consistent with Otchere and Ross (2002) and Li and McNally (2007), I **predict (H2A) that announcement returns are positively associated with firms citing current undervaluation as a reason for their repurchase programs.**

Announcements that cite putting in place a program in case the firm's shares become undervalued (32.4% as subsequently documented in Table 3) should be viewed positively. This explanation indicates that management will create demand for the firm's shares when, in management's opinion, the shares are undervalued. This may reduce information asymmetry since the market will be able to infer from management's actions information about the value of the firm's shares. **I predict (H2B) that announcement returns are positively associated with firms who cite putting the program in place in case of future undervaluation as a reason for their repurchase programs.**

Announcements that cite improving liquidity (5.8% as subsequently documented in Table 3) as a reason for the repurchase program should also be viewed positively. Analytical and empirical studies support the notion that firms with low liquidity pay a 'liquidity penalty'. Due to the small size of many TSX firms, and the lower number of investors investing in TSX stocks than NYSE and Nasdaq stocks, investors of TSX firms who wish to sell often have a hard time finding a buyer. Elfakhani and Lung (2003) note that "there are proportionately more small firms listed on Canadian exchanges; consequently more firms are thinly traded". Elfakhani and Lung (2003) find that Canadian firms who undertake stock splits enjoy better liquidity after the split. Mittoo (2003) finds that Canadian firms who cross-list on U.S. exchanges enjoy greater liquidity after cross-listing. However, the costs of stock splits and cross-listing may outweigh the benefits of increased liquidity for many small firms. Repurchase programs provide a low cost alternative that may help to increase liquidity since repurchases will increase demand for the stock.

Firms have an incentive to provide liquidity to their shareholders since if the stock is not liquid, many investors will avoid the stock. As a result, the full value of the stock is not achieved due to suppressed demand. Amihud and Mendelson (1986) show that expected stock returns are an increasing function of stock liquidity, as measured by the stock's bid-ask spread. This model shows that firms pay a price 'liquidity penalty'. Longstaff's (1995) model shows that the penalty for illiquidity can be large even when the illiquidity period is short. Archival literature supports the existence of a liquidity penalty. Amihud and Mendelson (1991) on bonds, Silber (1991) on restricted stocks and Brennen, Eldor and Hawser (2001) on options all confirm that securities with restricted marketability pay a price

penalty. Mittoo (2003), using Canadian data, finds that stocks which have higher liquidity gains from cross-listing also experience greater abnormal returns surrounding US listing.

The preceding discussion suggests that firms with liquidity problems have an incentive to provide liquidity through repurchases. If management is able to credibly communicate an intention to improve liquidity, the market should respond positively to the announcement since improving liquidity should increase the value of the firm. I **predict (H2C) that announcement returns are positively associated with firms who cite improving liquidity as a reason for their repurchase program.**

For the explanations that follow, I do not have clear predictions since there are competing arguments as to what the market reaction should be and the explanations may not be informative. Nevertheless, it is an interesting empirical question as to whether these explanations impact the market reaction.

Some firms (7.3% as subsequently documented in Table 3) cite avoiding dilution due to stock options as a reason for their repurchase programs. This might evoke a positive reaction if the market is concerned about dilution or if the market believes that the incentives of shareholders and managers have been aligned. On the other hand, the market might see the announcement of the intention to purchase shares as proof that the stock option programs are expensive and may react negatively to the announcement. Kahle (2001) finds that announcement returns are smaller for firms with high levels of non-managerial options. Kahle (2001) attributes the finding of decreased returns to the market interpreting a repurchase to fund options as not being indicative of undervaluation. Consequently where a firm cites option funding as the sole reason for its repurchase program, I expect no abnormal returns during the announcement window.

Announcements that cite excess cash (5.1% as subsequently documented in Table 3) or good use of cash (57.7% as subsequently documented in Table 3) as a reason for the repurchase program could also evoke either a negative or positive response. If the market perceives that the firm has few investment opportunities, a negative reaction could occur. On the other hand, if the market had already viewed the firm as having few good investment opportunities before the repurchase announcement, the lack of investment opportunities should already be incorporated in price. Consistent with Jensen's (1986) free cash flow theory, announcing the return of excess cash should be viewed as a positive development since management is indicating that they do not intend to waste cash. Hence, a positive reaction to the announcement could also occur. One problem is that citing good use of cash is a common reason (57.7%) and not particularly informative. One would expect firms to put their cash to good use. It is possible that many firms provide "good use of cash" as a reason simply to meet the TSX requirement that the reason for the NCIB be stated. It is possible that a negative reaction may occur if the market views "good use of cash" as ambiguous and indicative of a lack of transparency.

Announcements that cite helping or increasing the proportionate interest of remaining shareholders (37.3% of firms as subsequently documented in Table 3) as a reason for the repurchase program could also be viewed positively or negatively. Shareholders who do not have an intention to sell may view this statement positively since management may use its information advantage when purchasing stock from selling shareholders. Selling shareholders will be facing an informed buyer. Depending on the unobservable ratio of long-term to short-term shareholders, the market reaction could be positive or negative. Again the reason is not particularly informative and may just be provided to meet the TSX requirement to provide a reason for the program.

4.3 Management Credibility

Existing empirical studies in the finance literature support the existence of a reputation effect. Williams (1996) finds that the size of analyst forecast revisions are dependant on past management forecast accuracy. Hirst, Koonce and Miller (1999) provide similar experimental findings. Brucato and Smith (1997) document a reputation effect for dividend announcements. Hutton and Stocken (2006) find that investors respond more to management forecasts when the firm has developed a forecasting reputation. Outside of the finance literature, support exists for a reputation effect. Boulding and Kirmani (1993) find that firms who fail to fulfill their warranty obligations sacrifice their reputations, thereby eliminating future repeat business and losing other potential customers due to word-of-mouth effects. Davis and Weinberg (2005) find that online auction reputation information is accessed by consumers in making online purchasing decisions. Analytical literature also supports the existence of a reputation effect. Sobel (1985) demonstrates that it pays for information providers to build a reputation for providing accurate and valuable information. Kim (1996) demonstrates the importance of reputation in repeated interactions involving cheap talk. Stock repurchase announcements can be viewed as cheap talk since they are not binding. Stocken (2000) provides further analysis and demonstrates that the use of review strategies, whereby players review past truthfulness, allows players to factor in past actions when evaluating a current disclosure.

Lie (2005) finds that improvements in performance are limited to firms who actually repurchase shares during the same fiscal quarter. Lie's (2005) results suggest that actual repurchases, not announcements, are more important in forecasting future performance. In his conclusion, Lie (2005) points out the benefits of a study that addresses the actual follow through rate of firms. This study partially addresses Lie's call for research into follow through rates by considering the extent to which the market considers past follow through rates in interpreting a current announcement.

As discussed in section 2, TSX reporting standards allow investors to see the extent to which the announcing firm followed through on its prior repurchase announcement. Table 2 shows that the follow-through rate on repurchase announcements is quite low for the median firm, indicating the possibility that some firms may have little intention of following through on their repurchase announcements. Given the framework of the TSX repurchase system, I contend that firms and their management may develop reputations for either purchasing shares or not purchasing shares after announcing repurchase programs. Consistent with the existence of a reputation effect, if a firm purchases a large number of shares during a repurchase program, a subsequent repurchase announcement is more likely to be viewed by the market as good news. Therefore, **I predict (H3A) that announcement returns are positively related to the follow-through rate on the immediately preceding repurchase program.** In addition, firm's repurchase announcements are likely to be viewed as more credible if the firm has cash on hand to repurchase shares. Therefore, **I predict (H3B) that announcement returns are positively related to cash on hand.**

5. TSX Repurchase Activity during 1994 to 2005 and Sample Selection

I obtained a complete list of all repurchase announcements between 1994 and 2005 from the TSX Daily Record. These repurchase programs, known as normal course issuer bids (NCIB), are summarized in Table 1. I exclude preferred share, debenture, warrant, installment receipts and trust repurchases since the incentives to repurchase these securities are different from the incentives to repurchase normal equities. After excluding these other types of securities, there are 2,870 equity repurchase programs during the years 1994 to 2005.

Table 1. Toronto Stock Exchange normal course issuer bid programs

Number of programs by year and type of security

Year	Bonds	Preferred Shares	Trust Units	Warrants and Instalment Receipts	Equities	Total Securities	Total TSX Listed Securities (Note 2)	Percentage of TSX Listed Securities Announcing a NCIB
1994	0	3	0	1	133	137	1538	8.9%
1995	1	1	2	0	193	197	1572	12.5%
1996	1	1	2	1	195	190	1626	11.7%
1997	1	2	4	3	218	228	1720	13.3%
1998	6	1	13	4	310	335	1721	19.5%
1999	8	2	19	2	326	357	1761	20.3%
2000	10	6	20	1	346	383	1708	22.4%
2001	13	2	22	2	285	324	1645	19.7%
2002	8	6	36	2	233	285	1654	17.2%
2003	5	3	42	1	226	277	1710	16.2%
2004	6	5	69	1	193	274	1804	15.2%
2005	4	12	99	1	222	338	1962	17.2%
Total	63	44	328	20	2870	3325	20421	16.3%

This table presents the number of normal course issuer bids (NCIB) by type of security announced during the period 1994 to 2005 and reported in the TSX Daily Record. The percentage of TSX listed securities announcing a NCIB is determined by dividing the total number of programs by the total number of listed securities per the TSX Monthly Review.

Table 2 documents the press releases obtained.

Table 2. Toronto Stock Exchange normal course issuer bids 1994 to 2005

		Percentage Completion Rate		Missing Press	Found Press	% of Press Releases
Year	Total	Mean	Median	Releases	Releases	Found
1994	133	36.3	25.3	65	68	51.1
1995	193	30.9	12.9	65	128	66.3
1996	185	31.6	17.9	52	133	71.9
1997	218	37.7	17.3	23	195	89.5
1998	310	38.3	25.4	10	300	96.8
1999	326	42.5	29.3	6	320	98.2
2000	346	35.8	20.7	12	334	96.5
2001	285	23.7	8.0	9	276	96.8
2002	233	23.5	6.7	6	227	97.4
2003	226	18.3	4.7	3	223	98.7
2004	193	26.1	7.8	1	192	99.5
2005	222	29.1	9.4	1	221	99.5
Total	2870	31.9	15.7	253	2617	91.2

This table documents mean and median completion rates for all equity normal course issuer bids during the years 1994 to 2004 and the number of press releases that were obtained. The completion rate is equal to the actual number of shares repurchased divided by the maximum number of shares that the repurchase announcement stated could be repurchased under the program. Press releases were obtained from the Lexis-Nexis database, the SEDAR database or from corporate websites.

I am able to locate the press releases for 2,617 equity repurchase programs (91% of all equity repurchase programs) from the Lexis-Nexis database, the SEDAR database and corporate websites. Table 3 summarizes the reasons given for 2,617 TSX repurchase announcements between 1994 and 2005.

Table 3. Equity securities, reasons cited for repurchase programs 1994 to 2005

Explanation	Variable Name	Percentage
Current Undervaluation.	CUV	40.9
Firm is putting in place repurchase program in case of future undervaluation.	FUV	32.4
Good use of funds or investment	GOOD	57.7
Firm has excess cash	EXCESS	5.1
To prevent dilution due to stock plans	OPT	7.3
To improve liquidity.	LIQ	5.8
To benefit/increase interest of remaining shareholders.	REMSB	37.3
All other reasons.		2.5

This table documents the major explanations provided by firms for their repurchase programs. Variable name represents an indicator variable, taking on a value of 1 if the explanation is present in the repurchase announcement, 0 otherwise. Percentage represents the percentage of announcements citing the explanation during the sample period 1994-2005. Firms can cite more than one reason for their repurchase program. The results reflect the 2,617 repurchase announcements that were obtained (see Table 2).

My final sample is summarized in Table 4.

Table 4. Event study and explanatory model samples

	Returns Testing	Volume Testing
Total announcements, 1994 to 2005	2,870	2,870
Missing press releases	(253)	(253)
Missing market data	(889)	(470)
Event study sample	1,728	2,147
Missing explanatory variables	(425)	
Total sample for explanatory model, all firms	1,303	
Non-Repeat announcers	(486)	
Total sample for explanatory model, repeat announcers	978	

This table documents the number of firms that were included in the event study (results reported in Table 5) and explanatory model (results reported in Table 6).

6. Empirical Results

I test the market reaction to TSX repurchase announcements (H1) as follows. Using the market model, I calculate cumulative abnormal returns (variable CAR) and cumulative abnormal volume (variable CAV) during the three day period commencing one day before the repurchase announcement. I use the statistical package Eventus to calculate abnormal returns and volumes and to evaluate the statistical significance of abnormal returns and volumes. Returns models are common in the repurchases literature. I use a value weighted index when calculating abnormal returns since repurchasing firms tend to be larger than non-repurchasing firms. Following Cready and Hurtt (2002) I also measure the market reaction to repurchase announcements using the market model with log transformed relative volume, since Cready and Hurtt (2002) show that volume metrics are capable of detecting investor reaction to an information event when returns regressions are not. Cready and Hurtt (2002) find that volume tests are particularly useful where the expected investor reaction is small and where sample sizes are small. Investor response to a Canadian normal course issuer bid is expected to be small since firms are limited to a maximum of 10% of the public float of the firms' stock. In contrast, US repurchase announcements are not limited in size by regulation. Also, repurchase announcement sample sizes are limited in comparison to earnings announcement studies since not all firms repurchase shares.

The results are summarized in Table 5.

Table 5. Event study results

	Returns	Volume
Event Window	(-1,+1)	(-1,+1)
Number of observations	1,728	2,147
Mean cumulative abnormal returns/volume	1.12%	1.32%
Patell Z value	8.580	19.419
Patell Z p-value	<0.001	<0.001
Generalized Sign Z value	8.276	14.075
Generalized Sign Z p-value	<0.05	<0.001

This table presents event study results for TSX firms announcing repurchase programs during the years 1994 to 2005. Event window refers to the period in days starting before (-) and ending after (+) the announcement date. The numbers of observations are described in Table 4. Mean cumulative abnormal returns are calculated using the market model using a value weighted index. The market model parameters are estimated using a minimum of 60 and a maximum of 200 days of returns over the period ending 31 days before the event day. Mean cumulative abnormal volume is calculated with log transformation. All results were generated using the statistical package Eventus. Patell Z test results and generalized sign test results are calculated according to the definitions contained in the Eventus manual.

The results in Table 5 show that announcing firms enjoy a mean cumulative abnormal return of 1.12% and mean cumulative abnormal volume of 1.32% during the three day event window. The abnormal returns are consistent with prior research, which generally documents cumulative abnormal returns of between 1% and 3%. Abnormal returns for TSX firms should be lower than for comparable U.S. exchange traded firms since TSX firms are limited to

repurchasing no more than 10% of their public float, while U.S. traded firms do not face this limitation. Both of these results are statistically significant at the 0.1% level using both Patell Z and generalized sign Z tests. These results provide evidence that there is a significant market reaction to repurchase announcements. I also conduct similar tests using the buy and hold model, an equally weighted index, different estimation parameters and different event windows. The unreported results are similar, suggesting the choice of model, index, estimation parameters and event windows do not affect the results.

I conduct ordinary least squares regressions to test my predictions about the market reaction to repurchase announcements. The dependent variable is cumulative abnormal returns (variable CAR). The first regression is performed on all firms for which market data and the repurchase announcements are available. The second regression is performed on the subset of announcements where the firm has made another repurchase announcement within three years of the current announcers (i.e. repeat announcers). Variable REP represents the follow-through rate on the most recently completed share repurchase program within the last three years. CASH is cash on hand over total assets as of the most recent balance sheet prior to the repurchase announcement. Explanation variables CUV, FUV, EXCESS, GOOD, OPT, LIQ and REMSH are included and correspond to the repurchase reasons documented in Table 3. Control variables include the following. CARJB represents short-term pre-announcement returns and is calculated as cumulative abnormal returns during the thirty day period ending two days before the announcement date. SIZE is calculated as the natural log of total assets as of the most recent balance sheet date prior to the repurchase announcement. MBOOK is calculated as market value of equity divided by book value of equity as of the most recent balance sheet date prior to the repurchase announcement. OCF is calculated as operating cash flow as a percentage of total assets as of the most recent balance sheet date prior to the repurchase announcement. Given the panel data nature of the sample, I calculate and report standard errors using clustered standard errors as recommended by Petersen (2009). Each firm is defined as an independent cluster.

The results of both regressions are presented in Table 6.

Table 6. Explanatory models results

		All firms with available data		Repeat announcers with available data	
Observations		1303		978	
Number of firms		440		313	
R^2		0.0337		0.0486	
Variable	Predicted sign	Coefficient Estimate	t-value	Coefficient Estimate	t-value
CARJB		0.0222	1.24	0.0411	1.99**
TAR%		-0.0015	-0.04	0.0128	0.45
CUV	+ (H2A)	0.0082	1.69*	0.0060	1.17
FUV	+ (H2B)	-0.0055	-1.35	-0.0010	-0.22
GOOD		-0.0077	-1.84*	-0.0032	-0.70
EXCESS		0.0024	0.33	0.0112	1.41
OPT		-0.0027	-0.63	0.0004	0.09
LIQ	+ (H2C)	0.0024	0.21	-0.0057	-0.64
REMSB		-0.0042	-1.03	-0.0039	-0.88
CASH	+ (H3B)	0.0336	2.61***	0.0405	2.63***
SIZE		-0.0017	-1.73*	-0.0016	-1.33
MBOOK		-0.0002	-0.49	-0.0000	-0.09
OCF		-0.0154	-0.90	-0.0134	-0.67
REP	+ (H3A)			0.0078	2.25**

*** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.10 level

This table presents, without the use of selection controls, OLS regression results for all firms and for repeat announcers as described in Table 4. The dependent variable is cumulative abnormal returns over the three day window commencing one day before the repurchase announcement, calculated using a standard market model with a value weighted index. Market model parameters are estimated using a minimum of sixty days and a maximum of 200 days ending 31 days before the event date. Independent variables are defined as follows: CARJB= Cumulative abnormal returns during the thirty days ending two days before the announcement date. TAR%= Targeted percentage of total shares per repurchase announcement. CUV= 1 if the firm cited current undervaluation as a reason for the repurchase program, 0 otherwise. FUV= 1 if the firm cited potential future undervaluation as a reason for the repurchase program, 0 otherwise. GOOD=1 if the firm cited good use of cash a reason for the repurchase program, 0 otherwise. EXCESS= 1 if the firm cited excess cash a reason for the repurchase program, 0 otherwise. OPT= 1 if the firm cited offsetting dilution due to stock options as a reason for the purchase program, 0 otherwise. LIQ= 1 if the firm cited improving liquidity as a reason for the repurchase program, 0 otherwise. REMSB= 1 if the firm cited benefiting remaining shareholders as a reason for the repurchase program, 0 otherwise. CASH= Cash as a percentage of total assets as of the most recent balance sheet date prior to the repurchase announcement. SIZE=Natural log of total assets as of the most recent balance sheet date prior to the repurchase announcement. MBOOK= Market value of equity divided by book value of equity as of the most recent balance sheet date prior to the repurchase announcement. OCF= Operating cash flow as a percentage of total assets as of the most recent balance sheet date prior to the repurchase announcement.

Table 6 provides little persuasive evidence that the reasons cited by firms for their repurchase programs are value relevant. CUV is positive and weakly significant ($p<0.10$) in the regression for all firms. GOOD is negative and weakly significant ($p<0.10$) in the regression for all firms. However, statistical significance is weak for bother these explanations and neither of these findings hold for repeat announcers. Hence, there is little evidence to conclude that the TSX's requirement to state the reasons for the repurchase program conveys useful information to the market. One possible explanation for these findings is that during the course of coding the repurchase announcements by reason, it was observed that firms use "boiler-plate" language when describing their repurchase programs. Exactly the same or very similar language was often observed, suggesting that firms may be copying each other's disclosures and not putting much real effort into communicating their repurchase reasons.

Table 6 indicates that firms that followed through on their previous repurchase announcements experienced higher returns on subsequent repurchase announcements. Variable REP, representing the follow through rate is statistically significant at the 0.05 level. Firms who repurchased 100% of their announced targeted shares enjoyed a 0.78% greater announcement return than firms who repurchased none of their targeted shares. This finding supports prediction 3 and is consistent with the existence of a reputation effect. In addition, variable CASH, representing the percentage of assets held as cash, is strongly significant ($p<0.01$) suggesting that investors are more likely to believe that a repurchase announcement constitutes good news if the firm has the resources to follow through on the announcement. Both of these findings suggest that credibility is an important factor in assessing repurchases announcements.

The results presented in Table 6 are conditional regression results since only firms who announce repurchase programs are included in the sample. Consequently, sample selection bias could impact the results. In addition, efficient market theory suggests that the market is likely to develop expectations regarding the likelihood of a firm announcing a repurchase program and to incorporate those expectations into price. To evaluate the impact of sample selection, I employ a Heckman full information maximum likelihood model with the same dependent variables included in Table 6. The first stage model is deliberately parsimonious since Francis and Lennox (2008) demonstrate that sample selection models can be very sensitive to the inclusion of additional variables. After evaluating many repurchase announcement models (results not tabulated), three variables were found to be strong predictors of repurchasing firms and included in the first stage. Operating cash flows (variable OCF) are included since prior research, such as Stephens and Weisbach (1998), indicates that high cash flow firms will repurchase shares in order to reduce agency costs. Since TSX firms must re-apply for a new repurchase program each year, many firms announce a program each year (serial repurchasers). I therefore include an indicator variable, NCIB1, taking on a value of 1 if the firm had a repurchase program in place in the prior fiscal year, 0 otherwise. Finally, since repurchasing firms are generally large, I include the variable SIZE (natural log of total assets) to control for size. The predictive model is estimated using 7,983 non-repurchasing firms and 1,297 repurchasing firms over the period 1994 to 2005. This sample consists of all firms with available Compustat data during 1994 to 2005.

Table 7 presents the sample selection control results.

Table 7. Explanatory model results with sample selection control

Panel A: Explanatory Model

		All firms with available data		Repeat announcers with available data	
Observations		1303		978	
Number of firms		440		313	
		Coefficient		Coefficient	
Variable	Predicted sign	Estimate	z-value	Estimate	z-value
CARJB		0.0235	1.32	0.0409	2.00**
TAR%		-0.0004	-0.01	0.0122	0.43
CUV	+ (H2A)	0.0075	1.54	0.0060	1.14
FUV	+ (H2B)	-0.0056	-1.36	-0.0009	-0.22
GOOD		-0.0072	-1.72*	-0.0033	-0.72
EXCESS		0.0023	0.31	0.0111	1.40
OPT		-0.0023	-0.54	0.0002	0.05
LIQ	+ (H2C)	0.0026	0.23	-0.0058	-0.65
REMSB		-0.0037	-0.90	-0.0040	-0.89
CASH	+ (H3B)	0.0335	2.60***	0.0406	2.65***
SIZE		-0.0013	-1.37	-0.0017	-1.40
MBOOK		-0.0002	-0.49	-0.0000	-0.10
OCF		-0.0150	-0.88	-0.0136	-0.70
REP	+ (H3A)			0.0076	2.20**

Panel B: Predictive Model

		All firms with available data		Repeat announcers with available data	
Firm year observations – non-repurchasers		7983		7983	
Firm year observations – repurchasers		1297		1297	
Total firm year observations		9280		9280	
Number of firms		1554		1554	
		Coefficient		Coefficient	
Variable	Predicted sign	Estimate	z-value	Estimate	z-value
OCF	+	0.0204	2.28**	0.0171	2.83***
NCIB1	+	1.7240	31.3***	2.2467	33.95***
SIZE	+	0.1191	12.27***	0.1156	9.42***

*** denotes significance at the 0.01 level, ** denotes significance at the 0.05 level, * denotes significance at the 0.10 level

This table presents Heckman full information maximum likelihood estimates for all firms and for repeat announcers as described in Table 4. Panel A presents the results of the explanatory model. All variables used in the explanatory model presented in Panel A are defined in Table 6. Panel B presents the results of the predictive model. The dependent variable in the predictive model takes on a value of 1 if the firm announced a repurchase program, 0 otherwise. Independent variables in Panel B are defined as follows. OCF= Operating cash flow as a percentage of

total assets as of the most recent balance sheet date prior to the repurchase announcement. NCIB1 =1 if the firm had a repurchase program in place in the prior fiscal year, 0 otherwise. SIZE = natural log of total assets.

Panel A presents the results of the explanatory model. A comparison of the results in Table 7 Panel A with the conditional results reported in Table 6 reveals no significant differences. Variable REP continues to be positive and significant at the $p<0.01$ level, with an estimated coefficient value of 0.76 (0.78 in Table 6). CASH continues to be positive and significant at the $p<0.01$ level, with an estimated coefficient value of 0.0335 (0.0336 in Table 6). To test for the impact of selection, I use STATA to calculate ATHRHO, the hyperbolic arctangent of the probability from the probit model. A significant ATHRHO indicates that OLS results will not generate consistent estimates (Note 3). In both Heckman models presented in Table 7, ATHRHO was insignificant, suggesting that sample selection does not influence the coefficient results presented in Tables 6 and 7.

7. Conclusion

This study examines the market reaction to repurchase announcements by TSX firms. These announcements result in a significant market reaction as evaluated by abnormal return and volume tests. Further analysis indicates that firms that have followed through on past repurchase announcements and have cash on hand experienced greater announcement returns. However, most reasons provided by TSX firms for their repurchase programs were not found to be informative. These results provide little support for the TSX requirement for firms to disclose a reason for their repurchase programs. The results do support the TSX requirement to disclose repurchases since these disclosures appear to provide investors with useful information when interpreting subsequent repurchase announcements.

The findings of this study may be of interest to regulators in other jurisdictions. U.S. exchanges are currently contemplating increased disclosures for stock repurchases. The TSX may wish to consider the findings of this study in the course of reviewing their own regulations. This study contributes to the literature on reputation by examining whether management's follow-through on previous repurchase announcements affects the market reaction to subsequent announcements. This study contributes to the literature on stock repurchases by examining whether the additional information provided by TSX firms (timely reports, disclosure of the reason for the repurchase program) is useful to the market. Finally, this study contributes to the repurchases literature by introducing volume testing into the study of repurchase announcements, applying Cready and Hurtt's (2002) finding that volume tests are more powerful than return tests when investigating investor response to an information event.

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Notes

Note 1. Examples include Stephens and Weisbach (1998), Jagannathan and Stephens (2003) and Lie (2005) using U.S. data and Li and McNally (2007) using Canadian data.

Note 2. The Toronto Stock Exchange, 1999 and 2002. TSX Review, Dec. 1997, 2002 and 2006.

Note 3. For a detailed discussion of the full information maximum likelihood Heckman model and the ATHRHO test, see Baum, C., An Introduction to Modern Econometrics Using Stata, p.p. 266-271.

Note 4. Source: Toronto Stock Exchange requirements for normal course issuer bids are contained in Policy 6-501 of the TSX Manual.

Note 5. Ikenberry, Lakonishok and Vermaelen. 2000. Stock Repurchases in Canada: Performance and Strategic Trading, The Journal of Finance (Vol.55, No.6), p.2377.

Note 6. Oded, J. 2005. Why Do Firms Announce Open-Market Repurchase Programs. The Review of Financial Studies (Vol.18, No.1), p.271.

Appendix 1. Comparison of TSX and U.S. regulations on open market share repurchases

	TSX Requirements (Note 4)	SEC Requirements (Note 5)
Authority	• Policy 6-501 of the TSX Manual governs Normal Course Issuer Bids.	• There are no specific statutory rules relating to repurchases. • Firms fall under SEC Reg. 10b-18, a safe harbour provision for share purchases.
Authorization	• Firms must obtain authorization from the TSX to commence a normal course issuer bid.	• No requirement for authorization.
Size Limitation	• Annual repurchases are limited to the greater of 5% of total shares outstanding or 10% of the public float. • No more than 2% of total outstanding shares in a month.	• No specific limitations. • Reg. 10b-18 provides safe harbour if a firm does not exceed certain limits with respect to price, volume and time of day.
Disclosure	• Press release announcing program mandatory. • Specific announcement requirements as per Appendix 2 – includes requirement (item 6) to disclose reason(s) for repurchasing.	• No requirement to announce start of repurchase program although most firms choose to do so (Note 6). • No specific disclosure requirements for announcement.
Actual Repurchases	• Requirement to disclose shares repurchased in last twelve months as part of announcement press release. • Requirement to report shares repurchased each month once program started – published in the TSX Daily Record.	• Prior to 2005, there was no requirement to disclose shares repurchased except in the normal course of preparing interim and annual financial statements. • SEC began quarterly repurchase reporting requirement in 2005
Program Duration	• Limited to a maximum of twelve months at which time authorization must be re-obtained.	• No specific program duration. Can range from short (several months) to long (several years or no fixed duration).