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THE IMPACT OF REGULATIONS ON THE INFORMATIONAL BASIS OF INSIDER TRADING

ABSTRACT

While insider trading has been regulated in the vast majority of countries with financial markets, the efficacy of these regulations has only been sparsely examined. In this paper we examine the impact of major regulatory changes in New Zealand on the profitability and informational basis of insider transactions. We conclude that the law changes have both significantly reduced the profitability of insider trading and forced insiders to change the source of the information they use from private information to knowledge of market misvaluation. The results show that well constructed insider trading laws can be effective in controlling insider behaviour and profitability.

JEL Classification: G14, G38, K22

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1. INTRODUCTION

That insider's have an informational advantage over the rest of the market as a result of their relationship with their company has been proven in virtually every market that has examined the profitability of insiders¹. However, despite the harm that insider trading causes to the market as a whole (increased costs of capital (Bhattacharya and Dauok (2002)), volatility (Kyle (1985)) and bid-ask spreads (Copeland and Galai (1988), Glosten and Milgrom (1985) and Chung and Chareonwong (1998)) and reduced liquidity (Ausubel (1990), Fishman and Hagerty (1995)), it also improves the informational efficiency of the market (Manne (1966), Kyle (1985), Leland (1992)). Regulators, as a result, have tended to treat insider trading as a necessary evil and have attempted to prevent the worst of it via regulation (Bhattacharya and Dauok (2002) show that over 80% of countries with financial markets have regulated insider trading). In particular regulators have focused on the information basis for the trades made by insiders in attempting to control the harm from insider trading. The literature (Piotroski and Roulstone (2003)) identifies two predominant sources for the informational advantage of insiders, specific knowledge and market mispricing.

Specific knowledge refers to trading based on knowledge of undisclosed information that if released would have a price-impact, such as earnings announcements or merger plans. In virtually every market that has regulated insider trading, trades based on this information have tended to be prohibited. The reason this basis is treated so harshly lies in the fact that the details are ultimately released to the market via an announcement. As a result, trades based on this information are largely only redistributive as they offer little new information to the market that would not be known via the companies announcement while allowing insiders to reap significant abnormal returns at the expense of outside investors (Ausubel (1990)). For insiders however, it offers a relatively certain outcome as the market reaction and the timing of the reaction to the information contained within the announcement is relatively easy to determine.

By contrast, regulators have been quiet about the ability of insiders to exploit market mispricing. A number of papers have identified the superior ability of insiders to price the fundamental value of their company (Friederich, Gregory, Mataka and Tonks (2002)). This allows them to accurately identify situations where the market has failed to accurately incorporate all the public information relating to the company. By informing the market of the details of the trade insiders are able to signal such mispricing to the market resulting in more accurate market prices. The result of this is to improve the efficient allocation of resources within the market. Trading on this information and the resulting signals also means that the insider in a similar role to that of an analyst (Fishman and Hagerty (1992), Khanna and Slezak (1994) and Gilbert, Tourani-Rad and Wisniewski (2006)). Given the difficulty in disclosing such deviations from the fundamental price through other methods, these trades are important for the allocative efficiency of the market. However, insiders are likely to need a motivation to trade exclusively on this information given the market under-reacts to information of insider trades in the short-run (Lakonishok and Lee (2001)). As a result insiders face less certain and likely smaller profits exploiting market mispricing than those profiting from an upcoming announcement.

While regulations have been used to balance the costs and benefits of insider trading, there has been little examination of the success of these efforts. In particular the impact of the structure or strictness of laws and their enforcement on insiders' behaviour has been only lightly covered. Jaffe (1974) and Seyhun (1992) for instance both found that insider profitability was not affected by activities that were argued as increasing the cost of insider trading. Garfinkel (1997), by contrast, found that the insiders were dissuaded from trading in the same direction as an upcoming announcement, i.e purchasing before good news and selling before bad news, by stricter laws. We seek to add to the limited evidence on the role of regulations in controlling insider profitability and the information they use to trade on.

The literature on insider trading provides some further support for the belief that regulations can be effective in dealing with the consequences of insiders. Studies examining insider trading around announcements in the US, while not explicitly examining the role of regulation, show support for the findings of Garfinkel (1997). Studies on samples drawn predominantly from prior to the 1988 law changes

examined by Garfinkel tend to show insiders trading prior to an upcoming announcement (Karpoff and Lee (1991), Lee et al. (1992), Lamba and Khan (1999) and Elliot et al. (1984)). Studies based on sample periods after the changes show that insiders wait till after an announcement to trade and do so away from the direction of the market reaction (Sivakumar (1994), Noe (1999) and Piotroski and Roulstone (2003)). This change was argued as indicating a switch from short term information, such as the contents of an upcoming earnings announcement, to long term knowledge, including expectations about future cash flow realisations or predicted future growth rates. Such a finding suggests the increased cost of insider trading from the law changes have forced a change in the informational basis of insider trades to avoid the appearance of trading on material information.

Evidence also exists to show regulations have had a positive impact in other areas affected by insiders. Beny (2005) examined an index rating the strength of insider trading laws and found that countries with stricter regimes had higher liquidity, more widely held share ownership and more accurate prices. Bhattacharya and Daouk (2002), while finding that the enactment of laws had little effect did conclude that the first enforcement of insider trading laws resulted in a significant reduction in the cost of capital. Bushman, Piotroski and Smith (2005) using the same sample also found that enforcement resulted in a marked increase in the analyst following of emerging and developing markets. Developed markets by contrast saw a significant increase following the enactment of the laws. The evidence therefore does suggest that regulations have had an impact on insider trading, although the evidence is not unanimous.

Jaffe (1974) and Seyhun (1992) both concluded that events that they argued as having increased the cost of insider trading had resulted in little improvement and in the case of Seyhun had actually increased the volume of insider trading. One possible explanation for the differences in the findings between Jaffe and Seyhun and Garfinkel (1997) is the level of regulatory change. The law change examined in Garfinkel is noted as being a major increase in the severity of insider trading laws, including the introduction of bounties for those turning in insiders. The findings from Bhattacharya and Daouk (2002) and Bushman et al. (2005) also suggest that the mere presence of laws is not enough, that the laws must be sufficiently strict to pose

a real risk of enforcement. Further, Beny (2005) showed a clear relationship between the severity of insider trading regulation and the harm from insider trading. In this instance the situation of New Zealand provides an ideal case study within which to examine the effect on insiders profitability and the information they used, as it marked a significant and profound increase in the cost of insider trading and reduction in the benefits of insider trading.

The New Zealand Situation

The regime prior to the introduction of the SMAA has been the subject of scathing commentary regarding its ability to control insiders, particular in light of its inability to secure a conviction after over a decade in effect. Two weaknesses of the previous system were of particular importance, the lack of a public regulator and the lack of timely disclosure by directors and executives. Previously, the other party to the trade or the issuing company were required to prosecute insiders. However, due to the cost and evidential burdens, traders affected by insiders have proven largely unprepared to pursue an action against an insider, while the issuing companies have proven reluctant to prosecute their own insiders. The result has been very few cases taken with no successesⁱⁱ.

Further, the lack of timely disclosure has severely limited the benefit to the market of insiders trading. Chung and Charoenwong (1998) concluded that the market is unable to detect insiders trades unless they are disclosed. No disclosure, or delayed disclosure, means the market is unable to infer the insiders information. It also means that insiders are able to continue trading on inside information for much longer as the market is unable to adjust prices for their information resulting in significantly higher returns to insiders (Huddart, Hughes and Levine (2001)). It also appears to have given insiders little reason not to trade on the most profitable information, knowledge of upcoming announcements, as the insiders had little reason to suspect their trades would be examined in depth once they were disclosed (on average 9-10 months later as shown in Etebari, Tourani-Rad and Gilbert (2004)).

Both these weaknesses were addressed in the SMAA with the Securities Commission (a publicly funded watchdog which already had oversight of the markets and statutory declarations) given the ability to prosecute where the issuing company

refused and all corporate insiders (directors, executives and large blockholders) required to disclose within 5 days. Given the lack of disincentives not to use knowledge of upcoming announcements under the previous regime, and the significant tightening under the recent amendments, if regulations can influence the information that insiders use, and by extension their profitability, then it should be apparent in the New Zealand experiences.

This study will explore the regulatory experiences of New Zealand to the help address the issue of whether regulations can be effective in limiting the profitability of insiders and controlling the information they trade on. Specifically we examine the enactment of the Securities Market Amendment Act 2002 (SMAA) in New Zealand which was introduced to tighten an ineffective regime. The experience of New Zealand in going from a lax to tight legislative regime maybe of interest to policy makers in developing and emerging markets, many of whom while having enacted laws against insider trading have not enforced them due to weaknesses in their systems or a lack of political will (Stamp and Walsh (1996)).

We start by examining the profitability of insiders for a sample of 1146 director transaction before and after the regulatory changes. We find significant out-performance for both purchases and sales prior to the law changes but not after. Further, the change in profitability appears to be due to a change in the informational basis for the trades. We observe significant decreases post-change in the number of trades followed within 80 days by corporate announcements in the right direction. Further, pre-change profitability was predominantly driven by those trades preceding news in the expected direction. Post-change out-performance, on the other hand, is limited to situations where market prices have strongly deviated from the fundamental price. The results strongly suggest that the recent changes have been effective in discouraging insiders from trading or giving the appearance of trading on the basis of upcoming announcements.

The rest of the paper is structured as follows. Section 2 will give a discussion of the sample employed and the methodology for determining the profitability of insiders and the source of information they rely on. Section 3 presents the empirical results while the final section concludes the paper.

II. SAMPLE AND METHODOLOGY

Sample

To explore whether insider trading regulations can be effective in controlling the information that insiders trade on we examine director trades around the time of the introduction of the SMAA. We focus on directors exclusively as the old rules did not require executives to disclose at all and there are questions about the informational advantage and access to inside information of large block holders (Seyhun (1998)). Directors transactions were collected from all companies listed on the New Zealand Exchange over the period January 1996 – October 2005. Transactions for 2002, the year the amendment was enacted, were excluded from the study to prevent any bias from the preceding legislative events that occurred throughout 2002 leading up to the enactment. Transactions that occurred on the same day were combined into one trade based on the net number of shares traded. After removing transactions where there was insufficient data the sample consisted of 1121 transactions from 120 companies. The sample was separated into two time periods, pre-change running from 1996-2001 (755 trades) and post-change from 2003-Oct 2005 (366 trades).

Methodology

We start by examining the ability of insiders to outperform the rest of the market. This is accomplished by calculating the cumulative abnormal returns earned by insiders over the 80 days following the trade. We calculate the abnormal returns using the Fama and French 3 factor model such that

$$r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it} \quad (1)$$

where r_{it} is the return on company i , r_{ft} is the risk free rate r_{mt} is the return on the NZSE All index, SMB is the return from a portfolio of small stocks minus a portfolio of large stocks and HML is the return from a portfolio of high book-to-market firms minus a portfolio of low book-to-market firms. The daily portfolio returns were calculated for the top and bottom 30% of the universe of stocks, in this case non-

financial firms listed on the NZX between 1993 and 2006 including delisted firms. Portfolio formation occurred on the 30th of June with returns measured from 1 July. Sorts for the SMB and HML portfolios were based on the prior end of calendar year values. Parameter estimates for the regression coefficients were estimated over the period -375,-125 days prior to the date of the trade. Those estimates were then applied to calculate the abnormal returns in the testing period, -125,80.

We examine the issue of whether insiders are using knowledge of upcoming announcements in a similar fashion to that employed in Givoly and Palman (1985). We look at the period following an insiders trade and search for the first news announcement within 80 days which seems a reasonable estimate of the time before an announcement that an insider would be aware of the information. We classify news as either good bad or neutral as per Appendix A based on the criteria used in Palmon and Schneller (1980) and Fama (1998). We also categorised the announcements by the type of announcements into one of 7 categories based on the classifications of Pritamani and Singal (2001). If insiders are predominantly trading on the basis of the information contained in forthcoming announcements you would expect to see the majority of purchases before good news and sales before bad news.

We also test to see if insiders are instead trading based on market mispricing, or when the market price deviates from the fundamental price. As demonstrated by Seyhun (1992) if insiders are trading based on expected price reversals you should see purchases following price declines and sales after a price appreciation. Rozeff and Zaman (1998) and Piotroski and Roulstone (2003) go further and note that this should be most apparent in situations where the price suffers the most deviation. This they argued occurred in value and growth firms where value firms tended to be undervalued and growth overvalued (Fama and French (1992) and Lakonishok, Shleifer and Vichny (1994)). We test whether insiders do appear to be trading in these firms using the book-to-market ratio as a proxy for value versus growth,.

Summary Statistics

Table 1 gives sample descriptive statistics separating the sample into pre and post-change purchases and sales. Transactions per month have stayed largely the same

between the purchases and sales samples with the only major deviation being the 7% increase in the number of transactions taking place in March following the introduction of the new laws. Sales also see a small spike in transactions in March however there are few other notable deviations between the two samples. The purchases per year show a large jump between the pre-change and post-change periods, largely driven by the 2003-2004 period. 2005 however was back to pre-change levels. Sales on the other hand are at low end of the pre-change levels with 2004 being significantly lower. The high purchases and low sales, however, maybe the result of strong performance on the New Zealand market over this time period. One point of interest though is the very small number of transactions in 2001 for both purchases and sales. One possible explanation is that insiders in an attempt to avoid regulation may have stopped or delayed trading to mask the problem. The final value given is the average shares per transaction. While there is a small increase in purchases post-change, the numbers are largely similar suggesting little difference between the two time periods. On the whole the descriptive statistics do not show a significant change following the introduction of the new laws.

	Purchases				Sales			
	Pre Change		Post Change		Pre Change		Post Change	
	Number	%	Number	%	Number	%	Number	%
Transactions Per Month								
January	24	6%	6	3%	9	3%	5	4%
February	21	5%	10	4%	24	8%	10	8%
March	43	10%	40	17%	32	10%	16	13%
April	47	11%	24	10%	25	8%	12	9%
May	42	10%	22	9%	24	8%	14	11%
June	33	8%	25	10%	29	9%	11	9%
July	22	5%	10	4%	17	5%	6	5%
August	33	8%	23	10%	32	10%	18	14%
September	45	10%	26	11%	26	8%	10	8%
October	45	10%	9	4%	32	10%	8	6%
November	51	12%	30	13%	38	12%	10	8%
December	29	7%	14	6%	32	10%	7	6%
Transactions Per Year								
1995	76				60			
1996	59				63			
1997	65				52			
1998	78				49			
1999	66				44			
2000	74				42			
2001	17				10			
2003			90				48	
2004			82				34	
2005			67				45	
Average Shares/Transactions								
	180,886		237,794		311,851		301,711	

Table 1: Summary Statistics

Pre-change includes the 755 transactions (435 purchases and 340 sales) that occurred between Jan 1996 and Dec 2001. Post-change includes the 366 transactions (239 purchases and 127 sales) that occurred between Jan 2003 and Oct 2005. Transactions per month was measured as the total number of trades in a given month over the relevant time period. Transactions per year was measured as the total number of trades in a given year. Average shares per transaction was measured as the average shares traded over the relevant time period.

III. RESULTS

Insiders Performance

If the legislative changes have been effective it would be expected that there would be a noticeable reduction in the profitability of insider's transactions following their enactment. Table 2 gives details of the cumulative abnormal returns (CARs) earned by insiders both prior to the change in the laws and following their introduction. The results show a marked reduction in the profitability of insiders driven by both the purchase and sales sub-samples. The pre-change sub-samples both show

significance starting between the 0,20 (sales) and 0,40 (purchases) time periods with purchases earning 3.9% over the 0,80 day period while insiders sales avoid losses of nearly 6% compared to the market. By contrast in the post-change period insiders do not earn significant abnormal returns over any event period. Post-change purchase CARs are down nearly 50% and sales close to 80% after the new laws were introduced. These changes in profitability suggest the new laws have had a significant impact on the trading of insiders. These results also contrast somewhat with the evidence of other studies that have shown that changes in regulations had little or no impact on the profitability of insiders.

Panel A: Insider Purchases				
	Pre-Change		Post-Change	
	CAR		CAR	Difference
0-10	0.0064		0.0082	-0.0018
0-20	0.0112		0.0110	0.0002
0-40	0.0216	*	0.0163	0.0054
0-80	0.0390	***	0.0219	0.0172 ***

Panel B: Insider Sales				
	Pre-Change		Post-Change	
	CAR		CAR	Difference
0-10	0.0082		0.0120	-0.0038
0-20	0.0205	*	0.0217	-0.0012
0-40	0.0352	**	0.0240	0.0112 ***
0-80	0.0597	***	0.0130	0.0467 ***

Table 2: Insiders Cumulative Abnormal Returns

Note: * = Significant at 10%, ** = Significant at 5% and *** = Significant at 1%. Pre-change includes the 755 transactions (435 purchases and 340 sales) that occurred between Jan 1996 and Dec 2001. Post-change includes the 366 transactions (239 purchases and 127 sales) that occurred between Jan 2003 and Oct 2005. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126. The significance of the difference between the pre and post-change samples was calculated using two-sample t-tests.

Figures 1 and 2 offer some suggestion as to the cause of the differences in the CARs observed. Figure 1 shows the CAR's over the period -125,80 for the pre and post-change purchases. What can be seen is a change in the approach that insiders seem to be taking in trading. Prior to the legislative change, insiders purchases occur following a period of price increase that increases in magnitude following the trade. There appears to be no attempt to time their trading so that they purchase shares at a low point in its price history. By contrast, post-change purchases occur following a decrease in the price of shares of nearly 2%, suggesting insiders were timing their trades. Following the trade an increase in the price is observed taking the price to just above where it started.

A similar pattern is observed in Figure 2 for the sales samples. Pre-change sales occur during a period of downward prices that intensifies following the trade. Post-change sales however, occur at the peak of a price increase of nearly 2% over nearly 4 months prior to the trade followed by a steep decline. It appears, therefore, that insiders have started timing their trades to make the most efficient use of periods of minor mispricing rather than what appears to be knowledge of major forthcoming price changes.

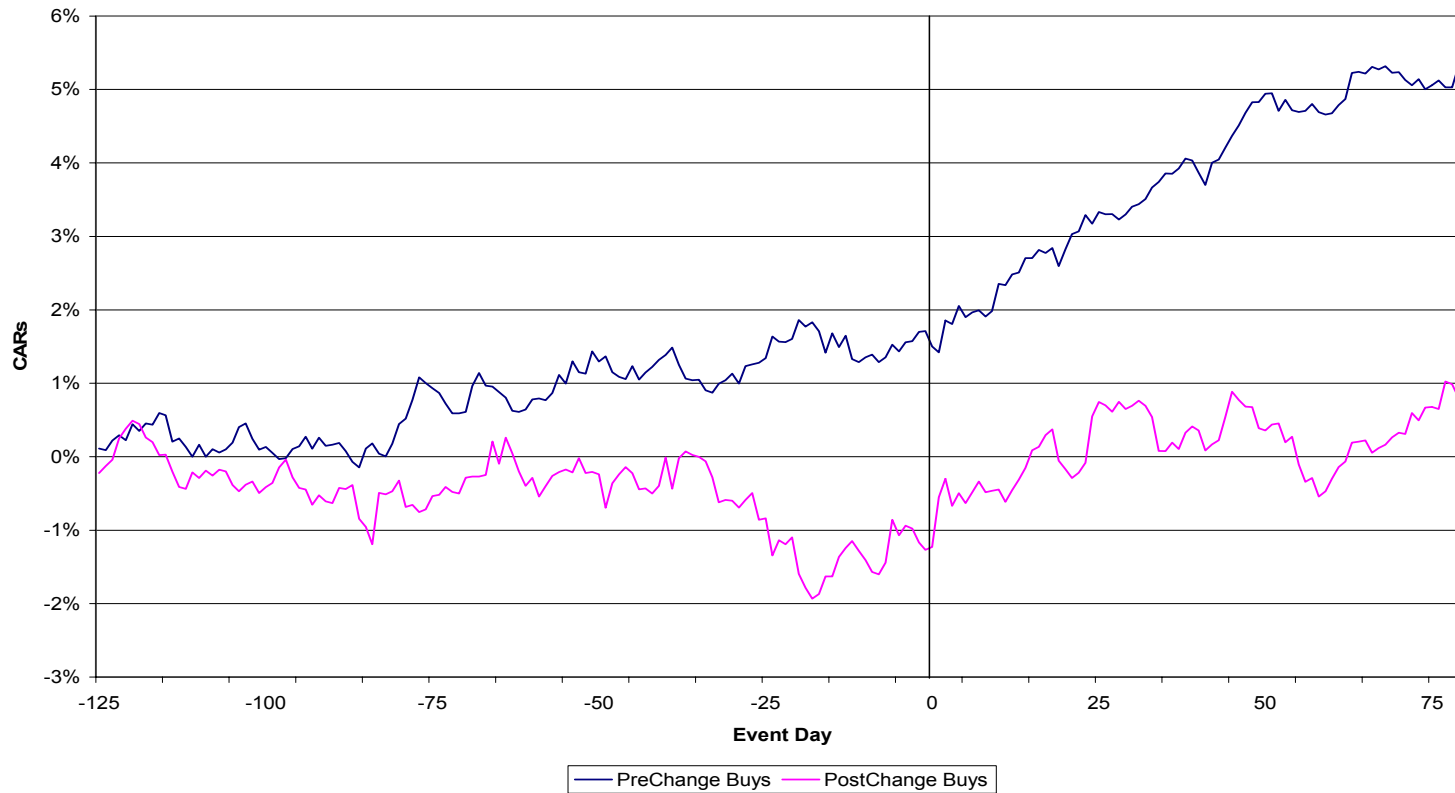


Figure 1: -125,80 Day Cumulative Abnormal Returns for Insider Purchases

Note Pre-change includes 435 purchases that occurred between Jan 1996 and Dec 2001. Post-change includes 239 purchases that occurred between Jan 2003 and Oct 2005. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126. Low BM includes the lowest 30% of trades based on the previous end of calendar year book-to-market ratio. High BM includes the highest 30% of trades based on the previous end of calendar year book-to-market ratio.

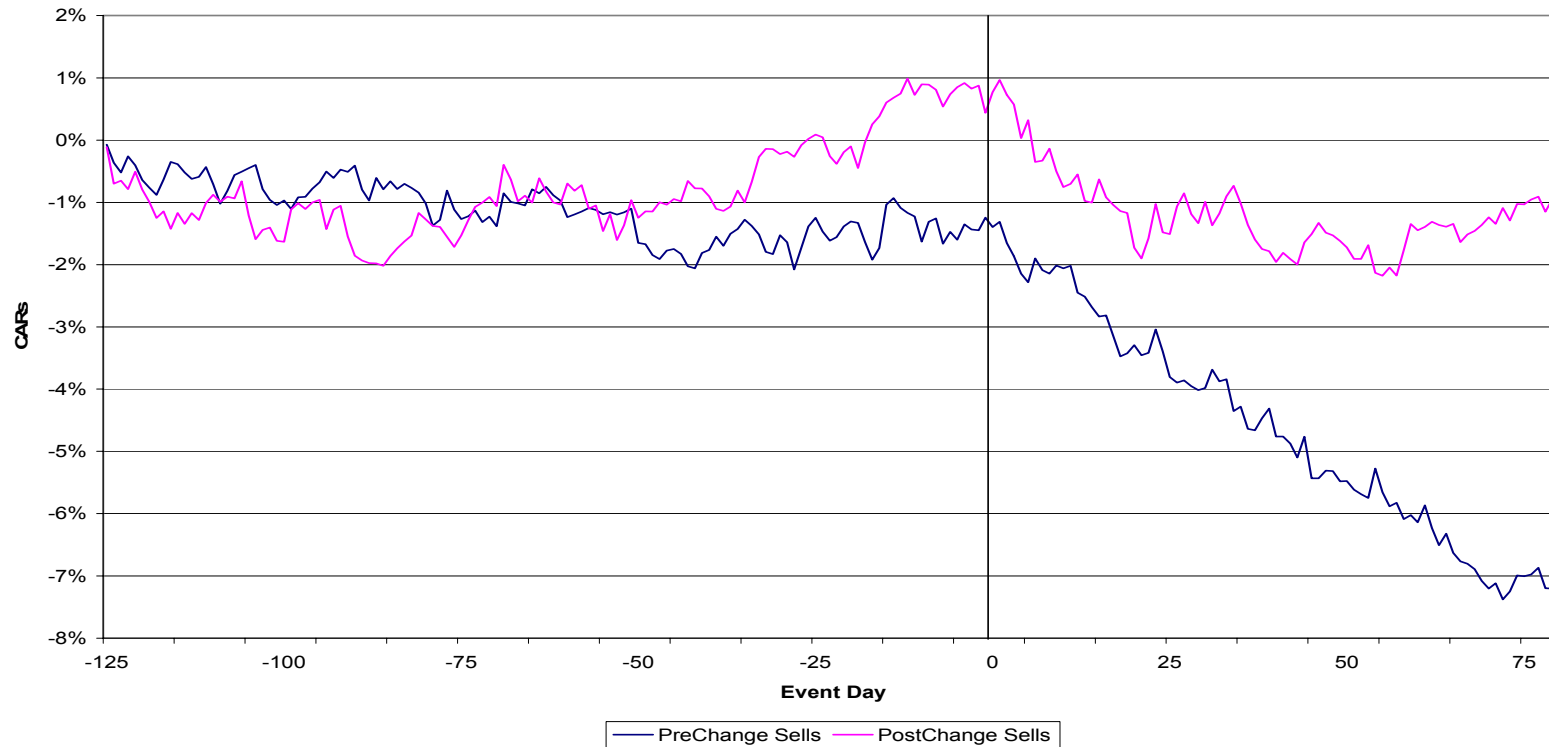


Figure 2: -125,80 Day Cumulative Abnormal Returns for Insider Sales

Note Pre-change includes 340 sales that occurred between Jan 1996 and Dec 2001. Post-change includes 127 sales that occurred between Jan 2003 and Oct 2005. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126. Low BM includes the lowest 30% of trades based on the previous end of calendar year book-to-market ratio. High BM includes the highest 30% of trades based on the previous end of calendar year book-to-market ratio.

The Source of Insiders Performance

The literature offers two possible explanations for insiders profitability, market mispricing and private information (Piotroski and Roulstone (2003)). The change in patterns observed in Figures 1 and 2 suggest that the new insider trading amendments may have forced insiders to switch between these two possible sources of profits. We will examine the two sources separately to see if the legislative changes have resulted in a fundamental change in how insiders make their profits.

Knowledge of Upcoming Announcements

The first source of profitability we will explore is knowledge of upcoming announcements. Insiders by virtue of their positions are privy to confidential information about the company that once released will have a price impact. Numerous studies have shown evidence to suggest that insiders both possess this information and trade in advance of its release where regulations do not provide a sufficient disincentive (Karpoff and Lee(1991), Lee et al. (1992), Lamba and Khan (1999), Elliot et al. (1984), Sivakumar (1994), Noe (1999) and Piotroski and Roulstone (2003)). There have been numerous suggestions by a variety of commentators that prior to the recent law changes the insider trading regime in New Zealand was weak (Fitzsimons (1995), O'Sullivan (2000), Gaynor (2000)). The lack of a public watch dog to police insider trading rules, the lack of timely disclosure with regards to directors transactions and the use of private enforcement all contributed to an environment where insiders had little reason to fear fully using their information advantage. We investigate whether insiders in New Zealand do use this information by exploring the pattern of announcements following insider trades.

To determine if insiders did predominantly base trading decisions on material information we examine the trades to see if a trade precedes an announcement in the 'right' direction i.e. a purchase followed by good news or a sale followed by bad news. The inference drawn from observing such a pattern being that the insider has traded based on knowledge of the likely price impact the information will have. Rather than limit this study to examining insider trades around one type of announcement, we explore the issue by examining the first announcement within 80 days of an insiders trade. This allows us to investigate more fully the relationship

between insiders buying and selling and the flow of publicly disclosed information to the market and whether the introduction of new laws to strengthen the regime has altered this relationship.

Panel A of Table 3 gives the break down of the purchase and sale trades both pre and post-change and the direction of the subsequent announcements. The pre-change samples both have markedly higher percentages of trades in the right direction than their post-change counterparts. Pre-change purchases are followed by good news nearly 60% of the time, not as high as observed in Calvo and Lasfer (2002), who examine the UK, but much higher than the number followed by news in the wrong direction at just 16%. Post-change purchases by contrast are only followed by good news in 44% of cases while news in the wrong direction nearly doubles to 32%.

A similar pattern is apparent in the sales sample with pre-change sales being followed by news in the right direction in 45% of trades as opposed to just 19% of transactions for the post-change sample. The smaller percentage in the right direction for sales is likely due to these trades being less informationally driven in light of a number of other reasons to sell such as liquidity needs and diversification that do not exist for purchases. We also observe a doubling of the number of trades followed by news in the wrong direction from 27% pre-change to 52% post-trade. What is apparent between the pre and post-change samples is that there are fewer trades being conducted ahead of announcements in the same direction trade for both purchases and sales with concurrent increases in trades in the wrong direction.

Panel A: Raw Numbers and Percentages								
Announcement Direction	Pre Change Purchases		Post Change Purchases		Pre Change Sales		Post Change Sales	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Right Direction	254	58.39%	106	44.35%	143	44.69%	24	18.90%
Wrong Direction	73	16.78%	77	32.22%	87	27.19%	67	52.76%
Neutral	50	11.49%	24	10.04%	30	9.38%	12	9.45%
No Announcement	58	13.33%	32	13.39%	60	18.75%	24	18.90%
Total Trades	435		239		320		127	

Panel B: Cumulative Abnormal Returns by Announcement Direction								
Announcement Direction	Pre Change Purchases		Post Change Purchases		Pre Change Sales		Post Change Sales	
	CAR		CAR		CAR		CAR	
Right Direction	0.0597	**	0.0174		0.1417	***	0.0067	
Wrong Direction	0.0096		0.0225		-0.0246		0.0173	
Neutral	0.0321		0.0279		0.0127		0.0076	
No Announcement	0.0110		0.0312		0.0125		0.0314	

Table 3: Trade Direction and CARs

Note: * = Significant at 10%, **= Significant at 5% and *** = Significant at 1%. Pre-change includes the 755 transactions (435 purchases and 340 sales) that occurred between Jan 1996 and Dec 2001. Post-change includes the 366 transactions (239 purchases and 127 sales) that occurred between Jan 2003 and Oct 2005. Right Direction represents purchases (sales) followed by good (bad) news. Wrong Direction represents purchases (sales) followed by bad (good) news. Neutral represents trades followed by neutral news and No Announcement represents trades without an announcement within the following 80 days. Classifications of announcements as good, bad or neutral was based the criteria in Appendix 1. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126.

Panel B shows the cumulative abnormal returns for each sample. Notably we observe that the profitability of the pre-change samples is largely dependant on the trades in the right direction. Pre-change purchases for instance rely on trades in the right direction which earn on average nearly 6% to make up for the insignificant but positive returns on the neutral and no news categories and the slight losses on the trades followed by announcements in the wrong direction. Likewise, sales see very strongly significant returns of 14.17% when the news is in the right direction and insignificant returns otherwise. The post-change samples by contrast have no category with significant returns and all categories earn similar levels of cumulative abnormal returns. This suggests that the pre-change profitability is largely driven by upcoming announcements while post-change is largely independent of the news.

In Table 4 we further separate the sample by the type of announcement that occurs to see if there are particular categories of news that insiders trade ahead of. Announcements were separated into one of seven categories, Earnings Announcements, Earnings and Profit Forecasts, Board and Management Changes, Capital Structure Information, Restructuring Information, General Business Information and Miscellaneous Information. The results for the Earnings and Profit Forecasts are not reported due to the very small numbers for all sub-samples for that category. For most of the categories there is little change in the percentage of transactions followed by an announcement of that type between the pre and post-change periods. However, there is a significant decrease in the percentage of trades followed by earnings announcements for both purchases (decreases by 12%) and sales (decreases by 21%). This is likely a result of greater visibility as a result of continuous disclosure making breaches of black-out periods more obvious combined with the increased risk of prosecution.

Panel A: Pre Change Purchases								
	Right Direction		Wrong Direction		Neutral		Total	
	Number	%	Number	%	Number	%	Number	
Earnings Announcements	75	67%	36	32%	1	1%	112	30%
Board/Mngt Changes	21	44%	0	0%	27	56%	48	13%
Capital Structure Info	36	88%	1	2%	4	10%	41	11%
Restructuring Info	57	74%	19	25%	1	1%	77	20%
General Business Info	38	90%	3	7%	1	2%	42	11%
Misc Info	24	50%	9	19%	15	31%	48	13%

Panel B: Post Change Purchases								
	Right Direction		Wrong Direction		Neutral		Total	
	Number	%	Number	%	Number	%	Number	
Earnings Announcements	19	50%	17	45%	2	5%	38	18%
Board/Mngt Changes	0		0		0		0	0%
Capital Structure Info	10	36%	11	39%	7	25%	28	14%
Restructuring Info	24	59%	17	41%	0	0%	41	20%
General Business Info	35	83%	7	17%	0	0%	42	20%
Misc Info	8	22%	13	36%	15	42%	36	17%

Panel C: Pre Change Sales								
	Right Direction		Wrong Direction		Neutral		Total	
	Number	%	Number	%	Number	%	Number	
Earnings Announcements	55	65%	27	32%	2	2%	84	32%
Board/Mngt Changes	19	59%	1	3%	12	38%	32	12%
Capital Structure Info	12	60%	7	35%	1	5%	20	8%
Restructuring Info	23	52%	20	45%	1	2%	44	17%
General Business Info	13	30%	30	68%	1	2%	44	17%
Misc Info	18	56%	1	3%	13	41%	32	12%

Panel D: Post Change Sales								
	Right Direction		Wrong Direction		Neutral		Total	
	Number	%	Number	%	Number	%	Number	
Earnings Announcements	4	36%	7	64%	0	0%	11	11%
Board/Mngt Changes	1	100%	0	0%	0	0%	1	1%
Capital Structure Info	5	28%	10	56%	3	17%	18	17%
Restructuring Info	7	28%	18	72%	0	0%	25	24%
General Business Info	2	6%	30	94%	0	0%	32	31%
Misc Info	3	23%	1	8%	9	69%	13	13%

Panel E: Cumulative Abnormal Returns by Announcement Type						
	Purchases			Sales		
	Pre Change		Post Change	Pre Change		Post Change
Earnings Announcements	0.0778	**	0.0398	0.0782	*	0.0013
Board/Mngt Changes	-0.001		NA	0.0977	**	0.0122
Capital Structure Info	0.0576	*	0.0511	0.1106	***	0.0032
Restructuring Info	0.0386	*	0.0035	0.0528		0.0239
General Business Info	0.0752	**	0.0136	0.0219		0.0214
Misc Info	0.0028		0.0447	0.0767	**	0.0147

Table 4: Trade Direction and Insider CARs by News Classification

Note: * = Significant at 10%, ** = Significant at 5% and *** = Significant at 1%. Pre-change includes the 755 transactions (435 purchases and 340 sales) that occurred between Jan 1996 and Dec 2001. Post-change includes the 366 transactions (239 purchases and 127 sales) that occurred between Jan 2003 and Oct 2005. Right Direction represents purchases (sales) followed by good (bad) news. Wrong Direction represents purchases (sales) followed by bad (good) news. Neutral represents trades followed by neutral news and No Announcement represents trades without an announcement within the following 80 days. Classifications of announcements as good, bad or neutral was based the criteria in Appendix 1. Classification by type was undertaken as per the criteria in Appendix 1. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126.

Table 4 also shows a reduction in the number of categories that feature a greater than average percentage of trades followed by good news following the enactment of the new laws. As seen in Panel A, Pre-change purchases feature four types of announcement that are more frequently preceded by trades in the expected direction, Earnings Announcements, Capital Structure, Restructuring and General Business Information. Panel E which details the CAR's earned by trades preceding each announcement category show that the four above average categories all earn significant abnormal returns while the other two categories, Miscellaneous and Board/Management Changes are very close to 0. The same pattern appears in the pre-change sales results presented in Panel C. Here there are 5 categories above the average, the same four as purchases plus Board/Management Changes. Of these four, Earnings Announcements, Board/Management Changes, Capital Structure and General Business Information, earn significant abnormal returns. The fifth, Restructuring Information, has similar levels of news in the right direction, 52%, as in the wrong direction, 45%. This is smaller difference between right and wrong direction trades especially in relation to the other announcement categories offers one possible reason for why this category earns insignificant abnormal returns. Even with the high number of trades in the wrong direction, this category still earns economically if not statistically significant returns of 5.28%.

The pattern for the post-change sample is vastly different. Post-change purchases (Panel B) have three categories with high percentages of trades followed by news in the right direction, Earnings announcements, Restructuring and General Business news. Of these however, all have reduced percentages from the pre-change sample, 17, 15 and 7% respectively, and none earn significant cumulative abnormal returns. The only category to earn significant abnormal returns is Capital Structure Information which has more trades followed by news in the wrong direction than the right direction. Post-change sales demonstrate an even bigger change with no categories featuring more than 36% in the right direction (except Board/Management Changes which has only 1 trade total) and no categories that earn significant cumulative abnormal returns.

The results suggest that prior to the enactment of the new legislation insiders significantly outperformed the market when they entered into trades. When we examine these trades in relation to upcoming news announcements we find that insider purchases and sales occur most frequently before announcements in the expected direction. Further, the abnormal returns earned by insiders are driven by trades followed by news in the expected direction. When this is examined based on the type of announcement we again find a direct relationship between the announcement categories with the highest percentage of trades in the expected direction and the out performance of the market by insiders. These findings suggest that insiders prior to the law changes were basing their investment decisions on specific knowledge of the likely market reaction to upcoming announcements. This basis seems to have altered post-change with marked decreases in the number of trades made prior to announcements in the right direction for both sales and purchases and the lack of a relationship between these trades and the returns earned by insiders.

Market Mispricing

The second widely suggested basis for insiders profits is so called market mispricing. This relies on the belief that insiders by virtue of their intimate knowledge of the company have a much better ability to accurately price the fundamental value of the company and exploit deviations from the fundamental price (Lakonishok and Lee (2001)). This gives them the ability to time their trades such that they purchase or sell shares in the company when the market value is sufficiently different from the fundamental value to enable them to significantly outperform the market (Seyhun (1992), Rozeff and Zamen (1998) and Piotroski and Roulstone (2003)). Insiders use of such information provides valuable information to the market about the true price of the company and leads to more accurate pricing of shares (Fishman and Hagerty (1992), Khanna and Slezak (1994)). This has huge benefits to the market which is why insider trading based on this superior pricing ability is encouraged in most laws unlike knowledge of specific price-sensitive announcements. However, market mispricing is also likely to earn smaller and less certain abnormal returns as it requires the market to fully recognise the deviation from the fundamental value and correct the prices before insiders are rewarded (Lakonishok and Lee (2001)). Use of

specific knowledge on the other hand, relies on the market to react to the information content of the announcement which is more predictable.

If insiders are predominantly relying on mispricing rather than specific knowledge of upcoming announcements, then you should observe a particular pattern in the abnormal returns. Specifically, you should see declining CAR's prior to a purchase followed by an increase in the abnormal returns and the opposite for sales, increasing CAR's before the transaction and declining following. This is the pattern observed in Figures 1 and 2 for the post-change sample and is supported by the results in Panel A of Table 5 which shows the CARs for the total test period, -125,80, and various event windows within that period. As can be seen both the pre-change samples show CARs in the same direction through-out the entire test period, positive for purchases and negative for sales. If insiders were predominantly exploiting deviations from the fundamental value you would expect the opposite signs prior to the trade. The post-change samples do exhibit these patterns although the CARs earned are insignificant. Prior to the trade date purchase companies see CARs of -1.27% while sales firms gain 0.4%.

Calvo and Lasfer (2003) point out that it should be more obvious when insiders are using mispricing if you look at those companies that are most prone to deviations from the fundamental price. In particular growth firms, or firms with low book to market ratios, tend to be overvalued while value firms, those with high book to market ratios, tend to be undervalued (Fama and French (1992) and Lakonishok, Shleifer and Vishny (1994)). Insiders trading in these particular types of firms should be more profitable as the deviation from the true value is much greater providing more opportunity to profit. We find little evidence of a difference in the pre-change abnormal returns earned by insiders when we separate the sample based on book to market ratios. In both cases the only significant CARs occur after the trade and the pre-trade abnormal returns are positive (negative) for purchases (sales). In contrast the post-change results strongly suggest evidence of insiders trading based on mispricing. For the purchases (sales) we see significant cumulative abnormal returns for the high (low) book to market firms after the trade as expected. We also observe significant decreases (increases) in the CARs in the event window immediately prior to the trade suggesting that insiders are timing their trades to maximise their

abnormal returns. As expected we also see significant differences between the high and low book to market CARs.

Panel A: All Trades									
	Pre-Change					Post-Change			
		Purchases	Sales			Purchases	Sales		
-125,80	0.0561	***	-0.0722	**		0.0092	-0.0086		
-125,-60	0.0078		-0.0124			-0.0029	-0.0070		
-59,-1	0.0093		-0.0001			-0.0098	0.0114		
0,80	0.0390	***	-0.0597	***		0.0219	-0.0130		

Panel B: Insider Purchases Separated by BM									
	Pre-Change					Post-Change			
		Low BM	High BM	Difference		Low BM	High BM	Difference	
-125,80	0.0973	***	0.0644	***	0.0328	0.0067	0.0452	***	-0.0385 **
-125,-60	0.0211		0.0093		0.0118	0.0115	-0.0103		0.0218
-59,-1	0.0230		0.0227		0.0003	-0.0065	-0.0139	*	0.0074
0,80	0.0532	***	0.0324	*	0.0207	0.0017	0.0694	***	-0.0677 ***

Panel C: Insider Sales Separated by BM									
	Pre-Change					Post-Change			
		Low BM	High BM	Difference		Low BM	High BM	Difference	
-125,80	-0.0765	**	-0.0856	*	0.0090	-0.0779	**	0.0223	-0.1002 ***
-125,-60	-0.0274		-0.0193		-0.0081	-0.0019	0.0100		-0.0119
-59,-1	0.0188		0.0215		-0.0027	0.0406	*	0.0219	0.0186
0,80	-0.0679	**	-0.0878	**	0.0199	-0.1167	***	-0.0097	-0.1070 ***

Table 5: Market Mispricing

Note: * = Significant at 10%, **= Significant at 5% and *** = Significant at 1%. Pre-change includes the 755 transactions (435 purchases and 340 sales) that occurred between Jan 1996 and Dec 2001. Post-change includes the 366 transactions (239 purchases and 127 sales) that occurred between Jan 2003 and Oct 2005. Abnormal returns were calculated using the Fama and French 3 Factor model such that $r_{it} - r_{ft} = \alpha_{it} + \beta_{1i}(r_{mt} - r_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}$ where SMB is a portfolio of small company returns less a portfolio of large companies. HML is a portfolio of high book-to-market companies less a portfolio of low book-to-market firms. Portfolios were formed based on the top and bottom 30% of a universe of New Zealand companies listed between 1993 and 2006 including delisted companies. Parameters were estimated over the period -375,-126. Low BM includes the lowest 30% of trades based on the previous end of calendar year book-to-market ratio. High BM includes the highest 30% of trades based on the previous end of calendar year book-to-market ratio.

The results overall suggest that the differences observed in the cumulative abnormal returns earned by insiders between the pre and post-change samples are driven by a difference in the informational basis of the trades. Pre-change in an environment of very lax enforcement and no continuous disclosure we find that insiders predominantly trade prior to and in the same direction as the upcoming announcement, i.e. we find purchases before good news and sales before bad news. It is also apparent that the insiders ability to outperform the market is driven by trades

that occur prior to news in the expected direction suggesting a reliance on the market reaction to the information to earn abnormal returns. After the introduction of stiff new laws that increase the possibility of enforcement and require all insiders to disclose in a timely fashion insiders appear to trade predominantly based on their superior ability to price the company. This is apparent in their ability to time their trades such that they purchase when prices are low and sell when they are high. Insiders also do significantly better when in situations with the greatest mispricing. Overall it appears that the new laws have had a significant impact on the harm from insider trading and have done much to encourage the most beneficial types of trades.

IV. CONCLUSION

The role of regulation and efficacy in controlling the actions and harm from insider trading have not been examined in great detail. Yet this lack of scholarly attention has not prevented over 80% of the countries with financial markets from regulating insider trading (Bhattacharya and Daouk (2002)). What research has been conducted has not found consistent results on the issue of whether insider trading laws can be effective in controlling insider trading. Much of the dissent centres on the issue of the profitability of insider transactions and the information they use to profit. In particular, two sources of profitability are open to insiders, their superior ability to price the firm which allows them to detect and exploit inaccurate or unpriced information and their knowledge of specific upcoming announcements and the likely effect this will have on the price. However, whether regulations can force insiders to trade only on the less harmful information, knowledge of mispricing, rather than the more profitable knowledge of material information has yet to be comprehensively established. This paper addressed these issues within the context of a non-US market to add the experiences of another market to help understand the effect of regulation. The New Zealand experience also offers the advantage of jointly allowing an examination of the effect of the structure and strictness of the laws in affecting insider trading, as the law change being examined involved a marked increase in the cost of insider trading as well as a reduction in its benefit.

We examine directors' transactions prior and post the introduction of the new and stricter laws. Employing the Fama and French 3 factor model we observe significant out-performance of the market pre-change by directors but not post-change. This change appears to be related to the informational base of the trades which also changes following the introduction of the new laws. Pre-change insiders traded prior to news announcements in the right direction (i.e purchases before good news and sales before bad news) far more frequently than before news in the wrong direction. The trades followed by news in the right direction also drove the profitability of insiders trades. These patterns were also reinforced when announcements were separated by announcement type. Post-change transactions by contrast showed little evidence of these patterns. In fact post-change transactions were only shown to outperform in situations where the company was most prone to deviations between the market price and fundamental price (i.e sales for growth firms and purchases for value firms). Overall the results show that the new laws have been effective in both reducing the profitability of insiders and forcing insiders away from the most profitable information, profiting from the knowledge of upcoming announcements.

APPENDIX A: CLASSIFICATION TABLE

Good News Events

Increase of at least 5% over last years EPS (if semi-annually over the same period)
Increase of at least 3% in dividends
Company awarded a contract
Prediction of record income (even if below 5% increase per share)
Strike ended, negotiations spurred hope of settlement, settlement with union
Reopening of plant
Rehiring
Litigation settled in favour of company
Announcement of extra dividends
Production, development or marketing of a new product; discovery of new oil etc
Received or purchases a license, right or patent for new products etc
Expansion of business or plant; joint market venture
Acquisition or plans to acquire other companies; approval of a merger etc
Merger if target company
Announcement of a stock dividend or stock split
Action against competitors
Initial Public Offering
Dividend Initiations
New Exchange Listings
Share Repurchases
Spin-off
Acquisition of large block by an investor
Other

Bad News Events

Decrease in Earnings compared to last year (same quarter)
Decrease in dividends
Contract cancelled
Prediction of sales or income decrease
Strike started, negotiations broken off, conflict with union, strike continues
Plant Closing
Layoffs
Litigation settled against the company
Unfavourable action by a government agency
Downward revision of planned sales or production
Announcement of sales decline
Seasoned Equity Offering
Dividend Omission
Asset/Investment Sales
Other

Announcement Categories

- 1 Actual Earnings Announcements by Management
- 2 Forecasts of Earnings by Management
- 3 Analyst Recommendations and Information regarding Credit Ratings
- 4 Capital Structure Related Information
- 5 Restructuring Related Information
- 6 General Business Related Information
- 7 Miscellaneous

NOTES

¹ Studies showing the profitability of insiders have examined a number of markets such as i.e for the US (Jaffe (1974a), Finnerty (1976), Seyhun (1986, 1998), Rozeff and Zaman (1988) and Lakonishok and Lee (2001)), Canada (Baesel and Stein, 1979), Spain (Del Brio, Miguel and Perote, 2002), New Zealand (Etebari, Tourani-Rad and Gilbert, 2004) and the U.K. (Pope, Morris and Peel, 1990, Friederich, Gregory, Matatko and Tonks, 2002) and virtually uniformly show insiders earn abnormal returns.

² A few cases did result in out of court settlements repaying the profits earned by the insider. However, other more severe non-financial penalties were avoided by these actions making the punishment significantly smaller than it should have been.

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