REGULATION AND MARKET EFFICIENCY:
THE IMPACT OF CRIMINAL SANCTIONS FOR INSIDER TRADING ON TRANSACTION COSTS

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The lack of development of the local securities market has been a persistent source of concern and attention from both the market's authorities and various government bodies. In late 1999, the government introduced a string of regulatory reforms to strengthen local investor protection laws and so aimed to improve both local and international confidence in the New Zealand Stock Exchange (NZX). One particular area of focus was insider trading. Insider trading was seen as being rampant in the market and despite being illegal there had been no successful prosecutions. The reforms to the insider trading laws were undertaken in two rounds. The first round, which came into effect in 2002, increased the minimum civil penalties and made the Securities Commission responsible for enforcement. Frijns et al. (2008) showed that these reforms were generally successful in reducing transaction costs and information asymmetry in the market. The second round, which came into effect in 2008, changed some of the definitions relating to what was considered to be insider trading, but most notably made insider trading a criminal offence subject to a 5 year jail term. While it was thought that criminal sanctions would act as a strong deterrent to insiders, in this paper we will investigate if this has indeed been the case.

Becker (1968) argued that deterrence of criminal activity is a function of both the penalties imposed and the probability of conviction, a theory supported by numerous studies (for example Ehrlich, 1973; Blumstein and Nagin, 1977; Wolpin, 1978). However, criminalisation of insider trading is not necessarily a stronger deterrent. While criminal penalties are harsher than civil penalties, which are largely restricted to fines as opposed to jail terms, the burden of proof (the level of certainty required for a guilty verdict) is also much higher for criminal sanctions. Civil penalties require that the prosecution prove on the balance of probabilities that illegal insider trading occurred, or to put it differently, that it is more likely that an illegal trade took place than not. Criminal sanctions however do require proof beyond a reasonable doubt. It has been noted by both the Securities Exchange Commission in the US (Newkirk and Robertson, 1998), and more recently the Australian Securities and Investment Commission (D'Aloisio, 2010) that the higher burden of proof makes proving insider trading cases extremely problematic, especially given the largely circumstantial nature of evidence in most insider trading cases. This is further compounded by the ability of defendants to point to 'explanations' which while improbable may be sufficient to create reasonable doubt (Duffy, 2009). It is therefore uncertain whether the introduction of criminal sanctions would increase the deterrence of insider trading. Therefore, if criminal sanctions do not deter insider trading then we should observe no apparent response in the market. However, as Bhattacharya and Daouk (2009) establish bad laws can actually harm the market. They argue that if laws are introduced that are effectively unenforceable then a portion of insiders will follow the laws, but another group will not. The group prepared to break the law will face less competition and effectively be in a position to exploit their information for longer period at greater cost to the

market. In essence an unenforceable law results in more harm to the market rather than no law at all, a finding they support empirically.

We examine the impact of the introduction of criminal sanctions by considering bid-ask spreads in the market. Spreads represent the transaction costs faced by investors and as such are a key way of evaluating the efficiency of a market, more efficient markets having lower spreads. Regulators and policymakers can influence these spreads via changes to the regulatory framework in a country to encourage more trading and preventing harmful practices like insider trading. If the criminalisation has obtained its goal by reducing insider trading then we would expect to see a reduction in spreads following the introduction of the law. If criminalization has been ineffective then we expect to see no change, or possibly even a widening of the spreads.

We examine the effect of the law change on two measures of the spread; the percentage spread and the effective spread. The percentage spread is the difference between the quoted bid and ask spread scaled by the midpoint. This in effect measures the size of the quoted spreads and is the most visible measure of transaction costs. The effective spread on the other hand recognizes that trades can occur at prices other than the quoted spreads, and so looks at the difference between the price a trade occurs at and the prevailing midpoint of the bid-ask spread at the time of the trade and scales by the midpoint.

We employ a sample of 51 of the most liquid companies in New Zealand for a period of six months around the date of the criminalisation coming into effect, August 2007 to August 2008 To be included in our sample, companies have to have an average of five trades per day over the total investigation period. For each company, we collect intra-day data on prices and trades from the Thompson Reuters Tick History Database. Table 1 presents the summary statistics for our sample of firms. The summary statistics indicate that on average there are about 35 trades per day, although the number of trades shows considerable variation and it is by international standards very low. Madhaven et al. (1997) reports an average of 95 trades per day for the New York Stock Exchange and Ahn et al. (2002) reports 296 trades per day for the Tokyo Stock Exchange. Of interest however is the fact that on average there was a slight decrease of 6 trades per day between the pre and post-change periods. This pattern was also observed in the average volume of trades where we see a decrease of over 600 shares per trade, while the quoted spreads increased by nearly a

full cent on average. These findings suggest that rather than improving the state of the market, the introduction of criminal sanctions resulted in fewer trades, less volume on average and higher transaction costs.

Table 2 shows the results for both the average percentage and average effective spreads, pre – and post-change.2 In both cases the results suggest that the added difficulty in prosecuting insiders outweighs the severity of the penalties. Panel A shows the results for the average percentage spreads. Of immediate note is the extremely large value for the average percentage spread, 2.27%. When compared with other markets where percentage spreads are typically under 1% (Madhaven et al., 1997; Ahn et al., 2002), the levels

Figure 1: 3 Month Rolling Window Estimations of the Percentage Spread
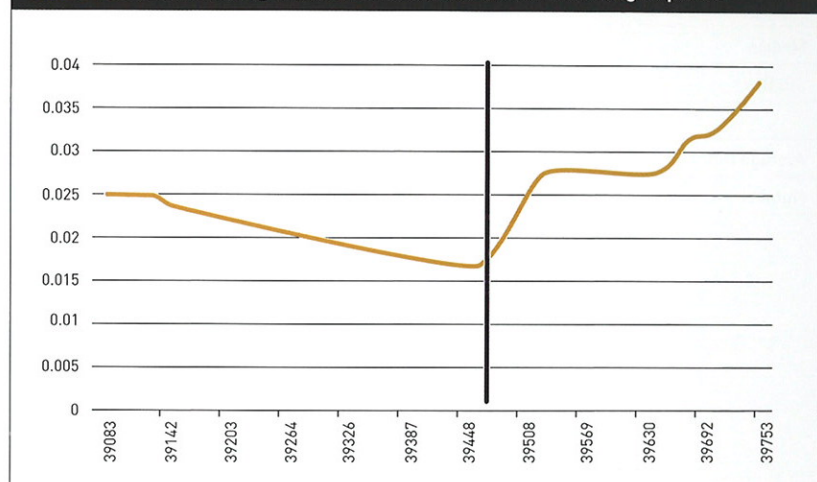
TABLE 1: SUMMARY STATISTICS

	Full Sample	Pre Enactment	Post Enactment
Trades Per Day			
Average	35.53	35.86	35.20
Std Dev	43.68	40.46	47.77
Min	5.40	6.15	4.64
Max	222.78	195.48	250.44
Average Volume			
Average	12512.34	12859.12	12136.77
Std Dev	11565.08	14426.15	10913.52
Min	1855.30	1783.33	1799.18
Max	54921.00	90173.25	50850.20
Average Quoted Spread			
Average	0.0754	0.0747	0.0840
Std Dev	0.0920	0.0952	0.1242
Min	0.0093	0.0098	0.0088
Max	0.6008	0.5083	0.8614

TABLE 2: PRE – AND POST-CHANGE EFFECTIVE SPREADS AND PROPORTION OF INFORMATION ASYMMETRY

	Full Sample	Six Month Window		Three Month Window	
		Pre Enact	Post Enact	Pre Enact	Post Enact
Panel A: Quoted Spreads					
Average	0.0227	0.0186	0.0246	0.0208	0.0238
Median	0.0206	0.0153	0.0207	0.0176	0.0207
Std Dev	0.0112	0.0102	0.0133	0.0117	0.0131
Average Diff			0.0057***		0.0029***
Number Increases			43		34
Panel B: Effective Spreads					
Average	0.0188	0.0175	0.0203	0.0188	0.0200
Median	0.0158	0.0115	0.0157	0.0129	0.0120
Std Dev	0.0161	0.0148	0.0181	0.0158	0.0173
Average Diff			0.0028***		0.0012*
Number Increases			30		29

The increases in percentage spreads are also observed in the average effective spreads. Once more, effective spreads are high, although not as high as percentage spreads, 1.88% for the full sample compared with 2.27%. However, we observe very similar patterns with regards to the pre – and post-change values with increases in both the mean and the median values. We also see that over half the sample companies examined show an increase in effective spread between the two time periods. We further observe the same patterns in the shorter window. The results of the analysis of both the percentage and effective spreads around the introduction of criminal sanctions suggest that the New Zealand Stock Exchange has not benefited from the introduction of the new laws.

Conclusion

While the changes implemented in 2008 which introduced criminal sanctions for insider trading were argued as sending a forceful message to the markets, it appears that the change has been ineffective as far as transactions costs (a proxy for the efficiency of the market) are concerned. If the law had been effective, we would have expected a reduction in transaction costs, instead we observe an increase in both percentage and effective spreads. Much of this reaction may relate to the poor record of enforcement in New Zealand, to date no successful prosecutions. Bhattacharya and Daouk (2002) contend that enforcement is typically required before markets benefit from the introduction of insider trading laws. Therefore, transaction costs may decrease if the criminal sanctions can be successfully applied to an insider. It may also be that the foundation of the new financial regulator, the Financial Markets Authority, with a much clearer purpose than the Securities Commission had, may improve the markets anticipation of the likelihood of prosecutions. At this point in time however, the new laws do not appear to have added value to the regulations introduced in 2002 in deterring insider trading. ∎

observed on the NZX are concerning and suggest action is needed to reduce the transaction costs facing investors. When we consider the pre-and post-change values for the six month window, we observe that spreads have increased markedly, both in terms of the mean and the median values. In both cases we see an increase of over half a percent, with the difference in the means being statistically significant. Furthermore, 43 companies, more than 80 percent of firms in our sample, show an increase in percentage spread post-change. The results for the shorter period, the three month window, follow the same patterns, albeit with less difference between the values. The dramatic increase in percentage spreads can be observed in Figure 1 where 3 month rolling average percentage spreads are calculated. We observe a gradual decline in percentage spreads until the introduction of the new law at which point spreads start to increase sharply over the following four month period.

References:
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