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STOCK RETURNS AND TRADING FREQUENCY**

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# Insider Trading in Hong Kong: Tests of Stock Returns and Trading Frequency

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## Abstract

We examine legal insider trading activities by directors of companies listed on the Hong Kong Exchange over the period 1993 to 1999. One characteristic of insider trading in Hong Kong is the high frequency of transactions and the large dollar amounts involved. Inside purchases appear to signal and correct undervaluation and inside sales appear to signal and correct overvaluation. In contrast to research from Britain and the United States, insider sales are more informative than purchases. On average, insiders earn HK\$91,297 per trade although outsiders who mimic insiders' transactions earn minimal returns. Many firms suffer from infrequent trading and our results are consistent with directors engaging in inside transactions so as to help create a market for the shares. In additional tests, we find that the frequency of insider trading is a function of information asymmetry.

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## 1. Introduction

Insider trading is a common phenomenon in many countries and it is receiving increased scrutiny by investors, regulators, and the general public (Bhattacharya and Daouk 2002). The pros and cons of insider trading and the arguments for and against restricting its use have received a good deal of attention in the literature (Dye 1984; Glosten and Milgrom 1985; Demsetz 1986; Fishman and Hagerty 1992; Leland 1992; Bernhardt et al. 1995; Baiman and Verrecchia 1996; Bainbridge 2000). Many investment advisory products and services use analyses of share dealings by insiders (Lakonishok and Lee 2001; Friederich et al. 2002). This multi-million-dollar business is predicated on the belief that by following the actions of insiders, outside stockholders can earn superior returns on their investments.

Numerous research studies have examined the profitability of insiders' share dealings and the profitability of outsiders' investment strategies that mimic the insiders' transactions as insiders (including directors) are most informed about the current and future business operation and opportunities of the firms (Piotroski and Roulstone, 2004). Early studies from the United States document significant positive returns to insiders' share dealings (Jaffe 1974; Finnerty 1976a, 1976b; Givoly and Palmon 1985; Lin and Howe 1990; Seyhun 1990, 1998). However, the results from more recent research have been mixed. For example, while Rozeff and Zaman (1998) document significant returns to insider trading, Lakonishok and Lee (2001) report more subdued abnormal returns. Lakonishok and Lee attribute the lower returns found in their study to the use of data taken from the recent past when insider trading regulations and enforcement of regulations are tighter, and to the use of a different research methodology.<sup>1</sup> They do, however, report significant positive abnormal returns to insider purchases in smaller firms.

Many investors believe that insiders have superior information on the firm and hence they closely monitor the insiders' share transactions. Thus insider trades act as a signal of the value of the firm. It has been argued that insider dealings aid price discovery in financial markets and so the activity should be encouraged rather than restricted by further regulation (Cornell and Sirri 1992; Meulbroek 1992). In many studies, purchases by insiders have been found to be more profitable and more informative signals than insider sales (Lakonishok and Lee 2001). This is because the motivations for purchasing stock are less ambiguous than for sales. Purchases are mainly motivated by the pursuit of profit (buying undervalued stock) whereas sales may be motivated by the need for personal liquidity and portfolio diversification as well as for making a profit.<sup>2</sup>

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<sup>1</sup> They show that their results vary depending on the methodology used. In general, the results from using their preferred methodology show lower stock returns to insider trading.

<sup>2</sup> For example, Kahle (2000) and Clarke, Dunbar and Kahle (2001) conclude that insiders in the U.S. firms earn profits (or reduce losses) by selling shares prior to seasoned equity offerings.

The research studies cited above have used data from the United States. There are also a number of research studies using data from Britain (King and Röell 1988; Pope et al. 1990; Gregory et al. 1994, 1997; Hillier and Marshall 2002). The British studies show statistically significant abnormal returns to insider trades. However, Friederich et al. (2002) conclude that the returns to investors who mimic the insiders are close to zero once transaction costs are included in the calculations. They report that purchases yield higher returns than sales although the market value of sales transactions is much higher. Eckbo and Smith (1998), using more than 18,000 reported insider trades on the Oslo Stock Exchange from 1985 to 1992, find zero or even negative returns to the insiders. They do not speculate on why insider trades are so popular in Norway given that they earn zero or negative returns. Lee and Bishara (1989) report gains to insider trading in Canada.

This paper reports the results from a study of legal insider trading in Hong Kong. The stock market environment and manager and investor behavior differ markedly from the United States and the United Kingdom and so the results from American and British research cannot be automatically imputed to Hong Kong. In particular, the ownership structure and governance characteristics of firms in Hong Kong contrast sharply with those of Britain and the United States and so the reasons for and consequences of directors' share dealings are very different. A typical listed firm in Hong Kong has a tightly held ownership structure where an individual and their family have voting control and serve on the board of directors. As one example of the tightness of control, Claessens et al. (2000) show that in 1996, 26.2 percent of the total value of listed corporate assets in Hong Kong was under the control of five families. The directors of Hong Kong listed firms (who have substantial share ownership) likely have different motivations for insider trading than their counterparts in other countries. Their large ownership stakes suggest that governance mechanisms may have a more limited impact on their behaviors (HKSA 1997). For example, independent non-executive directors may do little monitoring of, or have little control over, the insider trading activities of the founder of the firm and her or his family. The laws covering the broad area of insider trading and prosecutions for breaking those laws, while similar to those in the United Kingdom, are different from those in the United States and this will affect directors' behavior across the two markets. For example, during the period of our study, the disclosure period for disclosing insider trades was much shorter in Hong Kong than in the United States. The absence of rules prohibiting short-swing trading in Hong Kong enables insiders to trade with relative impunity compared with their counterparts in the United States. On the other hand, directors often have controlling stakes in their firms and they do not wish to alter this status by selling large numbers of shares.

Our sample consists of 33,675 inside trading transactions made by directors over the period 1993 to 1999. We investigate a number of issues relating to the scope, profitability, and motivations of insider trading. One characteristic of insider trading in Hong Kong is the high frequency of trading by directors and the significant number and value of shares involved. The trading record shows that 29.31 percent of

transactions are day-to-day trading.<sup>3</sup> Directors often reverse the trading directions (buy and sell within a short period of time). We find that the directors appear to trade to make a market for their firms' shares or to make their firms' shares more liquid. In our sample, the proportion of directors' trading to total daily trading volume ranges from 22% to 48%. The percentage increases as the firm size decreases. This finding suggests that the directors of smaller firms which are usually the less frequently traded in the market are more likely to conduct trading in their firms' shares. Such kind of trading may not necessarily be related to information signaling motive but related to the objective to make their firms' more liquid.

A control firm approach is used to measure the stock price performance of the firms. We find that insider purchases are made when stock prices have been declining and insider sales are made when stock prices have been rising. The directors' share transactions appear to disseminate inside information and thus aid price discovery. The cumulative abnormal returns from a long purchase and short sale investment strategy over 360 days after the insider trade average 1.9 percent, with purchase transactions averaging negative 6.4 percent and sale transactions averaging 17.6 percent. We calculate the average dollar return to an insider transaction to be HK\$91,297.<sup>4</sup>

Cross-sectional models are developed to explain differences in cumulative abnormal returns and the likelihood of insider trading. The proportion of informed trading and firm size are, respectively, positively and negatively associated with stock returns. We show that the likelihood of insider trading is affected by the extent of information asymmetry between insiders and outsiders.

We argue that insider trades are partly motivated by the perceived need to create a market for the firms' shares. Many firms in Hong Kong are majority owned by an individual or a family and the free float of shares is small. Trading volumes in these shares are low and trading is infrequent. Directors of these companies may decide to help make a market in the shares by buying or selling shares on the stock exchange.

Our results add to the literature in a number of ways. We provide evidence on the characteristics of insider trading from a market that is very different from Britain and the United States. Directors in Hong Kong are frequent and heavy traders of their firms' shares. Because there are no short-swing trading restrictions in Hong Kong, the directors often reverse their trades. The frequency of trading is explicitly examined in our study and we find that it is related to the strength of the signal conveyed by insider trades. If the directors conduct share transactions in an attempt to give signals to the market about the current mispricing of their firms' shares, they should not reverse their trades in a short period of time.

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<sup>3</sup> It does not imply that the trades could be unwound on the same day. The insiders could buy (or sell) stocks for consecutive two days.

<sup>4</sup> The alternative way to calculate insiders' profits is to track the net insider trade over the course of a particular period, i.e. to track the actual performance of a particular insider trade by matching the buying (selling) price with the subsequent selling (buying) price. However, it is difficult to match the identity of insider.

Furthermore, the purchase signals, which may indicate the current undervaluation of their firms' shares, are not as effective as the sale signals. The sale signals cause the share price to change (in fact decrease) by a greater magnitude than the share price change caused by purchase signals. On average, the insiders' trading transactions amount to more than one-third of the total share trading in the firm on any given day.

The paper proceeds as follows. Section 2 describes the sample and research design. Research results are introduced in section 3. Here, summary statistics, abnormal returns, and regression results are discussed and compared with findings from other countries. Section 4 concludes the paper.

## 2. Research Method

### 2.1 Sample

The main provisions on insider trading in Hong Kong are stipulated in the Securities (Insider Dealing) Ordinance (SIDO), and the Securities (Disclosure of Interests) Ordinance (SDIO). Company directors and chief executive officers are required by the Laws of Hong Kong (Chapter 396) to disclose their dealings in their companies' shares within five days of the transaction to the Hong Kong Exchange (HKEx).<sup>5</sup> This information is then disclosed to the public the next working day by way of the *Securities (Disclosure of Interest) (SDI) Daily Summary and Directors'/Chief Executives' Notification Report*. During the time of our study, the reporting period in Hong Kong (while similar to that in Britain) was much shorter than in the United States where, according to Section 16(a) of the Securities and Exchange Act of 1934, insiders were required to report their transactions within ten days after the end of the calendar month in which the transaction occurred.<sup>6</sup> The *SDI Daily Summary* also lists dealings by substantial shareholders (those owning 10 percent of a firm's shares) but we do not use these data in our study. Published details of the transactions include the date, buy or sell, number of shares, transaction price, and the name of the individual director. The information is reprinted in the financial pages of daily newspapers. The data are also collected in electronic form by PRIMARK, a commercial information vendor. PRIMARK sells the data

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<sup>5</sup> Chapter 395 (Securities (Insider Dealing) Ordinance) and Chapter 396 (Securities (Disclosure of Interests) Ordinance) of the Laws of Hong Kong govern directors' share dealings in Hong Kong. In addition, the Hong Kong Exchange also imposes a number of codes of conduct for the directors to comply with. Appendix 10 (Model Code for Securities Transactions by Directors of Listed Companies) and Appendix 14 (Code of Best Practice) of the Listing Rules require the directors that they should not deal in any of the securities of their firms at any time when they are in possession of price-sensitive information. Particularly, Rule A.3 of Appendix 10 states that the directors must not deal in any securities of their firms during the period commencing one month immediately preceding the earlier of the date of the board meeting for the approval of the financial results for any year, half-year, quarterly or any other interim period and the announcement deadline of the results for any year or half-year or quarterly or any other interim period.

<sup>6</sup> Section 403 (a) of the Sarbanes-Oxley Act of 2002 has amended the disclosure requirements of Section 16 (a) of the Securities and Exchange Act of 1934. The new amendment requires the insiders to report their transactions within two business days. The new requirement became effective on August 29, 2002.

under the brand *Inside Trade Asia*; this database is marketed to investment professionals who wish to use insider trading transactions as an aid in their decision making. Newspaper articles written by PRIMARK executives claim that profits can be made from investments that follow insider trades.<sup>7</sup> These articles tend to be single case examples, or case studies, but no systematic analysis has been done on the profitability of insider transactions in Hong Kong.

We use the *Inside Trade Asia* database to extract information on insider transactions in Hong Kong. The analysis covers the seven-year period 1993 to 1999. We use transactions made up of open market purchases and sales and ignore increases in shareholdings due to the exercise of options, warrants, rights, issues of bonus shares, stock splits, and conversions of bonds and debentures to equity. Open market transactions are the most interesting to investigate as they account for the vast majority of insider dealings (by number of transactions and dollar value) and they represent proactive transactions of the directors that change the relative ownership of their firms. Lin and Howe (1990) argue that open market transactions are more likely to be driven by firm-specific information. Insider trading studies in other countries invariably use open market transactions and ignore other types of transactions.

Companies that do not have 60 valid trading observations<sup>8</sup> in the estimation period and the test period, are omitted. Observations from days where the net trades are zero,<sup>9</sup> are also omitted. If the transaction date falls on Saturday, Sunday and public holidays, then the actual transaction date is amended to the first trading day following the weekends or public holidays. These data requirements result in a sample of 33,675 transactions and 19,336 transaction record observations. A transaction is a single transaction. If a firm has two or more insider trades on a single day, this counts as one transaction record. The 33,675 transactions and 19,336 transaction records imply that there are about 1.74 transactions per day for a firm if there is an insider trade on that day.

## 2.2 Event Study

We use event study methodology to estimate the magnitude of the share price reactions of the firms with insider dealings. The event date ( $t = 0$ ) taken is the transaction date<sup>10</sup> when there is an insider transaction

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<sup>7</sup> See, for example, the South China Morning Post (1997a, b).

<sup>8</sup> Some stocks have very little trading activity and so their stock prices are unreliable.

<sup>9</sup> Sometimes for a given firm on a given day, the purchase transactions are exactly offset by sale transactions (the number of shares bought is the same as the number of shares sold). The net trade is therefore zero.

<sup>10</sup> We choose the transaction date rather than the announcement date as the event date. If the market is efficient, it should respond to the inside transaction on the transaction day. Lakonishok and Lee (2001) also find a larger abnormal return around the trading period (0.59 percent) than in the reporting period (0.13 percent) in their study using the U.S. data. It appears that the market reacts around the trading period.



in the securities market. The control firm approach<sup>11</sup> is used to compute the abnormal returns of the sample firms. The abnormal return (AR<sub>it</sub>) for sample firm *i* on day *t* is defined as:

$$AR_{it} = (SR_{it} - CR_{jt}) \times \theta \quad (1)$$

SR<sub>it</sub> and CR<sub>jt</sub> are the actual returns of sample firm *i* and control firm *j* on day *t*, respectively.  $\theta$  is a variable for the direction of trade that takes the value of +1 if the trade *k* is a “Buy” transaction and -1 if the trade *k* is a “Sell” transaction.<sup>12</sup>

We use two benchmarks, market value of equity and book-to-market ratio, for identifying a control firm. The market value (the product of the number of outstanding shares and monthly average price) and book-to-market ratio (average book value to market value of equity) of all industrial companies in the PACAP database in month *m* are ranked into 10 deciles. Each firm is assigned a ranking from 1 to 10 according to the magnitude of the market value and book-to-market ratio. A sample firm is matched to a control firm if the control firm satisfies three conditions. First, there is no directors’ dealing in the control firm during the test period. Second and third, the control firm is in the same market value ranking and the same book-to-market ratio ranking as the sample firm. These selection criteria reduce the original sample of 19,336 observations to 9,385 observations for the event study.

Our sample consists of both “Buy” and “Sell” transactions. There are 6,421 (68.42 percent) purchase and 2,964 (31.58 percent) sell transaction records, making up a total of 9,385 transaction records in the sample. The abnormal returns for the insiders will increase if the share price rises after the “Purchase” and if the share price falls after the “Sell”. In order to aggregate the total abnormal returns for both the insiders’ “Purchase” and “Sell” transactions, the abnormal returns of the “Sell” transactions are multiplied by negative one (-1). This is equivalent to taking a short position in the stock and so positive abnormal returns from insider sales indicate profitable transactions.

Following the method outlined by Brown and Warner (1985, page 7), the *t*-statistic for the abnormal return is the ratio of the abnormal return on day *t* to the estimated standard deviation computed in the estimation period. The estimation period covers a 240-day period from  $t = -250$  to  $t = -11$ . Our abnormal returns test period is from ten days ( $t = -10$ ) prior to the transaction date to 360 days ( $t = +360$ ) after.

<sup>11</sup> Fama (1998) argues that the magnitude of abnormal returns is sensitive to the benchmark used for computation. To better measure the share price reaction (especially the long-term performance), we adopt the control firm approach that adjusts for firm size and book-to-market ratio effects when measuring abnormal returns.

<sup>12</sup> It is easy to demarcate the trades of a given firm *i* on a particular day *t* into the “Buy” or “Sell” portfolio when there is absolute consensus among the directors in trading their firms’ shares. When there is more than one transaction or there are conflicting transactions for a given firm *i* on a particular day *t*, firm *i* is classified into the “Buy” (“Sell”) portfolio when the net number of shares traded increases (decreases) the aggregate share-holding balance of all the directors trading in their firms’ shares on the day concerned.

### 2.3 Cross-Sectional Model of the Returns to Insider Trading

There are two regression models in our study. The first regression model evaluates the cross-sectional variation in the level of abnormal returns of insider trading firms. Seyhun (1986, 1998), Lin and Howe (1990), and others, have shown that the magnitudes of the abnormal returns associated with insider dealings are associated with the characteristics of the firm, the insiders, and the transaction itself. The abnormal returns reflect the stock market's perceptions of the quality of inside information possessed by directors. Similar to other studies, we construct a cross-sectional model that seeks to explain the magnitude of the abnormal returns and hence the quality of insiders' information. We formulate the following model:

$$\begin{aligned} \text{CAR} = & \alpha_0 + \beta_1 \text{PROP} + \beta_2 \text{CONSENSUS} + \beta_3 \text{FSIZE} + \beta_4 \text{OWNDir} \\ & + \beta_5 \text{D1997} + \beta_6 \text{Bk-Mkt} + \beta_7 \text{Date*FSIZE} \end{aligned} \quad (2)$$

CAR is the abnormal return over different time periods ( $-10 \leq t \leq -1$ ,  $-3 \leq t \leq +3$ , and  $0 \leq t \leq +240$ ). PROP is the ratio of the number of shares traded by the directors to the total trading volume on that day. CONSENSUS is the ratio of the difference between the total and net number of transactions<sup>13</sup> to the total number of transactions measured over the five trading days around the event day ( $-2 \leq t \leq +2$ ).<sup>14</sup> FSIZE is measured as the natural log of the market value of the firm on the transaction date, which is the product of the price and the number of outstanding shares. OWNDir is the proportion of the shareholding of the insider (who traded on that day) to the total number of outstanding shares.<sup>15</sup> D1997 is a dummy variable which takes the value of 1 if the event is in 1997 and 0 otherwise. Bk-Mkt is the book-to-market ratio. Date\*FSIZE is the interactive variable of Date (ratio of 1 to the number of trading days between two consecutive trades) and FSIZE.

### 2.4 Cross-Sectional Model of the Likelihood of Insider Trading

The second regression model tests the impact of the information asymmetry attributes on the frequency of insider trading activity. Insider trading is expected to be more likely in an asymmetric information environment. As insider trading can be motivated by the informational difference between the insiders and outsiders, a new strand of research (Aboody and Lev 2000; Huddart and Ke 2001; Frankel and Li 2001) has emerged that examines the impact of information asymmetry on the likelihood of insider trading.

<sup>13</sup> The difference between the total number and net number differentiates those observations that have absolute consensus with no conflicting trade from the other observations that have the same net number but with conflicting trades.

<sup>14</sup> We assume that if the insider's trade is motivated by information, then the insider would most probably trade on the few days around the time the information is known.

<sup>15</sup> If there is more than one insider trading in the shares of the firm concerned, the percentages of the ownership of all the trading insiders involved are aggregated.

The expected size of an insider trade is a function of the information environment and the insiders' informational advantage. There are two asymmetrical informational motive arguments for insider trades. The short-term profit-seeking hypothesis proposes that the insiders may trade to earn profits from their private information. The signaling hypothesis suggests that insiders trade to help "correct" mispriced shares (and mispricing is more likely when information asymmetry is large). Thus directors can signal high firm value by selling less stocks and buying more stocks than otherwise.

Examples of information asymmetry proxies include the number of financial analysts following the firms (Brennan and Subrahmanyam 1995; Alford and Berger 1999; Huddart and Ke 2001), stock return volatility (Krishnaswami and Subramaniam 1999), value of research and development expenditure (Aboody and Lev 2000), and firm size (Lakonishok and Lee 2001). We use published financial statement data to measure information asymmetry and we use them to help explain the likelihood of directors' dealings in Hong Kong.

Huddart and Ke (2001) suggest that the variables that proxy the information asymmetry environment can be grouped into the nature of a firm's assets, informativeness of accounting disclosure, external information search activities, and firm-specific characteristics. The relations between insider trading activity and the various information asymmetry variables are examined in the following regression model:

$$\begin{aligned} \text{Insider} = & \alpha_0 + \beta_1 \text{INTANGIBLE} + \beta_2 \text{LossD} + \beta_3 \text{LnSALE} \\ & + \beta_4 \text{OWN} + \beta_5 \text{SDVOL} + \beta_6 \text{FSIZE} + \beta_7 \text{AvgRet} \end{aligned} \quad (3)$$

Insider is the log measure of the insider trading activity for the year. The measures are in terms of the total number of shares, market value, and number of transactions traded by the directors.

Huddart and Ke (2001) argue that information asymmetry is related to the nature of a firm's assets. A greater proportion of intangible assets in the total assets provide greater flexibility in earnings, implying greater informational differences about the intrinsic value of the firm (Barth and Kasznik 1999). We expect that the greater the proportion of intangible assets in the total assets, the higher the information asymmetry. To test our argument, we compute the variable, INTANGIBLE, which is defined as the ratio of the book value of intangibles to the total asset value.

LossD is a dummy variable that takes the value of 1 if the net income is negative and 0 otherwise. Reported earnings can be used as a measure of the quality of information disclosure and magnitude of underlying economic uncertainties (Elliott and Hanna 1996). Beneish and Vargus (2002) investigate whether insider trading has information content about earnings quality and find that insiders trade with their private knowledge about likelihood of earnings management and earnings quality. Ke, Huddart and Petroni (2003), Piotroski and Roulstone (2005), and Aboody, Hughes and Li (2005) also provide evidence that insiders trade upon their information of forthcoming accounting disclosure and future earnings. We

use LossD to test the information quality of the earnings figure and the prospects for future profitability. If a firm reports a loss for the year, there is an increased uncertainty about the financial viability of the firm in the coming years. Higher uncertainty about the future prospects of a firm implies a wider informational difference between insiders and outsiders about the true value of the firm (Huddart and Ke 2001).

Huddart and Ke (2001) argue that an important force reducing information asymmetry is the collection of firm information by outsiders, principally, the financial analysts. They suggest two proxies for the external information search variable, the number of active analysts and the natural logarithm of total sales; these capture the information search activities of outside investors (Huddart and Ke 2001). However, the number of active analysts following the firm is highly correlated with firm size. We use firm size to capture the impact of outside information collection. LnSALE is used as a proxy for an external information search variable; it is defined as the log value of total sales. A high value of LnSALE is related to low information asymmetry.

Listed firms in Hong Kong are characterized by highly concentrated family ownership (Claessens et al. 2000) and more than 50 percent of firms are majority owned by directors and their families (HKSA 1997). Large family shareholdings may lead to greater information asymmetry between the insiders and outsiders as the family-shareholders have more discretion to manage in secrecy. Therefore, the standard of corporate governance of these firms is relatively lower (La Porta et al. 1999, 2002). To capture this effect we construct the variable OWN, which is the percentage shareholdings of the directors, their families, and other substantial blockholders. We expect OWN to affect the quality and quantity of informativeness and hence affect the likelihood of insider trading. A high percentage of shareholding concentration (OWN) is expected to increase the frequency of insider trading.

Other firm characteristics used as proxies for information asymmetry in the model are trading volume (SDVOL), firm size (FSIZE) and average stock return (AvgRet). SDVOL is the ratio of standard deviation of monthly trading volume over the 36 months before the trading month to the number of outstanding shares. FSIZE is the log of the market value. AvgRet is the average stock return for 150 days before the trade (Lakonishok and Lee 2001).

## 3. Results

### 3.1 Descriptive Statistics

Table 1 presents some summary statistics that describe the extent and magnitude of insider trading via open market purchases and sales in Hong Kong. The total number of shares traded across the seven years is 74,271 million with purchases accounting for 49.81 percent and sales accounting for 50.19

percent. The total dollar value of the trades is HK\$165,293 million<sup>16</sup> with purchases accounting for 55.61 percent and sales accounting for 44.39 percent.

A striking characteristic of Table 1 Panel A is the preponderance of purchase transactions compared to sales and this contrasts sharply with the international evidence where insider sales are more common than insider purchases (Lee 1997; Lakonishok and Lee 2001, Friederich et al. 2002). Approximately 2,205,523 shares are traded in the average deal (74,271,000,000/33,675) and the average dollar amount of an individual insider transaction is about HK\$4,908,478 (HK\$3,975,949 for purchases and HK\$6,950,649 for sales). The monetary amount of individual insider transactions in Hong Kong is larger than in the United States (Lee 1997; Seyhun 1998; Lakonishok and Lee 2001).<sup>17</sup> Directors want to retain control of the firm and so they are loath to jeopardize control by engaging in substantial share sales. It is therefore not surprising that inside purchase transactions are more common than insider sale transactions.

Insiders' transactions often make up a significant proportion of the trading volume of firms. On average, for our sample, about 35.52 percent of daily total trading volume is accounted for by directors' share dealings. As corroborating anecdotal evidence, the *South China Morning Post* (2001b) states that in August 2001, 100 percent of two companies' respective monthly share trading were accounted for by insiders and, in another article, the newspaper states "It is not unusual to find stocks in the Hong Kong market where the trades by directors account for more than 90 percent of their companies' trading volume" (2001a, p.7). Directors of small listed firms may be prompted to deal in their companies' shares to provide some liquidity and to help make a market in the shares.

Table 1 Panel B shows that directors in Hong Kong deal very frequently in the shares of their companies. More than 60 percent of companies have one reported insider trade per week (e.g. the cumulative percentage for five days in the last column is 60.51 percent). The evidence from Table 1 indicates that directors make relatively substantial trades and make them far more frequently than their brethren in the United States and Britain.

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<sup>16</sup> HK\$7.78 equals US\$1.

<sup>17</sup> Data in Table 3 of Lee (1997) indicates the average purchase transaction in the United States is worth US\$129,560 (HK\$1,007,977) and the average sale transaction is worth US\$776,000 (HK\$6,037,280). Lee's study uses insider trading surrounding seasoned equity offerings in the period 1976 to 1990. Data in Table 1 of Lakonishok and Lee (2001) suggests the average purchase transaction is worth US\$15,654 (HK\$121,788) and the average sale transaction is worth US\$29,457 (HK\$229,175). Lakonishok and Lee use data on all insider trades in the period 1975 to 1995.

### 3.2 Abnormal Stock Returns

We examine abnormal stock returns around the insider trade transaction. Basic results are shown in four Panels (from A to D) of Table 2.<sup>18</sup> We also show the movement of the market reaction diagrammatically in four figures (Figures 1 to 4). The abnormal returns are used to measure the profitability of the insiders' dealings and to assess the signaling characteristics of the transactions. Net purchase transactions ( $n = 6,421$ ) and net sale transactions ( $n = 2,964$ ) are combined into the "Overall" sample ( $n = 9,385$ ).

The pattern of abnormal returns, negative before the transaction date ( $-10 \leq t \leq -1$ ) and positive thereafter, is consistent with purchasers who buy when prices are at the lowest and sellers who sell when prices are at the highest. This is consistent with the contrarian approach to investing (Rozeff and Zaman 1998). Subsequent to the transaction day, abnormal returns become positive. Positive cumulative abnormal returns are observed over the 60 trading days after the insider trade. The cumulative abnormal return at  $t = +60$  is 1.27 percent and is highly significant ( $t = 2.63$ ). This finding provides support for the hypothesis that insider trading is profitable. Based on the average trade size of HK\$4,908,478 and a CAR of 1.86 (1.27) percent, the profit after 360 (60) days is about HK\$91,297 (\$62,338).

The sample is split into subgroups based on purchases and sales. The "Buy" portfolio consists of transactions at  $t = 0$  where there is a net purchase of shares (either there are only purchases on that day or the purchases exceed the sales on that day). The "Sell" portfolio consists of transactions at  $t = 0$  where there is a net sale of shares. A sole purchase (sale) is when there are only purchase (sale) transactions for the share in the 60 trading days before and after the purchase (sale) at  $t = 0$ . For the "Sole Purchase" and "Sole Sale" subsamples, there is a consistent pattern of insider purchases and insider sales and so the purchase or sale signal at  $t = 0$  should be less ambiguous. This procedure follows, in spirit, Lee's (1997) work in the United States. The sample sizes are 3,635 sole purchase observations and 1,289 sole sale observations. The "Mixed" sample consists of firms that have both purchases and sales in the 60 days before and after  $t = 0$ . The purchase or sale signal at  $t = 0$  is expected to be more muted for the "Mixed" sample than for the "Sole Purchase" and "Sole Sale" samples because of the conflicting transactions that take place within plus or minus 60 days of  $t = 0$ . The sample size for the "Mixed" portfolio is 4,461. The largest proportion (47.53 percent) of the overall sample of 9,385 records are classified as "Mixed Transactions" and this shows that it is common for the directors of the same firm to signal inconsistent trading information and/or to reverse their trade direction even within a short time period of 60 trading days.<sup>19</sup>

<sup>18</sup> Besides using the control firm approach to compute the abnormal return, for robustness purposes, we also employ the market model (the Hang Seng Index (HSI) is used to proxy the market return) to compute the abnormal returns. The results are qualitatively similar to those reported in Table 2.

<sup>19</sup> Besides using a window of 60 days to classify the "Sole Purchase", "Sole Sale" and "Mixed Transactions" subsamples, for robustness purposes, we also use a shorter window of 30 days. When a 30-day window is used, "Sole Purchase" sub-sample size increases from 3,635 to 4,510 (38.73 percent to 48.06 percent); "Sole Sale"

Comparing the abnormal returns of the “Buy” and “Sell” subsamples for 360 days, there is a significant abnormal loss of 6.4 percent for the “Buy” sub-sample and a significant abnormal gain of 17.59 percent for the “Sell” subsample. The abnormal returns for insider sale indicate that there is a share price decrease subsequent to the sales by directors. The directors can avoid abnormal losses by selling before the share price decreases. In contrast, purchases by directors are not followed by a share price increase but a share price decrease. Our result for insider purchase is not consistent with that of Wong et al. (2000) who find an increase in price following insider purchases in Hong Kong. These findings imply that an insider sale is a more effective signal to predict future share prices. Our results for the subsample are strongest for insider sales and these results contrast with British and American studies where insider purchases have been found to be the most profitable (Gregory et al. 1997; Lee 1997; Lakonishok and Lee 2001; Friederich et al. 2002).

Table 1 shows that the average buy / sell ratios for the number of shares, market value, and number of transactions are 0.99, 1.25, and 2.19 respectively. The relatively smaller number of sale transactions, coupled with the abnormal return results, implies that director sales may not necessarily be motivated by liquidity reasons. The lower relative frequency of director sales in Hong Kong, vis-à-vis Britain and the United States, may add more credibility to the signaling function of a director sale (i.e. liquidity is less of a reason for the insider trade).

If information quality is reflected in the trading direction consensus, we expect that there should be greater abnormal returns for the “Sole Purchase” and “Sole Sale” than for the “Mixed Transactions” subsamples. Surprisingly, the results are less strong than those for the “Buy” and “Sell” subsamples. The “Sole Sale” sample generates a positive and significant return of 8.22 percent for the 360 days subsequent to the transaction date. Note, however, that the magnitude of the returns is less than for the “Sell” sample (17.59 percent). The “Sole Purchase” sample generates a positive return for the 360-day period, although it is not significant. The “Mixed Transactions” sample yields a small non-significant negative return in the 360-day period subsequent to the transaction. The “Mixed” trading signals generate less significant share price movement.

When the securities trading information of directors are released, outsider investors, who mimic the insiders' investment actions, can also earn positive returns. We assume outsider investors mimic the insiders' trading at the closing price of day 1. The abnormal returns for 2-day ( $+1 \leq t \leq +2$ ) and 3-day ( $+1 \leq t \leq +3$ ) periods are 0.19 percent and 0.21 percent respectively. Although the positive returns show that the mimicking strategy is also money making, the small magnitude of abnormal returns indicates that the possibility for the outsiders to earn a substantial profit from the mimicking strategy is small. Since transaction costs are not considered in the study, the mimicking profit net of transaction cost will probably disappear. It seems that it is not cost-effective to be an imitator. When the sample is divided into “Buy”

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sub-sample size increases from 1,289 to 1,671 (13.73 percent to 17.81 percent); and “Mixed Transactions” sub-

and “Sell” subsamples, the abnormal return results suggest that the outsiders should imitate the directors selectively. The higher returns for the “Sell” transactions (0.53 percent for 2-day return and 0.67 percent for 3-day return) imply that a more profitable mimicking strategy should be based on directors’ sales rather than directors’ purchases.

In late 1997, most stock markets in Asia experienced a severe financial crisis. In Hong Kong, the Hang Seng Index (HSI) started to drop rapidly on October 20, 1997, with the two largest downswings on October 23 (-10.99 percent) and October 28 (-14.73 percent). Many studies (e.g., Kaminsky and Schmukler 1999) examine the causes and impacts of the Asian financial crisis on the trading behavior of investors (outsiders). In order to evaluate if the structural changes in the financial market due to the Asian financial crisis had an effect on the investment behavior of directors (insiders), the whole sample period between 1993 and 1999 is divided into three subsample periods from 1993 to 1996 (5,589 observations), in 1997 (1,618 observations), and from 1998 to 1999 (2,178 observations). The results are reported in Panels B, C and D of Table 2. In Panel B for the period between 1993 and 1997, we observe mostly positive CARs. However, in Panels C and D, we find mostly negative CARs. The findings shown in Panels C and D are qualitatively similar. The “Sell” transactions outperform the “Buy” transactions in most of the periods. Our results suggest that the Asian financial crisis did have a major impact on the market reaction.

### 3.3 Regression Results of the Returns to Insider Trading

The results of regression model 1 (equation (2)) are shown in Table 3. The summary statistics of the variables are shown in Panel A. We report the sample t-test results and regression results in Panel B and Panel C, respectively. In Panel C, we also divide the overall sample into “Sole Purchase” and “Sole Sale” subsamples to further examine the difference in market reaction of the trading pattern of the directors. The t-statistics are computed using White’s (1980) procedure to adjust for heteroskedasticity.

To provide evidence to support our hypothesis that the directors may trade to increase the liquidity of their firms’ shares, we perform a sample t-test on the relation between the proportion of directors’ trading to total daily trading volume (PROP) and firm size (FSIZE). The results are reported in Panel B. We expect that smaller size firms will be less frequently traded. If the directors trade with the motive to make a market for their firms’ shares, the intensity of directors’ dealings should be more severe for smaller size firms. The firms in our sample are divided into four quartiles and the mean PROP for each quartile is measured. We conduct a sample t-test analysis to compare the mean PROPs of Quartile 2, Quartile 3 and Quartile 4 with Quartile 1 (firms with smallest firm size). As the firm size decreases, the proportion of directors’ dealings to total daily trading volume increases. The directors of Quartile 1 trade almost 50% of the total daily trading volume and the directors of Quartile 4 trade only about 22%. This finding suggests

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sample size decreases from 4,461 to 3,204 (47.53 percent to 34.14 percent).



that the directors of small-size firms trade to increase the liquidity of their firms' shares in the market. Both parametric and non-parametric tests show that there are significant differences in the mean PROPs between Quartile 1 and other Quartiles.

Piotroski and Roulstone (2004) provide evidence that insider trading accelerate the firm-specific information into share price and suggest that insiders influence firm's information environment. Insiders transact a larger volume of shares when they have a higher level of confidential information (Seyhun 1986). Therefore, trade size should be positively associated with the value of inside information and hence the profitability of insider trading. The results show that the level of abnormal returns is a positive function of PROP in the short term. This result is consistent with the hypothesis that a higher proportion of informed trading relative to uninformed trading over total trading volume leads to higher abnormal returns. The positive relation between PROP and returns may be due to the increased liquidity of shares. The similar result of a positive coefficient on PROP is found in the "Sole Purchase" subsample. However, in the "Sole Sale" subsample, the coefficient on PROP is positively significant in the short term but negatively significant in the long term.

CONSENSUS is an indication of the quality of information, or the strength of conviction, possessed by the insiders. A small value for CONSENSUS means a high degree of consistency in trading direction. We expect to observe a negative relation between CONSENSUS and abnormal returns. However, as shown in Table 3, the coefficients on CONSENSUS are positive and significant on the days before and surrounding the inside trade. The positive relation suggests that an inconsistent trading signal is profitable in the short run. This finding is consistent with the argument of Piotroski and Roulstone (2005) that insiders are both contrarian traders and possessors of superior information. Insiders usually buy shares after a significant price increase and sell shares after a price decrease with the view of the possibility of subsequent price reversals (Seyhun 1992). In addition, the positive coefficient on CONSENSUS may be due to the fact that the directors may not trade with information but with the objective to increase the trading liquidity of the shares. CONSENSUS is not significant for the long-term returns.

As numerous studies have concluded that there is a negative association between firm size and stock market returns, we use FSIZE to test if firm size has an impact on the insider trading phenomenon. Seyhun (1986), Gregory et al. (1997), Lakonishok and Lee (2001), and Friederich et al. (2002), among others, conclude that insider transactions have greater informativeness for small firms. Based on these studies, we include FSIZE as an independent variable and expect a negative association with CAR. In Table 3, in "Overall" sample, firm size is negatively related to abnormal returns in the 240 days after the trade. CARs are therefore higher in small firms. Because financial analysts do not intensively follow small firms, and because small firms tend to have less frequent disclosures of information, any single piece of news, such as an insider trade, will have more impact on stock prices. The results are consistent with those from previous studies (Seyhun 1986; Lin and Howe 1990; Wong et al. 2000; Lakonishok and

Lee 2001). However, FSIZE exhibits different relation directions with abnormal returns when the sample is divided into “Sole Purchase” and “Sole Sale” subsamples. The coefficients on FSIZE are positive and negative when the directors buy and sell, respectively.

Some directors may be perceived as having more inside information than others and the share dealings by these directors may elicit stronger share price reactions. OWNDir is the percentage ownership of the firm held by the insider and represents their financial stake in the firm. The higher the ownership, the more information the insider is assumed to have. This suggests a positive relation between OWNDir and CAR. However, as reported in Table 3, we find mixed results for OWNDir. OWNDir is negative in “Sole Purchase” and positive in “Sole Sale”.

During the Asian financial crisis, the Hong Kong stock market experienced one of its largest downswings in its history. By the end of October 1997, the Hang Seng Index had accumulated a loss of over 40%. Some studies on informed trading show that there may be abnormal insider trading behaviour during a market crash or other volatile periods (Seyhun 1990). Therefore, we include D1997, which is a dummy variable which is coded 1 when the event is in 1997 and 0 otherwise. In Table 3, the coefficient on D1997 is only significant in the 240 days after the event in “Sole Purchase” subsample.

The book-to-market ratio, Bk-Mkt, is a measure of risk and investor sentiment on insider trading (Rozeff and Zaman 1998; Piotroski and Roulstone, 2005). The coefficient on Bk-Mkt is positive and only significant in the “Sole Sale” subsample.

We use Date\*FSIZE to further examine if there is a higher intensity of trading for smaller size firms and increased liquidity of trading shares leads to higher abnormal returns. Date is the ratio of number of trading days between two consecutive trades. Date is larger if the time length between two consecutive trades is short. We expect the frequency of directors’ dealings for smaller firms to be higher than for larger firms and the higher frequency of trading should lead to higher returns. Consequently, a positive relation is hypothesized between Date\*FSIZE and return. In Panel C, the coefficient on Date\*FSIZE is positive and significant in the  $-3 \leq t \leq +3$  period.

### 3.4 Regression Results of the Likelihood of Insider Trading

The second regression model (equation (3)) analyzes the frequency of insider trading and the results are shown in Table 4.<sup>20</sup> Panel A reports the summary statistics of the six information asymmetry proxies in

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<sup>20</sup> In Table 4 Panel B, the dependent variables are log values of the total number of shares, the total market value and the total number of transactions. For robustness purposes, three alternative variables, informed trading volume in percentage of shares outstanding, informed trading value in percentage of firm market value and informed trading volume in percentage of daily volume, are used as proxies for the frequency of insider trading activity. The results are qualitatively similar to those shown in Table 4.

the regression model. Panel B shows the results for equation (3). The t-statistics are adjusted for heteroskedasticity using White's (1980) procedure.

In Table 4, INTANGIBLE is positively related to the number of shares and market value.<sup>21</sup> The positive coefficients on INTANGIBLE show that the intensity of insider trading activity is higher if the proportion of intangible assets over total assets is higher. However, the coefficients are not significant at conventional levels.

According to the signaling hypothesis of Huddart and Ke (2001), a positive relation is expected between LossD<sup>22</sup> and insider trading activity as a loss figure indicates higher information asymmetry. As shown in Table 4, the sign on LossD is mixed. The inconsistent relation does not support the signaling hypothesis of Huddart and Ke where insiders trade more when information asymmetry is large (estimated as negative income).

We expect a high (low) LnSALE value to be related to low (high) information asymmetry. In Table 4, LnSALE is negatively related to the measures of insider trading activity. The significant and negative relation suggests that insiders trade more when information asymmetry is large.

OWN is used to examine if ownership structure affects the likelihood of insider trading. We expect a positive relation between OWN and Insider. In Table 4, OWN appears to be a significant determinant of the likelihood of insider trading. However, inconsistent with our expectation, OWN is negatively related to Insider.

Kyle (1985) suggests that insiders' trading strategies are affected by the variance of the net amount of stock demanded by liquidity traders in a given period. The price adjustment by the market is smaller if the variability of uninformed order imbalances increases. High information asymmetry about the firm may deter market participants from trading. However, in contrast to the hypothesis that low variability of trading volume implies high information asymmetry, the coefficients on SDVOL are significant and

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<sup>21</sup> Huddart and Ke (2001) suggest additional variables to capture the impact of the nature of firm assets on insider trading; examples include research and development expenses over total sales, net property, plant and equipment over total assets and book intangible assets over total assets. For robustness purposes, we also use an alternative measure (the ratio of net fixed assets over total assets) in the regression model. Consistent with the hypothesis that greater information asymmetry is related to more insider trading activity, the ratio of net fixed assets over total assets is negatively related to insider trading activity.

<sup>22</sup> Huddart and Ke (2001) suggest the proportion of extraordinary gains and losses to total sales as an alternative measure of informativeness of financial disclosure. However, data on extraordinary gains and losses are too few for analysis.

positive.<sup>23</sup> The positive relation suggests that the insiders trade more when there is a high variation in trading volume.

Firm size is a measure of the strength of the information environment of the firm. As information asymmetry is higher for smaller firms, the information content of insider trades should be greater for smaller firms than for larger firms (Seyhun 1986; Lakonishok and Lee 2001). However, Table 4 reports that FSIZE is significantly and positively related to the market value of insider trades. The positive coefficient indicates that insiders of large firms trade more than the insiders of smaller firms do. A possible explanation for this result may be that the large firms and the directors of large firms have more shares to trade and so there are more insider trades.

Lakonishok and Lee (2001) show that stock momentum is related to insider trading. According to the signaling hypothesis of Huddart and Ke (2001), the coefficient on AvgRet is expected to be negative as insider trading activity should be stronger during share price decreases. However, in Table 4, there is a positive and significant relation between AvgRet and the market value of insider trades.

While Huddart and Ke (2001) provide evidence that is mainly consistent with the signaling role for insider trades, we find that insiders may trade for profit-seeking and signaling purposes. The insiders trade more to signal firm value when the information asymmetry is large, that is, there is a higher proportion of intangible assets and sales value is small. The insiders also trade to earn profits from their informational advantage.

## 4. Conclusion

Insider trading is very common in many countries. This has given rise to a substantial body of empirical research that has investigated issues such as the motivations and profitability of insider trades. Prior research has mainly focused on American and British data although there are some studies based on insider trading in other countries. To date, there are few published studies using data from Asia.

Using a comprehensive database of insider transactions in Hong Kong over the period 1993 to 1999,<sup>24</sup> we examine the characteristics of directors' share dealings and their impact on stock prices. Directors make trades very frequently and for a substantial number and value of shares. In addition, they often reverse their trades (buy, sell, buy, sell, etc.) in a short period of time. The trading frequency and volume of insider purchases are higher than those of insider sales. The "Buy" transactions are less profitable

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<sup>23</sup> For robustness purposes, besides using SDVOL (the ratio of the standard deviation of monthly trading volume over the 36 months before the trading month to the total number of outstanding shares), we also use an alternative measure, which is the trading volume as a percentage of the number of outstanding shares. The results are qualitatively the same.

<sup>24</sup> The regulation and practice on insider trading in Hong Kong has not changed since 1991.

than the “Sell” transactions. This finding contrasts with the results found in the British and American studies (Gregory et al. 1997; Lakonishok and Lee 2001). The reasons for a greater number of net buyers than net sellers of their firms’ shares may be due to the concentrated ownership structure in Hong Kong. It is a popular practice for the directors to use shares as collateral for the advancement of personal or company loans. Therefore, the directors may conduct more “buy” transactions than “sell” transactions, as they believe this will help maintain the share price and prevent a decline in the value of the collateral.

We find that insider purchases are made when stock prices have been declining and insider sales are made when stock prices have been rising. The event study identifies small positive cumulative abnormal returns for insider trading activity. The small magnitude of returns found in this study is different from the evidence in the earlier studies (e.g. Jaffe 1974; Finnerty 1976b). However, the finding is similar to the results of the more recent studies by Eckbo and Smith (1998), Lakonishok and Lee (2001), and Friederich et al. (2002), who report only small positive or zero abnormal returns around the time directors trade in the market. The magnitudes of the abnormal returns are quite modest and so the scope for outsiders to earn substantial profits from an investment policy that mimics insiders’ transactions is low.

Our study tests the two informational motives for insider trade by relating the intensity of insider trades and measures of information asymmetry. The findings are consistent with both the profit-seeking motive and signaling role for insider trades. The tendency for the directors to trade is higher if there are more intangible assets in the total assets; smaller sales value; larger variation in trading volume; and higher stock returns.<sup>25</sup>

Based on the abnormal return measured using the control firm approach over 360 days, we estimate insiders earn an average profit of HK\$91,297 per trade. In addition to personal motives, we conclude that there are two other reasons for insider dealings. First, the directors trade so as to signal mis-valuation of the shares. Insiders often trade frequently in order to reinforce the signal. Second, for firms with relatively infrequent trading, the directors may purchase or sell shares so as to maintain a market in the stock. This latter explanation is a relatively little explored area but it represents an opportunity for future research.

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<sup>25</sup> In another paper, we examine directors’ dealing activity around share repurchasing periods in Hong Kong. We find insiders’ purchasers fall and sales increase when firms make share repurchases.

## References

- Aboody, D. and B. Lev (2000), "Information Asymmetry, R & D, and Insider Gains," *Journal of Finance*, 55: 2747-66.
- Aboody, D., J. Hughes and J. Liu (2005), "Earnings Quality, Insider Trading, and Cost of Capital," *Journal of Accounting Research*, 48: 651-73.
- Alford, A. and P. G. Berger (1999), "A Simultaneous Equations Analysis of Forecast Accuracy, Analyst Following, and Trading Volume," *Journal of Accounting, Auditing and Finance*, 14: 219-46.
- Baiman, S. and R. E. Verrecchia (1996), "The Relation Among Capital Markets, Financial Disclosure, Production Efficiency and Insider Trading," *Journal of Accounting Research*, 34: 1-22.
- Bainbridge, S. (2000), "Insider Trading," in *Encyclopedia of Law and Economics III*, Edward Elgar Publishing, Cheltenham, U.K.
- Barth, M. E. and R. Kasznik (1999), "Share Repurchase and Intangible Assets," *Journal of Accounting and Economics*, 28: 211-41.
- Beneish, M., and M. E. Vargus (2002), "Insider Trading, Earnings Quality, and Accrual Mispricing," *The Accounting Review*, 77: 755-91.
- Bernhardt, D., B. Hollifield and E. Hughson (1995), "Investment and Insider Trading," *Review of Financial Studies*, 8: 501-43.
- Bhattacharya, U. and H. Daouk (2002), "The World Price of Insider Trading," *Journal of Finance*, 57: 75-108.
- Brennan, M. and A. Subrahmanyam (1995), "Investment Analysis and Price Information in Securities Markets," *Journal of Financial Economics*, 38: 361-81.
- Brown, S. and J. Warner (1985), "Using Daily Stock Returns: The Case of Event Studies," *Journal of Financial Economics*, 14: 3-31.
- Claessens, S., S. Djankov and L. H. P. Lang (2000), "The Separation of Ownership and Control in East Asian Corporations," *Journal of Financial Economics*, 58: 81-112.

- Clarke, J., C. Dunbar and K. Kahle (2001), "Long-Run Performance and Insider Trading in Completed and Canceled Seasoned Equity Offerings," *Journal of Financial and Quantitative Analysis*, 36: 415-30.
- Cornell, B. and E. Sirri (1992), "The Reaction of Investors and Stock Prices to Insider Trading," *Journal of Finance*, 47: 1031-59.
- Demsetz, H. (1986), "Corporate Control, Insider Trading, and Rates of Return," *American Economic Review*, 76: 313-6.
- Dye, R. (1984), "Insider Trading and Incentives," *Journal of Business*, 57: 295-313.
- Eckbo, B. E. and D. C. Smith (1998), "The Conditional Performance of Insider Trades," *Journal of Finance* 53: 467-98.
- Elliott, J. A. and J. D. Hanna (1996), "Repeated Accounting Write-Offs and the Information Content of Earnings," *Journal of Accounting Research*, 34: 135-55.
- Fama, E. F. (1998), "Market Efficiency, Long-Term Returns and Behavioral Finance," *Journal of Financial Economics*, 49: 283-306.
- Finnerty, J. E. (1976a), "Insiders' Activity and Insider Information: A Multivariate Analysis," *Journal of Financial and Quantitative Analysis*, 11: 205-15.
- Finnerty, J. E. (1976b), "Insiders and Market Efficiency," *Journal of Finance*, 31: 1141-8.
- Fishman, M. J. and K. Hagerty (1992), "Insider Trading and the Efficiency of Stock Prices," *Rand Journal of Economics*, 23: 106-22.
- Frankel, R. and X. Li (2001), "The Characteristics of a Firm's Information Environment and the Predictive Ability of Insider Trades," *Journal of Accounting and Economics*, 37: 229-59.
- Friederich, S., A. Gregory, J. Matatko and I. Tonks (2002), "Short-Run Returns Around the Trades of Corporate Insiders on the London Stock Exchange," *European Financial Management*, 8: 7-30.
- Givoly, D. and D. Palmon (1985), "Insider Trading and the Exploitation of Inside Information: Some Empirical Evidence," *Journal of Business*, 58: 69-87.
- Glosten, L. R. and P. R. Milgrom (1985), "Bid, Ask and Transaction Prices in a Specialist Market with Heterogeneously Informed Traders," *Journal of Financial Economics*, 14: 71-100.

- Gregory, A., J. Matatko, I. Tonks and R. Purkis (1994), "U.K. Directors' Trading: The Impact of Dealings in Smaller Firms," *The Economic Journal*, 104: 37-53.
- Gregory, A., J. Matatko and I. Tonks (1997), "Detecting Information from Directors' Trades: Signal Definition and Variable Size Effects," *Journal of Business Finance and Accounting*, 24: 309-42.
- Hillier, D. and A. P. Marshall (2002), "The Market Evaluation of Information in Directors' Trades," *Journal of Business Finance and Accounting*, 29: 77-110.
- Hong Kong Society of Accountants (HKSA) (1997), *Second Report of the Corporate Governance Working Group*, HKSA, Hong Kong.
- Huddart, S. and B. Ke (2001), "Information Asymmetry and Cross-Sectional Determinants of Insider Trading," Working Paper, Pennsylvania University.
- Jaffe, J. (1974), "Special Information and Insider Trading," *Journal of Business*, 47: 410-28.
- Kahle, K. (2000), "Insider Trading and the Long-Run Performance of New Security Issues," *Journal of Corporate Finance*, 6: 25-54.
- Kaminsky, G. L. and S. L. Schmukler (1999), "What Triggers Market Jitters: Chronicle of the Asian Crisis," International Finance Discussion Paper.
- Ke, B., S. Huddart and K. Petroni (2003), "What Insiders Know about Future Earnings and How They Use It: Evidence from Insider Trades," *Journal of Accounting and Economics*, 35: 315-46.
- King, M. and A. Röell (1988), "Insider Trading," *Economic Policy*, 7: 163-93.
- Krishnaswami, S. and V. Subramaniam (1999), "Information Asymmetry, Valuation and the Corporate Spin-Off Decision," *Journal of Financial Economics*, 53: 73-112.
- Kyle, A. S. (1985), "Continuous Auctions and Insider Trading," *Econometrica*, 53: 1315-35.
- Lakonishok, J. and I. Lee (2001), "Are Insider Trades Informative?" *Review of Financial Studies*, 14: 79-111.
- La Porta, R., F. Lopez-De-Silanes and A. Shleifer (1999), "Corporate Ownership Around the World," *Journal of Finance*, 54: 471-517.



- La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. W. Vishny (2002), "Investor Protection and Corporate Valuation," *Journal of Finance*, 57: 1147-70.
- Lee, I. (1997), "Do Firms Knowingly Sell Overvalued Equity?" *Journal of Finance*, 52: 1439-66.
- Lee, M. H. and H. Bishara (1989), "Recent Canadian Experience on the Profitability of Insider Trades," *Financial Review*, 24: 235-49.
- Leland, H. E. (1992), "Insider Trading: Should it be Prohibited?" *Journal of Political Economy*, 100: 859-87.
- Lin, J. and J. S. Howe (1990), "Insider Trading in the OTC Market," *Journal of Finance*, 45: 1273-84.
- Meulbroek, L. (1992), "An Empirical Analysis of Illegal Insider Trading," *Journal of Finance*, 47: 1661-99.
- Piotroski, J. D. and D. T. Roulstone (2004), "The Influence of Analysts, Institutional Investors, and Insiders on the Incorporation of Market, Industry, and Firm-Specific Information into Stock Prices," *The Accounting Review*, 79: 1119-51.
- Piotroski, J. D. and D. T. Roulstone (2005), "Do Insider Trades Reflect both Contrarian Beliefs and Superior Knowledge About Future Cash Flow Realizations?" *Journal of Accounting and Economics*, 39: 55-81.
- Pope, P. F., R. C. Morris and D. A. Peel (1990), "Insider Trading: Some Evidence of Market Efficiency and Directors' Share Dealings in Great Britain," *Journal of Business Finance and Accounting*, 17: 359-80.
- Rozeff, M. S. and M. A. Zaman (1998), "Overreaction and Insider Trading: Evidence from Growth and Value Portfolios," *Journal of Finance*, 53: 701-16.
- Seyhun, H. N. (1986), "Insiders' Profits, Costs of Trading and Market Efficiency," *Journal of Financial Economics*, 16: 189-212.
- Seyhun, H. N. (1990), "Overreaction or Fundamentals: Some Lessons from Insiders' Response to the Market Crash of 1987," *Journal of Finance*, 45: 1363-88.
- Seyhun, H. N. (1992), "Why does Aggregate Insider Trading Predict Future Stock Returns?" *Quarterly Journal of Economics*, 107: 1303-31.
- Seyhun, H. N. (1998), *Investment Intelligence from Insider Trading*, Cambridge, MA: MIT Press.

- South China Morning Post (1997a), "Buy-Back Fever Rides Through Handover," South China Morning Post, Business News, 12 July, 3.
- South China Morning Post (1997b), "Directors Prove Adept at Shifting Position," South China Morning Post, Business News, 19 July, 3.
- South China Morning Post (2001a), "Hysan Buy-Backs Prompt Strong Price Rally," South China Morning Post, Business News, 23 June, 5.
- South China Morning Post (2001b), "Downturn Prompts Buying Push," South China Morning Post, Business News, 22 September, 7.
- White, H. (1980), "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," *Econometrica*, 48: 817-38.
- Wong, M. C. S., Y. L. Cheung and L. Wu (2000), "Insider Trading in the Hong Kong Stock Market," *Asia-Pacific Financial Markets*, 7: 275-88.

**Table 1. Summary Statistics of the Sample (1993 – 1999)**

“Buy” consists of transactions where there is a net purchase of shares (purchases exceed sales). “Sell” consists of transactions where there is a net sale of shares (sales exceed purchases).

**Panel A. Characteristics of Insider Trading Activity**

	Number of Shares ('000,000)	Market Value (HK\$'000,000)	Number of Transactions	Number of Firms	Average Firm Size (HK\$'000)	Proportion of Insider Trading to Daily Trading Volume	Average Return (-150≤-1)
Buy	36,996	91,916	23,118	531	6,800,637	0.4074	0.0005
Sell	37,275	73,378	10,557	488	8,446,152	0.2519	0.0026
Buy / Sell	0.9925	1.2526	2.1898				
Total	74,271	165,293	33,675	580			
Average					6,598,863	0.3552	0.0012

**Panel B. Distribution of Time Length Between Two Consecutive Trades in Terms of the Number of Trading Days**

Time Length in terms of Number of Trading Days	Number of Transaction Records	Proportion over the Total Number of Transaction Records	Cumulative Percentage to the Total Transaction Records
1	5,497	29.31%	29.31%
2	2,133	11.37%	40.68%
3	1,601	8.54%	49.21%
4	1,162	6.20%	55.41%
5	957	5.10%	60.51%
6	579	3.09%	63.60%
7	461	2.46%	66.06%
8	350	1.87%	67.92%
9	313	1.67%	69.59%
10	282	1.50%	71.09%
11	224	1.19%	72.29%
12	208	1.11%	73.40%
13	147	0.78%	74.18%
14	146	0.78%	74.96%
15	109	0.58%	75.54%
16	121	0.65%	76.18%
17	116	0.62%	76.80%
18	100	0.53%	77.34%
19	103	0.55%	77.89%
20	70	0.37%	78.26%
21 - 50	1757	9.37%	87.63%
51 - 100	1085	5.78%	93.41%
101 -150	440	2.35%	95.76%
151-200	251	1.34%	97.09%
201-250	137	0.73%	97.82%
251-300	109	0.58%	98.41%
301-350	67	0.36%	98.76%
351-400	50	0.27%	99.03%
401-450	38	0.20%	99.23%
451-500	31	0.17%	99.40%
501-1000	104	0.55%	99.95%
>1000	9	0.05%	100.00%

**Table 2. Average Abnormal Returns (AARs) and Cumulative Abnormal Returns (CARs) for the Overall, Buy, Sell, Sole Purchase, Sole Sale and Mixed Transactions Samples from 10 Days Prior to 360 Days After the Inside Transaction Date**

The "Overall" sample includes net purchase and net sale transactions. The "Buy" subsample consists of transactions where there is a net purchase of shares (purchases exceed sales). The "Sell" subsample consists of transactions where there is a net sale of shares (sales exceed purchase). The "Sole Purchase" subsample consists of transactions where there are only purchase transactions in the 60 trading days before and after the purchase at  $t = 0$ . The "Sole Sale" subsample consists of transactions where there are only sale transactions in the 60 trading days before and after the sale at  $t = 0$ . The "Mixed Transactions" subsample consists of firms that have both purchases and sales in the 60 trading days before and after the transaction at  $t = 0$ . N is the number of observations in the sample. We further divide the "Mixed Transactions" into "Buy" where the buying activity dominates the selling activity and "Sell" where the selling activity dominates the buying activity. We multiply the abnormal returns for insider sales by negative one. t-statistics for AARs and CARs are shown in parentheses.

**Panel A. Sample Period between 1993 and 1999**

Event Day	Overall	Buy	Sell	Sole Purchase	Sole Sale	Mixed Transaction Subsample		
	Sample (N = 9385)	Subsample (N = 6421)	Subsample (N = 2964)	Subsample (N = 3635)	Subsample (N = 1289)	All (N = 4461)	Buy (N = 2786)	Sell (N = 1675)
	AAR / CAR (t-statistics)							
-10-1	-0.0086 (-4.40)**	-0.0074 (-3.14)**	-0.0109 (-3.23)**	-0.0057 (-1.69)	-0.0188 (-3.62)**	-0.0074 (-2.80)**	-0.0092 (-2.80)**	-0.0046 (-1.06)
-1+1	-0.0047 (-4.41)**	-0.0018 (-1.41)	-0.0104 (-5.65)**	-0.0026 (-1.40)	-0.0089 (-3.14)**	-0.0049 (-3.36)**	-0.0010 (-0.54)	-0.0116 (-4.89)**
-3+3	-0.0052 (-3.16)**	-0.0042 (-2.13)*	-0.0071 (-2.53)*	-0.0056 (-1.97)*	-0.0066 (-1.52)	-0.0045 (-2.01)*	-0.0027 (-1.00)	-0.0076 (-2.09)*
0	-0.0023 (-3.78)**	-0.0001 (-0.12)	-0.0068 (-6.38)**	-0.0004 (-0.38)	-0.0045 (-2.77)**	-0.0030 (-3.57)**	0.0002 (0.23)	-0.0086 (-6.26)**
+1+2	0.0019 (2.15)*	0.0001 (0.11)	0.0053 (3.51)**	-0.0003 (-0.21)	0.0045 (1.96)*	0.0026 (2.16)*	0.00060 (0.41)	0.0059 (3.02)**
+1+3	0.0021 (1.99)*	-0.0003 (-0.21)	0.0067 (3.66)**	-0.0008 (-0.45)	0.0059 (2.09)*	0.0030 (2.05)*	0.0003 (0.19)	0.0074 (3.11)**
0+60	0.0127 (2.63)**	-0.0094 (-1.60)	0.0538 (6.47)**	-0.0087 (-1.04)	0.0602 (4.70)**	0.0123 (1.87)	-0.0101 (-1.25)	0.0488 (4.55)**
0+120	0.0157 (2.31)*	-0.0260 (-3.16)**	0.0932 (7.96)**	-0.0202 (-1.71)	0.0766 (4.25)**	0.0205 (2.22)*	-0.0321 (-2.82)**	0.1054 (6.99)**
0+240	0.0331 (3.45)**	-0.0342 (-2.95)**	0.1588 (9.62)**	0.0054 (0.33)	0.0831 (3.27)**	0.0356 (2.73)**	-0.0757 (-4.70)**	0.2136 (10.03)**
0+360	0.0186 (1.59)	-0.0640 (-4.51)**	0.1759 (8.70)**	0.0341 (1.67)	0.0822 (2.64)**	-0.0103 (-0.65)	-0.1656 (-8.41)**	0.2429 (9.32)**

Table 2 (continued).

## Panel B. Sample Period between 1993 and 1996

Event Day	Overall	Buy	Sell	Sole Purchase	Sole Sale	Mixed Transaction	Subsample	
	Sample (N = 5589)	Subsample (N = 3747)	Subsample (N = 1842)	Subsample (N = 2027)	Subsample (N = 760)	All (N = 2802)	Buy (N = 1720)	Sell (N = 1082)
	AAR / CAR (t-statistics)							
-10-1	-0.0021 (-1.03)	0.0038 (1.73)	-0.0127 (-3.67)**	0.0037 (1.15)	-0.0128 (-2.35)*	-0.0026 (-0.83)	0.0040 (1.16)	-0.0127 (-2.60)**
-1+1	-0.0020 (-1.84)	0.0025 (2.02)*	-0.0104 (-5.47)**	0.0020 (1.13)	-0.0109 (-3.67)**	-0.0021 (-1.21)	0.0029 (1.56)	-0.0100 (-3.75)**
-3+3	0.0004 (0.23)	0.0045 (2.43)*	-0.0073 (-2.51)*	0.0043 (1.59)	-0.0089 (-1.97)*	0.0006 (0.22)	0.0047 (1.65)	-0.0061 (-1.51)
0	-0.0014 (-2.13)*	0.0016 (2.33)*	-0.0070 (-6.38)**	0.0014 (1.37)	-0.0067 (-3.88)**	-0.0016 (-1.65)	0.0019 (1.74)	-0.0072 (-4.69)**
+1+2	0.0030 (3.29)**	0.0017 (1.74)	0.0053 (3.39)**	0.0025 (1.73)	0.0035 (1.42)	0.0031 (2.26)*	0.0009 (0.62)	0.0065 (2.98)**
+1+3	0.0044 (3.97)**	0.0028 (2.30)*	0.0073 (3.84)**	0.0041 (2.31)*	0.0049 (1.66)	0.0044 (2.61)**	0.0015 (0.81)	0.0089 (3.35)**
0+60	0.0332 (6.66)**	0.0204 (3.72)**	0.0560 (6.54)**	0.0254 (3.19)**	0.0752 (5.61)**	0.0265 (3.45)**	0.0155 (1.84)	0.0429 (3.56)**
0+120	0.0465 (6.61)**	0.0128 (1.66)	0.1063 (8.81)**	0.0365 (3.25)**	0.1159 (6.14)**	0.0334 (3.09)**	-0.0108 (-0.91)	0.0996 (5.87)**
0+240	0.0741 (7.47)**	0.0262 (2.40)*	0.1596 (9.38)**	0.0846 (5.33)**	0.1312 (4.92)**	0.0522 (3.42)**	-0.0324 (-1.93)	0.1784 (7.46)**
0+360	0.0862 (7.11)**	0.0375 (2.81)**	0.1733 (8.32)**	0.1272 (6.55)**	0.1273 (3.90)**	0.0500 (2.68)**	-0.0523 (-2.55)*	0.2036 (6.95)**

## Panel C. Sample Period for the year 1997

Event Day	Overall	Buy	Sell	Sole Purchase	Sole Sale	Mixed Transaction	Subsample	
	Sample (N = 1618)	Subsample (N = 1127)	Subsample (N = 491)	Subsample (N = 602)	Subsample (N = 192)	All (N = 820)	Buy (N = 525)	Sell (N = 295)
	AAR / CAR (t-statistics)							
-10-1	-0.0101 (-1.80)	-0.0170 (-2.63)**	0.0059 (0.60)	-0.0031 (-0.37)	-0.0307 (-1.84)	-0.0099 (-1.27)	-0.0310 (-3.39)**	0.0320 (2.46)*
-1+1	-0.0076 (-2.49)*	-0.0045 (-1.26)	-0.0152 (-2.78)**	0.0010 (0.21)	-0.0118 (-1.30)	-0.0124 (-2.89)**	-0.0098 (-1.95)	-0.0177 (-2.47)*
-3+3	-0.0110 (-2.34)*	-0.0123 (-2.27)*	-0.0078 (-0.94)	-0.0096 (-1.38)	-0.0075 (-0.54)	-0.0129 (-1.97)*	-0.0151 (-1.96)*	-0.0081 (-0.74)
0	-0.0052 (-2.94)**	-0.0028 (-1.38)	-0.0109 (-3.46)**	-0.0023 (-0.88)	-0.0054 (-1.03)	-0.0072 (-2.90)**	-0.0034 (-1.16)	-0.0149 (-3.62)**
+1+2	0.0005 (0.19)	-0.0017 (-0.57)	0.0056 (1.25)	-0.0021 (-0.57)	0.0036 (0.49)	0.0014 (0.41)	-0.0012 (-0.30)	0.0070 (1.21)
+1+3	-0.0032 (-1.05)	-0.0070 (-1.98)*	0.0059 (1.08)	-0.0094 (-2.07)*	0.0021 (0.23)	-0.0005 (-0.13)	-0.0049 (-0.98)	0.0086 (1.21)
0+60	-0.0258 (-1.86)	-0.0565 (-3.53)**	0.0450 (1.83)	-0.0567 (-2.78)**	0.0598 (1.46)	-0.0260 (-1.35)	-0.0563 (-2.49)*	0.0364 (1.13)
0+120	-0.0779 (-3.99)**	-0.1321 (-5.86)**	0.0495 (1.43)	-0.1906 (-6.64)**	0.0475 (0.82)	-0.0300 (-1.11)	-0.0699 (-2.20)*	0.0536 (1.18)
0+240	-0.0571 (-2.07)*	-0.1538 (-4.84)**	0.1641 (3.36)**	-0.1900 (-4.69)**	0.0611 (0.75)	0.0040 (0.10)	-0.1137 (-2.53)*	0.2394 (3.74)**
0+360	-0.1080 (-3.20)**	-0.2319 (-5.96)**	0.1811 (3.03)**	-0.0749 (-1.51)	0.1007 (1.01)	-0.1722 (-3.68)**	-0.3623 (-6.59)**	0.2322 (2.97)**

Table 2 (continued).

## Panel D. Sample Period Between 1998 and 1999

Event Day	Overall	Buy	Sell	Sole Purchase	Sole Sale	Mixed Transaction	Subsample	
	Sample (N = 2178)	Subsample (N = 1547)	Subsample (N = 631)	Subsample (N = 1006)	Subsample (N = 333)	All (N = 839)	Buy (N = 541)	Sell (N = 298)
	AAR / CAR (t-statistics)							
-10-1	-0.0288 (-5.63)**	-0.0343 (-5.25)**	-0.0184 (-1.85)	-0.0341 (-3.99)**	-0.0264 (-2.07)*	-0.0250 (-3.49)**	-0.0344 (-3.70)**	-0.0079 (-0.61)
-1+1	-0.0108 (-3.85)**	-0.0130 (-3.63)**	-0.0065 (-1.20)	-0.0179 (-3.83)**	-0.0022 (-0.31)	-0.0080 (-2.05)*	-0.0058 (-1.14)	-0.0123 (-1.73)
-3+3	-0.0181 (-4.22)**	-0.0244 (-4.47)**	-0.0061 (-0.73)	-0.0293 (-4.10)**	-0.0004 (-0.04)	-0.0158 (-2.64)**	-0.0174 (-2.24)*	-0.0135 (-1.24)
0	-0.0029 (-1.76)	-0.0029 (-1.42)	-0.0027 (-0.86)	-0.0036 (-1.35)	0.0012 (0.31)	-0.0040 (-1.74)	-0.0019 (-0.64)	-0.0079 (-1.93)
+1+2	-0.0004 (-0.16)	-0.0032 (-1.11)	0.0051 (1.16)	-0.0065 (-1.70)	0.0078 (1.36)	0.0015 (0.48)	0.0014 (0.34)	0.0018 (0.30)
+1+3	-0.0003 (-0.10)	-0.0033 (-0.93)	0.0055 (1.02)	-0.0073 (-1.55)	0.0107 (1.53)	0.0011 (0.27)	0.0022 (0.43)	-0.0011 (-0.15)
0+60	-0.0243 (-1.93)	-0.0667 (-4.14)**	0.0537 (2.19)*	-0.0734 (-3.48)**	0.0196 (0.62)	-0.0036 (-0.21)	-0.0588 (-2.56)**	0.0959 (2.98)**
0+120	-0.0044 (-0.25)	-0.0500 (-2.20)*	0.0791 (2.29)*	-0.0339 (-1.14)	-0.0176 (-0.40)	0.0276 (1.11)	-0.0693 (-2.14)*	0.1960 (4.33)**
0+240	-0.0412 (-1.64)	-0.1414 (-4.42)**	0.1572 (3.23)**	-0.0739 (-1.76)	-0.0638 (-1.02)	-0.0056 (-0.16)	-0.2292 (-5.02)**	0.3961 (6.20)**
0+360	-0.1599 (-5.20)**	-0.3106 (-7.92)**	0.2055 (3.45)**	-0.1629 (-3.18)**	-0.0919 (-1.20)	-0.1736 (-4.03)**	-0.5079 (-9.09)**	0.5056 (6.47)**

\*\* significant at 0.01 level

\* significant at 0.05 level

**Table 3. Regression Analysis (equation (2))**

$$CAR = \alpha_0 + \beta_1 PROP + \beta_2 CONSENSUS + \beta_3 FSIZE + \beta_4 OWNDir + \beta_5 D1997 + \beta_6 Bk-Mkt$$

CAR is the abnormal return over different time periods. PROP is the trade size of the directors on day t. CONSENSUS is a variable for the net number of transactions. FSIZE represents firm size. OWNDir is the percentage share ownership of directors who trade. D1997 is a dummy variable which takes the value of 1 if the event is in 1997 and 0 otherwise. Bk-Mkt is the book-to-market ratio. The "Overall" sample includes net purchase and net sale transactions. The "Sole Purchase" subsample consists of transactions where there are only purchase transactions in the 60 trading days before and after the purchase at t = 0. The "Sole Sale" subsample consists of transactions where there are only sale transactions in the 60 trading days before and after the sale at t = 0. t-statistics are adjusted for heteroskedasticity using White's (1980) procedure.

**Panel A. Summary Statistics**

	<u>PROP</u>	<u>CONSENSUS</u>	<u>FSIZE</u>	<u>OWNDir</u>	<u>D1997</u>	<u>Bk-Mkt</u>	<u>Date*FSIZE</u>
Mean	0.3234	0.0526	14.4545	0.2675	0.1761	1.1345	6.5894
Median	0.2148	0.0000	14.0771	0.1749	0.0000	0.9417	4.3499
Maximum	1.0000	1.0000	19.2164	0.9958	1.0000	2.9981	19.1400
Minimum	0.0000	0.0000	10.7455	0.0000	0.0000	0.0150	0.0132
Standard Deviation	0.3062	0.1952	1.7222	0.2722	0.3809	0.7459	5.9823

**Panel B. Sample t-Test Comparison**

	<u>Overall PROP</u>	<u>Sole Purchase PROP</u>	<u>Sole Sale PROP</u>
FSIZE Quartile 1 (Smallest)	0.4753	0.5070	0.3739
FSIZE Quartile 2	0.3983 <sup>ab</sup>	0.4463 <sup>ab</sup>	0.2973 <sup>ab</sup>
FSIZE Quartile 3	0.3440 <sup>ab</sup>	0.4255 <sup>ab</sup>	0.2264 <sup>ab</sup>
FSIZE Quartile 4 (Largest)	0.2178 <sup>ab</sup>	0.2558 <sup>ab</sup>	0.1532 <sup>ab</sup>

a The difference in PROP between "FSIZE Quartile 1" and the compared Quartile is significant at 0.01 level by a two-sample t-test.

b The difference in PROP between "FSIZE Quartile 1" and the compared Quartile is significant at 0.01 level by the Mann-Whitney test.

Table 3 (continued). Regression Analysis (equation (2))

## Panel C. Regression Results

	Overall			Sole Purchase			Sole Sale		
	10≤t≤-1	-3≤t≤+3	0≤t≤+240	10≤t≤-1	-3≤t≤+3	0≤t≤+240	10≤t≤-1	-3≤t≤+3	0≤t≤+240
	Beta Coefficient (t – statistic)								
Intercept	-0.0294 (-1.95)	0.0028 (0.20)	0.1063 (2.91)	-0.0688 (-2.68)	0.0039 (0.16)	-0.1964 (-3.10)	0.0359 (0.81)	-0.0144 (-0.41)	0.5311 (5.30)
PROP	0.0185 (3.67)**	0.0095 (2.03)*	-0.0045 (-0.35)	0.0178 (2.13)*	0.0031 (0.40)	0.0506 (2.45)*	0.0416 (3.15)**	0.0478 (4.17)**	-0.0823 (-2.42)*
CONSENSUS	0.0224 (3.02)**	0.0171 (2.36)*	0.0023 (0.11)						
FSIZE	0.0003 (0.35)	-0.0012 (-1.35)	-0.0052 (-2.20)*	0.0036 (2.08)*	-0.0015 (-0.92)	0.0155 (3.66)**	-0.0065 (-2.29)*	-0.0017 (-0.76)	-0.0352 (-5.54)**
OWNDir	0.0132 (2.29)*	0.0018 (0.35)	-0.0365 (-2.41)*	0.0136 (1.42)	0.0077 (0.85)	-0.0508 (-1.89)	0.0972 (4.92)**	0.0495 (2.90)**	0.1200 (2.25)*
D1997	0.0027 (0.63)	-0.0026 (-0.67)	-0.0075 (-0.72)	0.0117 (1.63)	0.0070 (1.21)	-0.0501 (-2.65)**	-0.0048 (-0.41)	-0.0020 (-0.19)	0.0371 (1.22)
Bk-Mkt	0.0026 (1.31)	0.0005 (0.27)	0.0079 (1.50)	-0.0003 (-0.09)	0.0010 (0.30)	0.0060 (0.60)	0.0207 (3.66)**	0.0100 (2.15)*	0.0241 (1.87)
Date*FSIZE	0.0003 (1.09)	0.0006 (2.45)*	0.0009 (1.28)	-0.0001 (-0.17)	0.0005 (1.17)	0.0002 (0.13)	-0.0001 (-0.20)	0.0012 (2.06)*	0.0016 (0.94)
Adjusted R <sup>2</sup>	0.0056	0.0029	0.0015	0.0048	-0.0003	0.0117	0.0846	0.0476	0.0588
F	5.4781	3.2546	2.0893	2.3925	0.9195	4.3902	14.1989	8.0672	8.6178
p-value	0.00	0.00	0.04	0.03	0.48	0.00	0.00	0.00	0.00

\*\* significant at 0.01 level

\* significant at 0.05 level



**Table 4. Regression Analysis (equation (3))**

$$\text{Insider} = \alpha_0 + \beta_1 \text{INTANGIBLE} + \beta_2 \text{LossD} + \beta_3 \text{LnSALE} + \beta_4 \text{OWN} + \beta_5 \text{SDVOL} + \beta_6 \text{FSIZE} + \beta_7 \text{AvgRet}$$

Insider is the log measure of the insider trading activity for the year. The measures are in terms of the total values of the number of shares, market value and number of transactions traded by the directors. INTANGIBLE is the ratio of the book value of intangibles to the total assets. LossD is a dummy variable that takes the value of 1 if the net income is negative and 0 otherwise. LnSALE is the log value of sales. OWN is the percentage shareholdings of the directors, their families, and other substantial blockholders. SDVOL is the ratio of the standard deviation of monthly trading volume over 36 months before the trading month to the number of outstanding shares. FSIZE is the firm size. AvgRet is the average return of the firm for 150 days before the trade. t-statistics are adjusted for heteroskedasticity using White's (1980) procedure.

**Panel A. Summary Statistics**

	<u>INTANGIBLE</u>	<u>LossD</u>	<u>LnSALE</u>	<u>OWN</u>	<u>SDVOL</u>	<u>FSIZE</u>	<u>AvgRet</u>
Average	0.011694	0.133797	13.451850	0.282173	0.111656	13.723730	0.001262
Standard Deviation	0.000001	0.340566	13.533660	0.245490	0.040939	13.576690	0.000932
Maximum	0.397395	1.00000	17.024260	0.810000	8.224670	18.853280	0.051920
Minimum	0.000000	0.00000	6.918695	0.050000	0.000028	7.210006	-0.055453

**Panel B: Regression Results**

	<u>Total Number of Shares</u>	<u>Total Market Value</u>	<u>Total Number of Transactions</u>
	<u>Beta Coefficient (t – statistic)</u>		
Intercept	5.9442 (5.20)	-0.5315 (-0.45)	2.7803 (4.81)
INTANGIBLE	2.5318 (1.68)	2.8116 (1.76)	-0.8770 (-0.22)
LossD	0.1944 (0.67)	-0.3904 (-1.36)	0.0447 (0.27)
LnSALE	-0.1258 (-1.81)	-0.1906 (-2.49)*	-0.0353 (-0.91)
OWN	-1.2173 (-1.89)	-1.7060 (-2.62)*	-0.0500 (-0.14)
SDVOL	0.6737 (1.86)	0.4931 (2.56)**	0.2829 (2.82)**
FSIZE	-0.1497 (-1.44)	0.4394 (5.26)**	0.0202 (0.59)
AvgRet	14.5405 (0.80)	30.5335 (1.89)	-13.0443 (-0.90)
Adjusted R <sup>2</sup>	0.0368	0.0859	0.0030
F	5.7207 0.00	12.5981 0.00	1.3656 0.22

\*\* significant at 0.01 level

\* significant at 0.05 level

Figure 1. Cumulative Abnormal Return Path (1993-1999)

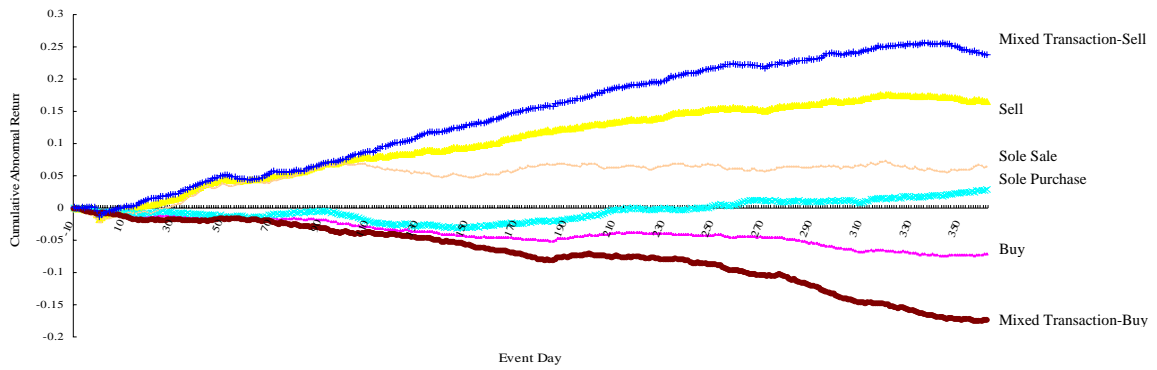


Figure 2. Cumulative Abnormal Return Path (1993-1996)

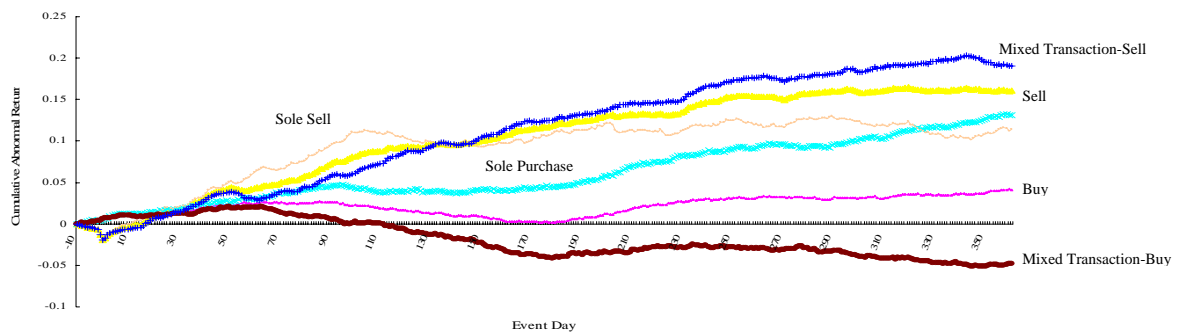


Figure 3. Cumulative Abnormal Return Path (1997)

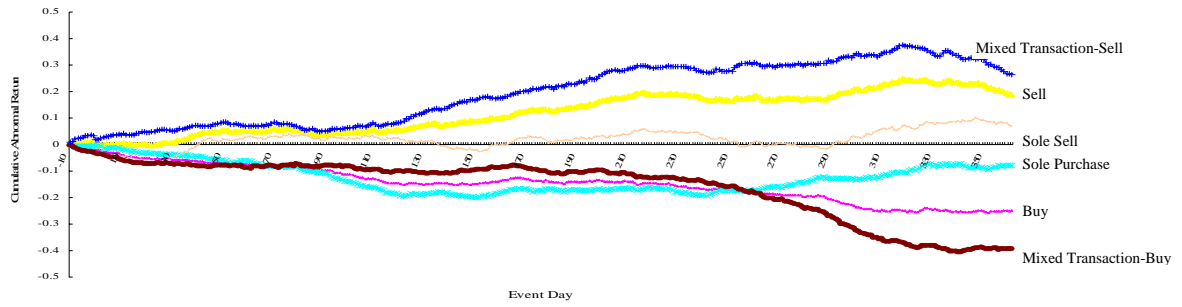


Figure 4. Cumulative Abnormal Return Path (1998-1999)

