

Legal insider trading and stock market reaction: Evidence from the Netherlands

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Abstract

This paper provides an analysis of legal insider trading on the Euronext Amsterdam stock exchange by using data published in the register held by the AFM, the Dutch financial markets authority. The sample includes 822 transactions executed by corporate insiders between the beginning of January 1999 and the end of September 2005. Our analysis shows that the financial markets' response is not significant for purchases, and that the abnormal returns associated with the sales do not have the expected sign. However, over a longer time horizon, the average cumulated abnormal returns are positive for the stocks purchased, and negative for stocks sold by insiders. This result suggests either that insiders use long-term information for their trading activities or that they are able to time the market.

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INTRODUCTION

Insider trading regulation plays an important role in economies with developed stock markets. According to Battacharya and Daouk (2002), 87 out of 103 countries with stock markets have insider trading laws, 38 of which have taken enforcement measures. One interesting aspect of these regulations is that they allow insiders to trade in their own companies' stocks, provided that certain conditions are fulfilled. Such transactions are referred to as legal insider trading. For example, under US securities laws, legal insider trading occurs on a daily basis, as corporate insiders – officers, directors or employees – buy or sell stock issued by their own companies. One constraint is that the insiders concerned have to report these trades to the Securities and Exchange Commission (SEC): once the trades are completed, filings have to be sent to the SEC which makes them public.

The well-known debate. The question whether insider trading should be regulated has been deeply debated in the literature. This is certainly due to the fact that corporate insiders are the persons most likely to possess privileged information regarding their company, and are therefore able to realize abnormal profits on the financial markets at the expense of outside investors. Critics of insider trading regulation mainly argue that restrictions are inefficient because insider trading allows new (private) information to be priced more quickly. As a result, stock prices reflect intrinsic firm value more accurately, promoting improved economic decision-making and resource allocation (e.g., Manne, 1966; Carlton and Fischel, 1983; Leland, 1992). On the other hand, those in favor of insider trading regulation essentially claim that prohibition promotes public confidence and participation in the stock market and allows outsiders to share in value-enhancing events on an equal footing (Ausubel, 1990).

In recent decades, the academic literature mainly within the US context has dealt extensively with the economic and financial analysis of legal insider trading. Without being exhaustive, topics such as the contribution of insider trades to market efficiency (e.g., Rozeff

and Zaman, 1988; Lakonishok and Lee; 2001; Aktas *et al.*, 2007), the market-timing capacity of insiders and their stock price predictive ability have attracted a great deal of attention (see Jenter (2005) or Piotroski and Roulstone, (2005)).

Short term studies. A number of studies also appraise the impact of insider trading activities over a shorter period. Seyhun (1986), Lakonishok and Lee (2001), and more recently Aktas *et al.* (2007) provide short-term event study results on US legal insider trading. They observe statistically significant, but economically unimportant market movements around insider net purchase and net sale days. For example, Aktas *et al.* (2007) report, using a sample of 59,244 aggregated daily insider trades, statistically significant five-day abnormal returns of 0.417% and 0.225% for net purchases and net sales, respectively. It is important to stress that these small returns could be considered as economically significant, given that these trades contain transactions that are uninformative as well as others that do contain private information.

Long term studies. There is overwhelming evidence in the literature that portfolios that are long on stocks purchased by insiders and short on stocks sold by insiders outperform the market over a time horizon ranging from one month to several months (e.g., Jaffe, 1974; Finnerty, 1976; Seyhun, 1986 and 1998; Lin and Howe, 1990; Jeng *et al.*, 2003).³ However, it is important to note that the reported abnormal performance seems to be driven by latent risk factors such as size, earnings/price or book-to-market (e.g., Rozeff and Zaman, 1988; Lakonishok and Lee, 2001).

As mentioned above, previous researches mainly focus on US legal insider trading. They are based on the insider transactions notified to the Securities and Exchange Commission. Insider trading in Europe has been the subject of only few comparable studies. One of the main reasons remains the lack of European data. Only until recently, the majority

³ A notable exception is the study by Eckbo and Smith (1998), where the authors show that insiders on the Oslo Stock Exchange do not earn abnormal profits.

of European countries did not have a legal obligation of notification for insider transactions. As a consequence, these countries did not possess databases such as the register kept by the SEC in the United States. It was only after the promulgation of European Directive 2003/6 of 28 February 2003 that all European member states were conducted to adopt an obligation of notification in their national legal systems. However, some European countries such as the Netherlands and France already adopted a national obligation of notification before Directive 2003/6 came into existence. In the Netherlands, as we will see later on, this obligation came into effect on January 1st, 1999. Since then, insiders realizing transactions in their firm's own stock must notify these trades to the AFM, the Dutch financial markets authority.

The contribution of this chapter consists in an analysis of insider trading on the Euronext Amsterdam stock exchange by using data published in the register held by the AFM. More precisely, following the approach developed in Lakonishok and Lee (2001) and more recently in Aktas *et al.* (2007), we provide market reactions on short event windows around insider trading days to test whether insider trades are information-motivated. It is important to note that this test relies on the ability of financial markets to detect the presence of insiders in the market. We also present the abnormal returns over longer event windows to check whether insiders use long-term information and whether the notification of their transactions conveys valuable information to the other investors. Our sample encompasses 822 transactions executed by corporate insiders on the Euronext Amsterdam stock exchange between the beginning of January 1999 and the end of September 2005. Our analysis shows that the financial markets' response is not significant for purchases, and that the abnormal returns associated with the sales do not have the expected sign. However, over a longer time horizon, the average cumulated abnormal returns are positive for the stocks purchased, and negative for stocks sold by insiders. This result suggests either that insiders use long-term information for their trading activities or that they are able to time the market.

The chapter is organized as follows. We first describe the Dutch insider trading regulation, and compare it to the US system. Then, to study the information content of insiders' trades (both insider net purchases and insider net sales are considered), we provide an analysis of market reactions around and following the transaction dates. The last section presents our conclusions.

ANALYSIS OF THE RELEVANT LEGISLATION

Before presenting the financial analysis of transactions notified by insiders to the Dutch AFM, we provide a brief overview of the Dutch law on insider trading. We will mainly focus on the legal obligation for insiders to report their transactions in their own company's stock to the AFM, and we will present some comparisons with the corresponding filing requirements under US law.

The current Dutch law on insider trading is determined by the successive legal initiatives taken on the European level. The main piece of European legislation with respect to insider trading is Directive 2003/6/EC of January 28th 2003 on insider transactions and market abuse. As did its predecessor, Directive 89/592/EEC of November 13th 1989 coordinating regulations on insider trading, Directive 2003/6/EC prohibits persons who knowingly possess inside information from using that information by acquiring or disposing of financial securities to which that information relates. Further, the directive prohibits these persons from disclosing their inside information to any other person, as well as from recommending or inducing another person on the basis of that information to acquire or dispose of financial instruments to which that information relates.

For the purpose of these prohibitions, inside information must be interpreted as information of a precise nature which has not been made public, and which relates – directly or indirectly – to one or more issuers of financial instruments and which would have a

significant effect on the prices of those financial instruments or on the price of related derivative financial instruments if it were made public.

In order to obtain transparency with regard to the transactions conducted by insiders, and in order to examine whether or not these transactions are conducted using inside information, Directive 2003/6/EC obliges certain insiders to notify the competent authorities of the transactions they conduct on their own account in the stock of the company to which they relate. The insiders subject to this obligation are the persons who discharge managerial responsibilities within an issuer of financial instruments as well as persons closely related to the latter.

It must be emphasized that this mechanism of notification in Directive 2003/6/EC does not imply an exception to the insider trading prohibition. Completing a transaction using inside information remains prohibited, and does not become authorized as a result of a notification of the transaction.

European Directives do not have direct effect in the legal order of the European member states. They establish the objectives that must be attained by the member states, leaving it to the latter to decide on the means used to arrive at these objectives. Dutch national law on insider trading has been adapted several times in order to comply with the objectives prescribed in the successive European Directives (first Directive 89/592/EEC and then Directive 2003/6/EC). As a result, in imitation of the latter Directive, current Dutch law on insider trading contains (1) a prohibition from using inside information by acquiring or disposing of financial instruments, (2) a prohibition from disclosing inside information to another person or from recommending or inducing another person to acquire or dispose of financial instruments to which that information relates, and (3) an obligation for certain insiders to notify their transactions to the AFM, the Dutch authority surveying the financial

markets. This last obligation is our main point of interest, and is the subject of the following paragraphs.

The Dutch legal obligation of notification in its current form – apart from some minor modifications inserted at the occasion of the introduction of the new Act on Financial Supervision (‘AFS’) on September 26th, 2006 – came into effect on October 1st 2005, and translates the obligation of notification in Directive 2003/6/EC into Dutch national law. Prior to October 2005, Dutch law already contained an obligation of notification, as the Netherlands were one of the few countries that introduced such an obligation before it was generalized by Directive 2003/6/EC. This previous obligation, which came into effect in January 1999, was somewhat different from the current obligation. The transactions that serve as a basis for our analysis have been notified in the period running from January 1999 until September 2005, *i.e.* under the previous legal regime. As a consequence, the following paragraphs discuss the obligation of notification under both the current and the previous state of Dutch law.

The Persons Subject to the Obligation of Notification

Current Dutch law imposes an obligation of notification upon the directors and commissioners of the issuing institution, as well as upon other persons who are not officially directors or commissioners, but who have similar authority and responsibilities. Furthermore, their relatives – spouses and partners, children and other relatives of the aforementioned insiders – are subject to the same obligation. Finally, corporate bodies, trusts or personal companies that are controlled or managed by the aforementioned persons or that are set up for the benefit of these persons or the economic interests of which are equivalent to those of these persons are also subject to the obligation of notification.

Under the previous legal regime, the personal scope of the obligation of notification was somewhat different: apart from the directors and commissioners of the issuing institution and their relatives, the directors and commissioners of significant legal entities in which the issuing institution holds participation were also subject to the obligation. Further, persons holding more than 25% of the capital of the issuing institution – as well as their administrators and commissioners if this person was a company or a corporate body – were obliged to notify their transactions. Relatives of the aforementioned two categories were equally subject to the obligation, as were members of the works council of the issuer. Finally, the issuing institution itself was subject to the obligation of notification.

US law also imposes an obligation of notification upon insiders. Without going into detail, this obligation principally regards officers and directors, as well as beneficial owners. As ‘officers’ must be considered – amongst others – the president, the principal financial and accounting officers, any vice president in charge of a principal business unit, division or function, as well as any other officer or other person who performs policy-making functions. A ‘beneficial owner’ is a person holding more than 10% of a class of registered equity securities, such as common stock or registered preferred stock. (Hazen, 2005)

The Transactions that Must Be Notified

Under current Dutch law, the aforementioned persons must notify transactions (1) in stocks that regard their own company and that are allowed to be traded on a regulated market, as well as (2) transactions in securities the value of which is determined by the value of the aforementioned stocks, *i.e.* call and put options, warrants and convertible debentures. Under the previous legal regime, the obligation of notification more generally envisaged transactions in securities that regarded the issuer.

US law obliges officers, directors and beneficial owners to file changes in their ownership of any class of any registered equity security of the issuer, as well as any purchase or sale of a security-based swap agreement involving such security.

The Delay of Notification

Under current law, the notification must be filed to the AFM *at the latest on the fifth working day after the transaction date*. A five-day period may be considered as rather long, certainly in comparison with the delay of two business days that is applicable in the United States since the Sarbanes-Oxley Act came into effect (Hazen, 2005). In the period from January 1999 until September 2005, directors and commissioners of the issuing institution were obliged to notify the AFM *without delay*, whereas the other persons subject to the obligation had to notify their transactions *at the latest on the tenth day after the end of the calendar month during which the transaction was conducted or effected*.

Exceptions

Dutch law exempts from the obligation of notification transactions conducted or realized pursuant to a written mandate by a licensed portfolio manager, if that mandate stipulates that the principal shall not exert influence on transactions conducted or effected by the portfolio manager in his capacity of authorized representative. A similar exception existed under the previous legal regime.

The fact that a transaction does not come within the scope of application of the insider trading prohibition, *i.e.* the prohibition from using inside information when conducting a transaction, does not imply that such a transaction is automatically exempted from notification to the AFM (see Grundmann-van de Krol (2004) and Schutte (2006)).

US law provides for various exceptions to the reporting requirement. For instance, transactions effected in the framework of a distribution of securities where the insider acquires the securities for the purpose of distributing them are exempted from the reporting requirement. Further, there are exemptions from the reporting requirement for stock splits, stock dividends and for rights issued pro rata. (Hazen, 2005)

Delay of Six Months under US law

The aforementioned US reporting obligation for officers, directors and beneficial owners is included in Section 16 of the 1934 Securities Exchange Act. Apart from the filing requirements, this section also imposes a short-swing prohibition: insiders must disgorge to the issuer any profit realized as a result of a purchase and sale of equity securities within a six months period. In practice, this means that if an officer, director or beneficial owner purchases relevant stock he must wait at least six months before reselling this stock in order not to incur liability (Hazen and Ratner, 2006). No similar waiting period for insiders who have conducted a transaction in relevant financial instruments is provided for under European or Dutch law.

MARKET REACTIONS TO INSIDER TRADES ON EURONEXT AMSTERDAM

Data and Method

We use the database of the Dutch financial markets authority (AFM) to extract notified corporate insider purchases and sales. For each transaction, this database indicates the name of the insider, the transaction date, the type of the transaction (sale or purchase), the price at which the transaction was concluded and the number of shares exchanged.

Our sample period ranges from January 1999 (when the obligation of notification came into effect in the Netherlands) until the end of September 2005. Since a new legal provision regarding the obligation of notification came into effect in October 2005, we limited the

period under examination to the end of September 2005 for purposes of consistency. The number of transactions notified in the period running from January 1999 until September 2005 amounts to 11,970 transactions. To ensure the quality of the gathered data, we applied several filter rules to our initial sample. We only kept *stock* transactions realized by corporate insiders. We deleted transactions the prices of which were not reported in the AFM database or the prices of which were not in EUR. We eliminated any transaction in shares that are not listed on Euronext Amsterdam. The application of these filters reduced the sample size to 2,549 transactions. Moreover, we cross-checked the AFM price and volume information against that reported by the Datastream database. Doing so, we dropped from the sample records with a price outside the range of prices of that day, as well as records with a volume exceeding the number of shares exchanged on that day. As a last filter, we excluded transactions of less than 100 shares in order to focus only on the more meaningful events. Our final sample encompasses 822 transactions.

[Insert Table 1 about here]

Since several transactions for a given company in the sample were realized at the same date, we have computed the net transactions using the same method as in Fidrmuc *et al.* (2006). For example, a purchase of 400 shares and a sale of 220 shares on a given day become a net purchase of 180 shares for that day, and a purchase of 210 shares and a sale of 400 shares become a net sale of 190 shares. Following this adjustment and the elimination of net transactions with a compensated volume or value of zero we reduced our sample from 822 to 600 transactions on the basis of the net volumes and to 602 on the basis of the net values. The remaining transactions include 163 net purchases (both in volume and in value), 439 net sales in value and 437 net sales in volume.

Empirical Method

To measure the market reaction around insider transaction dates we perform a classic event study. We compute the daily abnormal returns (AR) as in Lakonishok and Lee (2001) and Aktas *et al.* (2007) using the Beta-one model, which consists of subtracting the daily market portfolio return from the daily return for each company. We use the daily ‘All Shares’ index of Euronext Amsterdam as a proxy for the market portfolio. The abnormal return for firm i is computed as follows:

$$AR_{i,t} = R_{i,t} - R_{M,t}, \quad (1)$$

where $R_{i,t}$ and $R_{M,t}$ are the observed return for stock i and for the market portfolio, respectively. The cumulated abnormal return (CAR) is simply the sum of the daily AR over the different considered event windows. The event windows are defined relative to the insider trading days (day 0).

Results

Summary statistics. Table 2 shows some descriptive statistics for the insider transactions on the Amsterdam Euronext Stock Exchange between January 1999 and September 2005. The average number of insider net purchase days is 3.47 per firm. The corresponding average for the net sale is 8.09. On average, the companies that are subject to insider transactions in our sample have a market value of about EUR 5.3 billion.

The average number of stocks purchased is inferior to that of the sales. It is well-known that corporate insiders are on average net sellers, probably for reasons of diversification (see a.o. Lakonishok and Lee (2001) and Jenter (2005)). On average, the number of stocks

exchanged per purchase is 6,722. The median of the number of stocks purchased is 2,400. On the other hand, the average number of stocks sold per transaction is 14,975, the median being 4,063 stocks. Again, we observe that there is a large difference between the average value of the purchases and that of the sales. This value is EUR 116,665 for a purchase against EUR 216,010 for a sale. The medians are EUR 23,400 and EUR 45,662, respectively.

In Table 2 we also provide two ratios to analyze the relative size of the insider transactions. The first one is the ratio of the insider net transaction to the volume of the corresponding day, and the second one is the ratio of the net insider transaction to the market capitalization of the corresponding day. For the net purchases and net sales, the insider transactions amount on average to 12.09% and 13.38% of the daily volume exchanged, respectively. Relative to market capitalization of the firm, the average ratio is 0.04% for the purchases, and 0.08% for the sales.

[Insert Table 2 about here]

Market reactions. Table 3 displays market reactions to insider net purchases and sales around the transactions dates. For the entire sample, the two-day ($CAR_{-1,+1}$) and five-day ($CAR_{-2,+2}$) abnormal returns for the purchases are on average -1.20% and -0.92%, respectively. These CARs are not statistically significant. However, the CARs during the three days as of the transaction date ($CAR_{0,+2}$) and during the two days after the transaction ($CAR_{+1,+2}$) are positive (0.39% and 0.74%, respectively) with the latter CAR being statistically significant at the 10% level. These results suggest that the market does not react on insider purchase days, but that the significant impact appears only during the subsequent two days. Since during the period under examination some categories of insiders (directors and commissioners of the issuing institution) were obliged to notify the AFM *without delay*,

these *ex post* positive CARs could be explained by a buying pressure caused by other investors upon receipt of the information on the notification.

[Insert Table 3 about here]

For the net insider sales, the average five-day *CAR* around the transaction date is 0.97%, and it is significant at the 1% level. Even if it is well-known in literature that insider *sales* are more likely to be driven by other motives (such as diversification and liquidity reasons) than private information, this result is quite puzzling. One possible explanation is that insiders are more willing to sell stock when the market is dominated on the buy side, probably due to a positive (value creating) public announcement. Consistent with this idea, Huddart *et al.* (2007) document in the US context that insiders seem to sell after good news earnings announcements. On the other hand, the CARs observed within a period of three days as of the date of the sale (-0.19%) and during the two days following the transaction date (-0.31%) are negative, but without being statistically significant.

Overall, as do previous US studies, our results show that the market reactions around the insider transaction date are too small to be economically significant.

In Panel B of Table 3 we have also explored the effect of transaction size by calculating the average *CAR* as a function of the trade size. Unlike the observations in some US studies, the market impact does not seem to increase with trade size. For purchases, only the average *CAR* over the two days subsequent to the insider trading days is positive and statistically significant. The corresponding abnormal return is 2.29%. This result is consistent with the *stealth trading hypothesis* of Kraakman (1991) according to which insiders try not to alert the market (Friederich *et al.*, 2002) by conducting, for example, several smaller transactions

rather than one large transaction. The results regarding the net sales show positive and significant CARs during the five days around the dates of large value transactions (1.48% and 1.62% for trade size in value between the median (Q2 = EUR 46,662) and the third quartile (Q3 = EUR 192,400) and above the third quartile, respectively). The positive returns associated with large insider sales are again more likely to be explained by the announcement of positive corporate events (such as for example positive earnings announcements).

[Insert Figure 1 about here]

We have also computed the average *CAR* over longer event windows to check whether insiders use long-term information. Figure 1 displays both for purchases (Panel A) and sales (Panel B) the average *CAR* from day +3 to day +200 relative to the insider trading day (which corresponds to day 0). For the purchase, we obtain an average *CAR* of 6.73%, while it is -14.91% for the sales. Both abnormal returns are statistically significant (see Table 4). Moreover, the more informative insider trades seem to be the smaller the transactions (where the trade size in value is below the first quartile) are. The corresponding *CARs* are 7.90% and -20.20% respectively for the purchases and sales. These results suggest that on average insiders' transactions rely on long-term information and/or insiders have market timing skills. Moreover, since the maximum delay for the notification is 40 days after the transaction day and since an important proportion of the cumulative abnormal returns seems to be realized after day +40 (see Figure 1 and Table 4), outsiders mimicking insiders may also be able to realize an abnormal performance.

CONCLUSION

Public confidence in the integrity of the financial markets is crucial for the development of these markets. That is the reason why developed countries constantly introduce and improve regulations that envisage the preservation of this public confidence and the protection of the financial markets against abuse and manipulation. The regulation of insider transactions forms part of these measures and envisages the prohibition of operations conducted by corporate insiders on the basis of private information.

In several countries, insider trading regulation implies an obligation to notify any transaction conducted by a corporate insider. This measure allows using stock price reactions an examination of the motives behind those transactions and provides the other investors in the market with a source of potential information. As a consequence, the information content of the transactions notified by insiders has been the subject of intense analysis in literature. Consistent to a large extent with previous literature, short-term abnormal returns associated with insider trades on Euronext Amsterdam are either non-significant or ambiguous. It is important to note that short-term abnormal returns are only a very noisy proxy for private information revelation in the context of insider trading. According to Aktas *et al.* (2007) this is mainly due to two shortcomings. The first relates to the probable endogenous relation between abnormal returns and insider trading: insiders may decide to purchase on a specific day because they expect stock prices to increase on that day. The second shortcoming results from the fact that insiders can act strategically by timing the market, and can voluntarily choose a trading window in which they can hide their motivation for trading.

However, using longer event-windows, we are able to show that the adjustment of the stock prices is notable and has the right direction. This suggests that insiders either have some market timing ability and/or use long-term information. The notification process seems to provide outsiders with an important source of information. However, to ensure that the excess

returns are not simply a compensation for risk, more data are needed to perform a more sophisticated significance test while controlling for known priced factors in the market (e.g., such as beta, size, book-to-market, momentum). This is left for further research.

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Table 1. The sample

This table presents the filters used to obtain the final sample of 822 transactions.

Initial sample	11,970
Deletion of	
- <i>Transactions in derivatives, or realized by the company, or with no price information, or in a currency different from EUR</i>	9,158
- <i>Transactions in stock not listed on Euronext Amsterdam</i>	263
- <i>Transactions with volume superior to total shares outstanding</i>	227
- <i>Transactions with volume superior to the volume exchanged on the corresponding day</i>	160
- <i>Transactions with price outside the range of prices of the corresponding day</i>	1,320
- <i>Transactions with less than 100 shares</i>	20
Final sample	822

Table 2. Summary statistics

This table depicts a number of summary statistics on legal insider transactions on Euronext Amsterdam in the period from January 1999 until the end of September 2005.

	Mean	Min	Q1	Median	Q3	Max
Number of net purchases per firm	3.47	1	1	2	4.5	13
Number of net sales per firm	8.09	1	2	5	12	37
Market cap. (in million €)	5,278	5	87	351	1,340	68,368
Number of stocks per net purchase	6,722	100	500	2,400	7,750	200,000
Number of stocks per net sale	14,975	100	1,000	4,063	13,036	315,513
Value of net purchases (in €)	116,666	45	4,263	23,400	93,236	5,000,000
Value of net sales (in €)	216,010	954	12,500	45,662	192,400	9,105,600
Net purchase over volume	12.09%	0.00%	0.16%	2.75%	15.63%	100.00%
Net sale over volume	13.38%	0.00%	0.54%	5.24%	16.57%	100.00%
Net purchase over market cap.	0.04%	0.00%	0.00%	0.01%	0.03%	0.89%
Net sale over market cap.	0.08%	0.00%	0.00%	0.01%	0.05%	5.16%

Table 3. Market reactions to insider trading activities

This table reports average cumulative abnormal returns (CAR) around insider net purchases and insider net sales days. The event windows are defined relative to the transaction day (day 0). Panel A deals with the total sample. Panel B provides a split of the sample by trade size in value. One, two and three asterisks denote significance at the 10%, 5% and 1% levels, respectively.

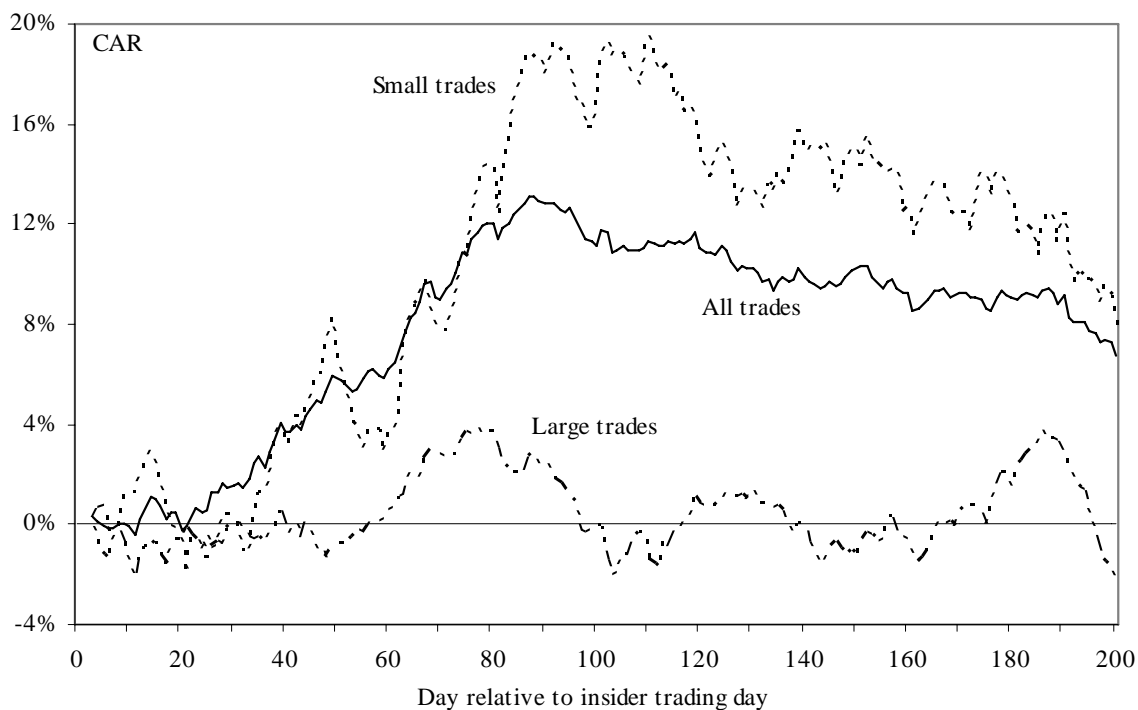
	Event Windows			
	CAR _{1,+1}	CAR _{2,+2}	CAR _{0,+2}	CAR _{+1,+2}
Panel A. Total sample				
<i>Net purchases</i>	-1.20%	-0.92%	0.39%	0.74%*
<i>Net sales</i>	0.47%	0.97%***	-0.19%	-0.31%
Panel B. Split by trade size				
<i>Net purchases</i>				
Trade Value <= Q1	-3,60%	-2,41%	-0,33%	2,29%**
Q1 < Trade Value <= Q2	1,09%	1,12%	0,55%	0,43%
Q2 < Trade Value <= Q3	-1,49%	-1,43%	0,75%	0,22%
Q3 < Trade Value	-0,80%	-0,95%	0,61%	0,00%
<i>Net Sales</i>				
Trade Value <= Q1	-0,04%	0,40%	-0,57%	-0,70%
Q1 < Trade Value <= Q2	0,17%	0,37%	0,00%	-0,46%
Q2 < Trade Value <= Q3	0,80%	1,48%*	-0,19%	-0,24%
Q3 < Trade Value	0,97%*	1,62%**	0,03%	0,10%

Table 4. Market reactions over longer time horizons

This table shows average cumulative abnormal returns (*CAR*) for different event windows defined ex post to the insider trading day, which is day 0. Small trades are trades the size in value of which is below the first quartile. Large trades are the ones the size in value of which is above the third quartile. One, two, and three asterisks denote significance at the 10%, 5% and 1% levels, respectively.

	Event Windows		
	<i>CAR</i> _{+3,200}	<i>CAR</i> _{+41,+100}	<i>CAR</i> _{+41,+200}
<i>Net purchases</i>			
All trades	6.73%*	7.45%***	3.09%
Small trades	7.90%	12.80%**	4.59%
Large trades	-2.09%	-0.07%	-2.14%
<i>Net Sales</i>			
All trades	-14.91%***	-4.40%***	-10.93%***
Small trades	-20.20%***	-1.18%	-8.51%**
Large trades	-9.93%**	-4.30%***	-11.08%***

Panel A. Net purchases



Panel B. Net sales

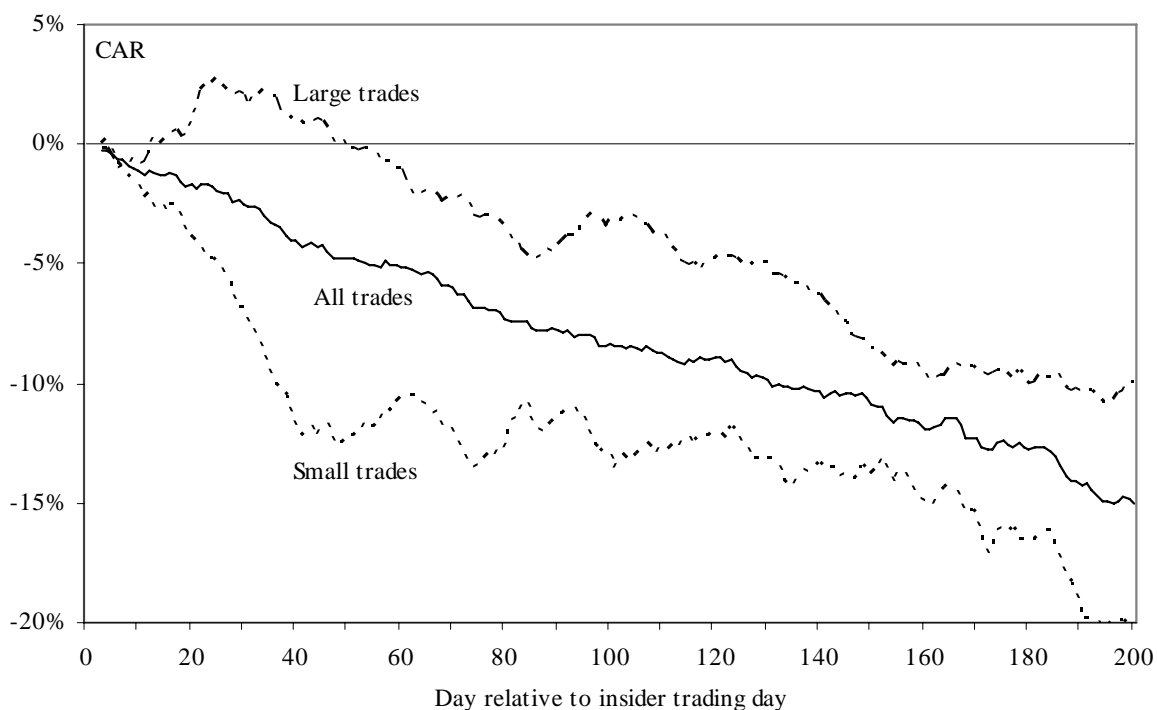


Fig. 1. Cumulative abnormal returns (CAR) from day +3 until day +200 relative to the insider trading day, which is day 0. Small trades are trades the size in value of which is below the first quartile. Large trades are the ones the size in value of which is above the third quartile.