

## Sooner or Later

# Delays in Trade Reporting by Corporate Insiders\*

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**Abstract:** Until October 2004 corporate insiders in Germany were required to report trades in the shares of their firm "without delay". In practice substantial reporting delays were common. We show that the delays are systematically related to the characteristics of the firm. Delays are longer in widely-held firms and in firms using German accounting standards. This suggests that managers of these firms are less responsive to the informational requirements of the capital market. We further find that abnormal returns after the reporting date of an insider trade are independent of the reporting delay. This implies that prices are distorted in the period between the trading and the reporting date. This is a strong point in favor of regulation requiring immediate disclosure of insider trades.

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## 1 Introduction

Corporate insiders arguably know more about the prospects of their firm than the capital market. Consequently, most countries have adopted regulation that requires insiders to report their trades and, in some cases, prohibits trading. Several empirical studies have documented that stock prices react to the announcement of insider trades, thereby substantiating the claim that corporate insiders possess superior information.<sup>1</sup>

Regulation in different countries differs with respect to the time allowed for the reporting of trades. In the US, insider trades had to be reported no later than the 10th day of the month following the trade. The Sarbanes-Oxley act now requires reporting within two days after the trade. Corporate insiders in the UK are required to report their transactions no more than five business days after the trading day.<sup>2</sup> Several other countries (e.g., Australia, Austria, Sweden) have also adopted a five day reporting requirement. In Germany, trades had to be reported "without delay" until October 2004 and within five business days since then. Canada allows for a 10 day delay and Malaysia for a 14 day delay. In Switzerland, trades have to be reported until the fourth business day of the month after the month in which the trade occurred as long as the total trading volume in the calendar month does not exceed 100,000 Swiss Francs. Once that threshold is reached each additional trade has to be reported within two business days.

These international differences and the recent changes in regulation in some countries lead to the question of whether the time allowed for reporting insider trades matters. There are several reasons why it might matter. As already mentioned, several empirical papers have concluded that share prices react to the reporting of insider trades. This implies that the market is

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<sup>1</sup> Examples include the studies by Seyhun (1986) for the US, Eckbo and Smith (1998) for Norway, Bajo and Petracci (2004) for Italy, Fidrmuc et al. (2006) for the UK and Betzer and Theissen (2006) for Germany.

<sup>2</sup> In addition, corporate insiders in the UK are not allowed to trade in the two months preceding final or interim earnings announcements and in the month prior to quarterly earnings announcements.

unable to infer the full information content of the trade on the trading day. Consequently, prices are distorted in the period between the trading and the reporting date. Further, insiders may intend to execute more than one trade. If delayed reporting is feasible the insider may delay the reporting until she has completed all transactions. Such a practice will obviously be to the disadvantage of the counterparties to the trades.

The present paper is the first to analyze the determinants and implications of reporting delays. We provide empirical evidence from Germany. Here, until October 2004, trades had to be reported "without delay". This prescription is imprecise and subject to interpretation. We show that substantial reporting delays exist. We continue by analyzing whether there are any regularities with respect to the reporting delays. We find that delays are smaller for insider sales than for purchases, and that delays have generally decreased over time. Insiders in widely held firms report their trades with longer delays than do insiders in closely held firms. As managers in widely held firms are likely to be subject to lower levels of control by the owners of the firm they may be less responsive to the information requirements of the owners and the capital market in general.

We further find that insiders in firms adopting international accounting standards report their trades faster than insiders in firms using German accounting standards. In our interpretation, this result implies that corporate officers in firms adopting international accounting standards are more open towards the capital market and its desire for transparency. In a certain sense, thus, these firms appear to have developed a culture that is more responsive to the needs of investors in financial markets.

In order to address the issue of market efficiency we relate the reporting delays to the cumulative abnormal returns (CARs) after the announcement day. We find that the CARs are independent of the reporting delays. This implies that, even with more time between the trading and the reporting date, the market does not learn the information content of the trade. Conse-

quently, prices are distorted when the reporting of insider trades is delayed. This result is a strong point in favor of regulation requiring immediate disclosure of insider trades. Our empirical conclusion thus lends support to the theoretical prediction in Huddart et al. (2001). They use an extension of Kyle's (1985) sequential auction equilibrium to show that information is reflected more rapidly in prices when insiders have to disclose their trades.

Our paper is related to previous research on insider trading, most notably to research investigating into the price reactions to insider trades. We are not aware, however, of any previous research focusing on reporting delays.<sup>3</sup> The remainder of the paper is organized as follows. In section 2 we describe the legal framework in Germany as well as our data set. In section 3 we analyze the determinants of the reporting delays. Section 4 is devoted to the relation between reporting delays and informational efficiency. Section 5 offers a summary and derives the implications of our results.

## **2 Legal Background and Data**

Germany was very slow in adopting regulation on insider trading. An amendment to the Securities Trading Act (Wertpapierhandelsgesetz) that required corporate insiders to report their trades became effective as late as July 1, 2002.<sup>4</sup> Members of the executive board, members of the supervisory board and their family members have to report trades in shares and other equity-related securities of their company. Board members of firms with exchange-listed sub-

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<sup>3</sup> Seyhun (1986, p. 207) reports delays but neither seeks to analyze their determinants, nor investigates into the impact of delayed reporting on market efficiency. Etebari, Tourani-Rad and Gilbert (2003), relying on data from New Zealand, analyze insider trades by large shareholders (which had to be disclosed immediately) to those of directors (which were disclosed in the firm's annual report) and find that the latter are more profitable. They do not attempt to control for the different characteristics of the trades in the two subsamples, and they use the trading day (rather than the disclosure date) as their event date.

<sup>4</sup> For companies listed on the Neuer Markt, the (now defunct) segment for technology stocks of Deutsche Börse AG, there were publication requirements in effect from 1997 onwards. The rules for the Neuer Markt demanded quarterly publication of the shareholdings of corporate insiders. These rules were revised in 2001, when reporting of individual trades became mandatory.

sidiaries also have to report trades in shares of the subsidiary. Former board members and large shareholders are not required to report their trades.

Trades have to be reported both to the company and to the Bundesanstalt für Finanzdienstleistungsaufsicht (BAFin), the German analogue to the SEC. During our sample period, trades have to be reported "without delay" when the total transaction volume within a 30 day window exceeds € 25,000.<sup>5</sup> In our empirical analysis we only include trades for which this immediate reporting requirement applies. We thus include i) all trades larger than € 25,000 and ii) trades smaller than or equal to € 25,000 only if the aggregated volume of trades by the same insider in the preceding 30 days surpasses € 25,000. As an example, consider an insider buying shares worth € 20,000 on April 15 and shares worth 10,000 on May 10. The first trade does not have to be reported. However, upon execution of the second trade *both* trades have to be reported. We only include the second trade in our analysis because only this trade has to be reported without delay.

The report has to contain the trading date, information on the position of the trader within the company, the security traded, the trade size, and the price. The company has to publish the trade information. This usually happens by way of posting the information on the company's web site.

Certain exemptions from the reporting requirement exist. Securities obtained as a part of the remuneration (e.g. stock options) do not have to be reported. When stock options are exercised, however, the purchase of the shares has to be reported. Further, the rules do not apply to firms that are only traded over the counter.<sup>6</sup>

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<sup>5</sup> In October 2004 new rules became effective. Trades now have to be reported within five business days whenever the total volume in a calendar year exceeds € 5,000.

<sup>6</sup> There is an OTC segment on German exchanges termed "Freiverkehr". Listing requirements are generally low in this segment.

The BAFin maintains a database of all insider trades that have been reported. It contains information about the company name and ISIN code, the trading date and the reporting date, the security traded, the transaction type (purchase or sale), the transaction volume and the price, and the name and the function of the person reporting the trade (executive board member, supervisory board member or other person subject to the trade reporting requirement). Our empirical analysis is based on this database. It covers the period from July 1<sup>st</sup> 2002 to June 30<sup>th</sup> 2004. A total of 4,272 transactions by insiders in firms listed on a German exchange have been reported in this period.

We complement the data on insider transactions with data obtained from other sources. By matching the names given in the BaFin database with information on the composition of the executive and supervisory boards provided in Hoppenstedt Aktienführer,<sup>7</sup> we identify transactions initiated by the chairman of either the executive or the supervisory board. We further collect data on the ownership structure of the firm. The Hoppenstedt Aktienführer lists all investors with a stake of at least 5% of the shares outstanding. Data on (dividend-adjusted) daily closing prices is obtained from Datastream. We further collect information on the accounting standards used and on the publication dates of annual reports, intermediate reports and quarterly earnings announcements from various sources.

In several cases the entries in the BAFin database were incomplete, e.g. because a trade was not characterized as being a purchase or a sale. We dropped the corresponding observations from the sample. In some cases the same person reported more than one equal-sized trade in the same security and at the same price on the same day. We interpret these observations as duplicates and dropped all but one from the sample. In cases in which the reported trading or reporting date fell on a weekend or a holiday we replaced the date with the date of the first subsequent business day. Finally, in 15 cases the reporting date as it appears in the BAFin

database is prior to the trading day. We corrected the dates after cross-checking the data with other sources. The sample contains 15 "intra-insider trades", i.e., transactions in which one insider is the buyer and another insider is the seller. The most likely reason for these transactions is the transfer of stocks between spouses, or between executives and their children, possibly for tax reasons. We dropped these observations because intra-insider trades arguably do not constitute a signal to the market. For five firms stock price data was not available. These firms are excluded from the analysis.

The final dataset consists of 1,977 observations (972 purchases and 1,005 sales). Table 1 presents descriptive statistics. The average trade size is close to € 1 million (corresponding to slightly more than 1% of the value of shares outstanding), with sales on average being larger than purchases. The trade size distribution is heavily skewed. The median trade size is about € 70,000 (0.06% of the value of shares outstanding) and is, again, larger for sales than for purchases. Members of the executive board and the CEO in particular account for the largest number of trades. The average trade size, on the other hand, is larger for trades initiated by members and, in particular, the chairman of the supervisory board.

Insert Table 1 about here

### **3 What Determines the Delays - Empirical Results**

As noted in the previous section trades had to be reported "without delay" during our sample period. The law was not specific as to what exactly that meant. In practice, substantial reporting delays occurred, as is documented in Table 2. About 25% of the insider trades are reported on the trading day or the subsequent day. Another 48.3% of the trades are reported between 2 and 7 days after the trade, 12.9% are reported in the second week after the trade, 6.9% are reported in the third or fourth week after the trade and the remaining 6.2% of the

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<sup>7</sup> Hoppenstedt Aktienführer is a yearly publication that provides details on all listed firms.

trades have reporting delays of more than 30 days. The mean reporting delay is 13.1 days, the median delay is 4 days. The separate figures for insider purchases and sales also shown in Table 2 reveal that purchases are reported with longer delays than sales. The differences are statistically significant.

Some trades are reported with extreme delays (the maximum reporting delay in our sample is 442 days). These extreme observations are likely to be outliers and may bias our results. In order to assure the robustness of our results we repeat our complete analysis after exclusion of observations with delays exceeding 30 days.

Insert Table 2 about here

The figures in Table 2 reveal that substantial reporting delays exist, and that there is considerable variation in the reporting delays. Whether this variation is systematic is one of the questions we now turn to. To this end we sort the sample into groups according to the following variables:

- Trade size, measured in Euro (below / above median),
- firm size, measured by the market value of equity (below / above median),
- trading date (first versus second half of sample period),
- the announcement day abnormal return, obtained from a standard event study (below / above median),
- the ownership structure, measured by a variable indicating whether the firm has an individual shareholder owning more than 25% of the voting equity (closely-held firms) or not (widely held firms),
- the accounting standards (either German or IAS / US GAAP),
- the position of the insider within the firm.



For each partition of the sample we report average delays for all trades and separate values for purchases and sales. We repeat the analysis after exclusion of observations with a delay in excess of 30 days.

The results are presented in Table 3. Smaller trades and trades by insiders in smaller firms tend to be reported with longer delays. "Early" trades (those trades that occurred in the first half of our sample period, i.e., between July 1, 2002 and June 30, 2003) are also reported with longer delays. This indicates that the reporting delays have generally decreased over time.

If insiders delay the reporting of those trades that are based on more material information we would expect to see that trades triggering larger reporting day abnormal returns are reported with longer delays. This is not generally the case (although we find a significant difference in the predicted direction when considering insider purchases and excluding observations with delays exceeding 30 days).

We do find evidence that trades in widely held firms are reported with longer delays. Managers in widely held firms are likely to be subject to lower levels of control by the owners of the firm. This, in turn, may make them less responsive to the information requirements of the owners and the capital market in general. A related argument may explain why trades (and purchases in particular) by insiders in firms using German accounting standards are reported with longer delays. German accounting standards are not tuned to the information requirements of the capital market and firms using German accounting standards may therefore be less willing to provide investors in financial markets with timely and accurate information.

The position of the insider within the firm appears to matter. When comparing the reporting delays of five groups of insiders (the CEO, other members of the executive board, the chair of the supervisory board, other members of the supervisory board, and other traders) the ANOVA F-statistic for the null hypothesis of no differences in means indicates rejection of the null in three cases.

Insert Table 3 about here

The univariate analysis presented thus far does not take into account the interdependences between the explanatory variables. We therefore now turn to a regression analysis. The dependent variable is the reporting delay. As noted earlier, there are outliers in the sample that may bias the results. We therefore estimate five versions of the model:

- a simple linear model,
- a linear model where observations with delays in excess of 30 days are excluded,
- a winsorized model in which delays in excess of 30 days are set to 30 days,
- a log model in which the dependent variable is the log of 1 plus the delay<sup>8</sup>,
- a probit model in which the dependent variable is a binary variable taking on the value one if the delay is more than 7 days and zero otherwise. The cutoff value of 7 calendar days corresponds to 5 business days. This, in turn, is the maximum delay allowed according to the new regulation that became effective in October 2004.

The univariate analysis has shown that the reporting delays for purchases and sales differ. We therefore include a dummy variable identifying insider sales on the right-hand side. We divide the sample period in four sub-periods of equal length and include three dummy variables (the first sub-period is the reference period), thereby allowing for changes in the reporting delays over time.

We further include the size of the insider trade (measured as a percentage of the number of shares outstanding), firm size (measured by the log of the market value of equity), and the abnormal return on the reporting day as independent variables. Finally we include dummy variables for widely-held firms, for firms using international accounting standards (IAS or US

GAAP) and dummy variables for trades by the chair and members of both the executive and the supervisory board among the set of explanatory variables.<sup>9</sup>

Insert Table 4 about here

The results are shown in Table 4. Our earlier finding that insider sales are reported with shorter delays is confirmed. The coefficient on the dummy variable identifying insider sales is significantly negative in four out of the five models. We also confirm the previous finding that reporting delays have decreased over time. This is evidenced by the negative coefficients of the dummy variables, in particular the one for period 4.

Reporting delays are not systematically related to trade size. There is some evidence that trades by insiders in larger firms are reported with shorter delays. The respective coefficient is significantly negative in two cases. There is only weak evidence that trades containing more material information (as measured by the reporting day abnormal return) are reported with longer delays. The coefficient is positive in all five models and significant (though at the 10% level only) in two models.

Trades by insiders in firms that adopt international accounting standards are reported with shorter delays. The coefficient is negative and significant in all five models. Also consistent with our previous findings, trades by insiders in widely-held firms are reported with longer delays. All five coefficients are positive and four are significant at the 5% level.

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<sup>8</sup> We add 1 to the delays because there are many observations with a zero delay. The log model puts less weight on extreme observations.

<sup>9</sup> Insiders wishing to execute more than one trade may deliberately delay the reporting of the first trade in order to increase the profitability of their trades. We would, therefore, expect to find longer reporting delays when a trade is followed by other trades prior to being reported. We construct a multiple-trade dummy variable that identifies these cases. Including this variable does not materially affect the results. We do not report the results including the multiple-trade dummy for two reasons. First, a trade that is followed by another trade before it is reported can, by definition, not have a zero reporting delay. Therefore, we are likely to find a positive coefficient on the multiple trade dummy. Second, assume reporting delays are random and, in particular, are independent from subsequent trades by the same insider. Now consider a trade that is, by chance, reported with a long delay. This trade has a larger probability of being followed by a second trade by the same insider before it is reported. In the regression we may therefore find a positive relation between the multiple-trade dummy and the reporting delays. This relation, however, would be spurious.

With respect to the identity of the trader there is weak evidence that trades by the chair and members of the executive board and the chair of the supervisory board are reported with shorter delays whereas those of other members of the supervisory board are reported with longer delays.

In summary, the regression results are fully consistent with the univariate results presented earlier. Most importantly, the finding that both the ownership structure of the firm and the accounting standards matter is confirmed. The results thus support our conclusion that widely-held firms and firms applying German accounting standards are less responsive to the informational requirements of investors, analysts and other market participants.

#### **4 Reporting Delays and Informational Efficiency**

Several empirical papers have concluded that share prices react to both the occurrence of an insider trade itself and to the reporting of the trade.<sup>10</sup> This implies that the market is unable to infer the full information content of the trade on the trading day. Consequently, prices are distorted in the period between the trading and the reporting date. Longer reporting delays will thus impair market efficiency. It may, however, be the case that the market learns some of the information even without reporting of the insider trade. If this is the case, reporting day abnormal returns will be smaller for insider trades that are reported with longer delays.

To address this issue empirically we first conduct a standard event study. We use the CDAX performance index, a value-weighted, broad-based index calculated by Deutsche Börse AG, to estimate market model expected returns over a 180 day estimation window ending 20 days prior to the insider trade. We define the reporting date of the insider trade as the event day and then calculate cumulative abnormal returns over 20 day event windows starting on the event day. The results are presented in the first two columns of Table 5. Consistent with the results

of previous papers we find that the reporting of insider trades is associated with significant cumulative abnormal returns (CARs). Share prices rise after the reporting of insider purchases (the  $CAR_{0,20}$  amounts to 2.44%) and they decline after insider sales (the CAR amounts to -2.20%).

Insert Table 5 about here

In a second step we test whether the magnitude of the CARs depends on the reporting delays. In order to do so we sort the observations into two groups - those with a reporting delay of seven days or less, and those with a delay of eight or more days. We do not find significant differences between the groups. The reporting day  $CAR_{0,20}$  of purchases with short reporting delays is 1.92%. The corresponding value for insider purchases reported with long delays is *larger*, amounting to 3.67%. The t-statistic of 1.65 indicates that the difference just falls short of being significant at the 10% level. The difference between the CARs for insider sales with short and long reporting delays is much smaller. The cumulative abnormal returns amount to -2.24% and -2.04%, respectively, and the difference is far from being significant.

These results indicate that the magnitude of the abnormal return after the announcement day does not decrease when the trade is reported with a longer delay. It thus appears that the market does not learn the information content of the insider trade. Consequently, reporting delays have a negative impact on market efficiency.

The univariate analysis conducted thus far does not take into account that the reporting day CARs may depend on variables we have not considered. Previous research (e.g. Fidrmuc et al. 2006, Betzer and Theissen 2006) has uncovered that the CARs are related to the characteristics of the insider trade, the characteristics of the firm, and the position of the insider within

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<sup>10</sup> See footnote 1 above.

the firm. We therefore now turn to a multivariate regression analysis in which we control for these variables.

The dependent variable is the  $CAR_{0,20}$ . The CAR for sales is multiplied by -1. This allows us to pool the data for purchases and sales. In order to allow for different CARs for purchases and sales we include a dummy variable identifying insider sales on the right-hand side. We also include a measure of the size of the insider trade (the trade size as a percentage of the number of shares outstanding), a measure of firm size (the log of the market value of equity) and dummy variables identifying widely-held firms and firms adopting international accounting standards. The informational hierarchy hypothesis posits that trades by insiders who are more involved with the day-to-day operations of the firm (and who therefore have better access to information) have larger price impacts. We therefore also include dummy variables identifying the position of the insider within the firm. Finally, Betzer and Theissen (2006) have shown that insider trades prior to earnings announcements have larger price impacts. We take this into account by including a dummy variable that identifies insider trades executed in the 60 days prior to an annual or interim earnings announcement or in the 30 days prior to a quarterly earnings announcement.<sup>11</sup>

The variable of prime impact is the reporting delay. We estimate five versions of the model. Model 1 is the base model. In model 2 we exclude all observations with delays larger than 30 days. Model 3 uses a winsorized variable, i.e., delays in excess of 30 days are set to 30. Model 4 measures the delay by the log of 1 plus the delay, and model 5 includes a dummy variable taking on the value 1 if the delay is larger than 7 days. The results of all five models are reported in Table 6.

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<sup>11</sup> We obtained the data on earnings announcement dates from Bloomberg, Datastream, and company web sites. The choice of the 60 and 30 day windows is motivated by the fact that trades within two months prior to annual or interim earnings announcements and trades within one month prior to a quarterly earnings announcement are prohibited under UK regulation.

Reporting day abnormal returns appear to be equal for insider purchases and sales, and they are independent of trade size. The CARs are smaller for trades by insiders in large firms. CARs by insiders in widely-held firms and by insiders in firms using international accounting standards are associated with higher CARs.<sup>12</sup> Trades by ordinary members of the executive board and by the chair of the supervisory board have higher CARs than those by the CEO. This result is inconsistent with the informational hierarchy hypothesis. Insider trades executed prior to earnings announcements have higher CARs. These results are consistent with those found in the literature, most notably those in Betzer and Theissen (2006).

Insert Table 6 about here

The coefficient on the delay variable is very close to zero and insignificant in all five models. Thus, reporting delays do not decrease when a trade is reported with a longer delay. Consequently, market prices are distorted in the period between execution and reporting of the trade. This result is a strong point in favor of a regulation requiring immediate disclosure of insider trades.

## **5 Summary and Conclusion**

Until October 2004 corporate insiders in Germany were required to report trades in the shares of their firm "without delay". In practice substantial delays were common. In the present paper we analyze both the determinants and the consequences of these reporting delays.

We find that the reporting delays are systematically related to the characteristics of the firm. In particular, delays are longer in widely-held firms and in firms using German accounting

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<sup>12</sup> The result that trades reported by insiders in firms using international accounting standards have higher CARs is inconsistent with the notion that international accounting standards are more informative. If they were more informative, we should expect informational asymmetries between insiders and the capital market to be lower in firms adopting international accounting standards. In this case, however, we would expect smaller CARs for these firms.

standards. These results suggest that managers of these firms are less responsive to the informational requirements of the capital market.

Abnormal returns after the reporting date of an insider trade are independent of the reporting delay. This implies that prices are distorted in the period between the trading and the reporting date. Consequently, and consistent with the theoretical predictions in Huddart et al. (2001), regulation that requires and enforces immediate publication of insider trades will increase the informational efficiency of prices.



**References:**

- Bajo, E. and B. Petracchi (2004): Do What Insiders DO: Abnormal Performances After the Release of Insiders' Relevant Transactions. Working Paper, University of Bologna, July.
- Betzer, A. and E. Theissen (2006): Insider Trading and Corporate Governance - The Case of Germany. Working Paper, University of Bonn, April.
- Eckbo, E. and D. Smith (1998): The Conditional Performance of Insider Trades. *Journal of Finance* 53, 467-498.
- Etebari, A., A. Tourani-Rad and A. Gilbert (2003): Profitability of Insider Trading: New Zealand Evidence. *University of Auckland Business Review* 5 No. 2.
- Fidrmuc, J., M. Goergen and L. Renneboog (2006): Insider Trading, News Releases and Ownership Concentration. *Journal of Finance*, forthcoming.
- Huddart, S., J. Hughes and C. Levine (2001): Public Disclosure and Dissimulation of Insider Trades. *Econometrica* 69, 665-681.
- Kyle, A. (1985): Continuous Auctions and Insider Trading. *Econometrica* 53, 1315-1336.
- Seyhun, N. (1986): Insiders' Profits, Costs of Trading, and Market Efficiency. *Journal of Financial Economics* 16, 189-212.

## Table 1: Descriptive Statistics

The table presents descriptive statistics. Panel A contains descriptive statistics on the trades in our sample while Panel B shows the number and average size of trades initiated by insiders holding different positions within the firm.

### Panel A: Transaction size

		All transactions	Purchases	Sales
Number of observations		1,977	972	1,005
Size, €	mean	969,540.25	549,050.17	1,376,628.26
	median	69,243.00	41,913.50	131,407.50
Size, percent of shares outstanding	mean	1.02%	0.64%	1.39%
	median	0.06%	0.04%	0.09%

### Panel B: Transactions by position of insider

	Purchases			Sales		
	#	mean size, €	median size, €	#	mean size, €	median size, €
CEO	193	266,751.87	50,000.40	153	1,802,323.14	196,740.00
Other members of executive board	331	154,545.12	39,200.00	330	1,098,820.64	148,500.00
Head of supervisory board	82	137,902.02	38,259.25	71	3,829,027.44	86,670.00
Other members of supervisory board	263	1,099,134.91	32,950.00	259	853,562.28	86,825.00
Others	103	1,268,532.15	73,580.00	191	1,313,271.93	154,751.20

## Table 2: Reporting Delays

The table shows the reporting delays (defined as the number of days between the trading date and the reporting date) for the insider trades in our sample. Columns 1 and 2 report figures for all transactions, columns 3 and 4 (5 and 6) show figures for insider purchases (insider sales). Only trades which, according to the law, had to be reported are included.

	All transactions		Purchases		Sales	
	number	percent	number	percent	number	percent
0 days	194	9.81	74	7.61	120	11.94
1 day	316	15.98	155	15.95	161	16.02
2-7 days	954	48.25	455	46.81	499	49.65
8-14 days	254	12.85	130	13.37	124	12.34
15-30 days	137	6.93	79	8.13	58	5.77
> 30 days	122	6.17	79	8.13	43	4.28
total	1,977		972		1,005	
Mean, days	13.07		19.18		7.17	
t-statistic					5.97	
Median, days	4.00		5.00		4.00	
z-statistic					4.55	

**Table 3: Determinants of Reporting Delays - Univariate Analysis**

We sort the sample into groups according to the variables listed in the first column. Only insider trades which, according to the law, had to be reported are included. For each partition of the sample we report average delays for all trades (columns 2 and 3) and separate values for purchases (columns 4 and 5) and sales (columns 6 and 7). We repeat the analysis after exclusion of observations with a delay in excess of 30 days. An "\*" indicates significance at the 5% level.

	All trans- actions		Purchases		Sales	
	all	D≤30	all	D≤30	all	D≤30
small trades (below median)	16.83	5.90	21.48	5.98	8.69	5.78
large trades (above median)	9.31	4.66	14.96	5.41	6.32	4.28
t-statistic	3.72*	4.89*	1.57	1.40	2.43*	4.42*
small firms (below median)	15.69	5.71	22.37	5.96	7.77	5.42
large firms (above median)	10.45	4.86	15.26	5.55	6.68	4.32
t-statistic	2.59*	3.34*	1.78	1.04	1.16	3.35*
early trades (July 2002 - June 2003)	18.41	5.75	22.99	5.97	8.52	5.29
late trades (July 2003 - June 2004)	7.72	4.82	10.45	5.33	6.55	4.60
t-statistic	5.31*	3.69*	2.91*	1.51	1.95*	1.95*
small AR <sub>0</sub> (below median)	12.79	5.12	18.03	5.35	7.17	4.90
large AR <sub>0</sub> (above median)	13.36	5.43	20.47	6.26	7.16	4.74
t-statistic	0.29	1.20	0.62	2.32*	0.02	0.47
widely-held firms (n = 605 / 312 / 373)	22.81	5.34	40.33	5.29	8.16	5.37
closely-held firms (n = 1,292 / 660 / 632)	7.91	5.25	9.19	5.98	6.58	4.49
t-statistic	7.08*	0.33	7.52*	1.60	1.64	2.60*
German reporting standards (n = 571 / 355 / 216)	22.58	6.05	31.14	6.78	8.53	4.94
IAS or US-GAAP (n = 1,406 / 617 / 789)	9.21	4.98	12.31	5.24	6.79	4.78
t-statistic	6.03*	3.79*	4.61*	3.76*	1.52	0.40
Chair executive board (n = 346 / 193 / 153)	8.04	5.30	10.22	6.09	5.29	4.35
Other member executive board (n = 661 / 331 / 330)	10.23	5.19	14.11	6.16	6.34	4.22
Chair supervisory board (n = 153 / 82 / 71)	8.44	4.32	9.84	4.09	6.83	4.57
Other member supervisory board (n = 523 / 263 / 260)	23.14	5.72	37.52	5.81	8.60	5.63
Other traders (n = 294 / 103 / 191)	9.88	5.21	12.89	5.17	8.26	5.24
ANOVA F-statistic	9.17*	1.94	8.30*	2.35	1.74	3.39*

**Table 4: Determinants of Reporting Delays - Regression Results**

The table reports the results of a regression of the reporting delays on the explanatory variables listed in column 1. Column 2 reports the results of the baseline linear model. Alternative specifications exclude observations where the delay exceeds 30 days (column 3), winsorize the dependent variable at 30 (column 4), use the log of one plus the delay as the dependent variable (column 5) or use a dummy variable that takes on the value 1 if the delay is larger than 7 calendar days and zero otherwise as the dependent variable (column 6). Only transactions that, according to the law, had to be reported are included. t-values are given in parentheses and are based on heteroscedasticity-consistent standard errors.

	linear	linear, D>30 excluded	winsorized	Log (D+1)	Probit
Constant	16.32 (4.85)	7.78 (13.6)	10.05 (12.6)	2.10 (20.3)	-0.29 (-2.31)
Dummy sales	-8.70 (-5.41)	-0.64 (-2.39)	-1.11 (-2.84)	-0.21 (-3.93)	-0.10 (-1.49)
Period 2	14.98 (3.39)	-0.20 (-0.46)	0.69 (1.15)	0.15 (1.80)	0.03 (0.35)
Period 3	-0.66 (-0.29)	-0.41 (-1.13)	-0.70 (-1.36)	-0.03 (-0.45)	-0.27 (-3.05)
Period 4	-4.05 (-1.94)	-0.92 (-2.63)	-1.91 (-3.91)	-0.18 (-2.66)	-0.29 (-3.04)
Volume (relative)	-14.10 (-1.31)	-1.83 (-0.54)	-3.61 (-0.98)	-0.78 (-1.31)	-0.33 (-0.42)
Log (Market cap.)	0.67 (1.40)	-0.21 (-3.39)	-0.17 (-2.04)	-0.01 (-1.19)	0.02 (1.53)
AR <sub>0</sub>	23.59 (1.92)	1.25 (0.33)	5.07 (1.24)	0.80 (1.67)	0.71 (1.23)
International acc. std.	-13.55 (-4.93)	-0.84 (-2.82)	-2.11 (-4.91)	-0.35 (-6.09)	-0.22 (-3.20)
Widely held	14.22 (5.58)	0.38 (1.43)	1.76 (4.40)	0.29 (5.23)	0.26 (3.79)
CEO	-2.81 (-1.10)	-0.37 (-0.80)	-0.93 (-1.49)	-0.15 (-1.82)	-0.08 (-0.72)
Chair sup. board	-2.06 (-0.63)	-1.46 (-3.00)	-2.19 (-3.05)	-0.26 (-2.46)	-0.26 (-1.76)
Executive board	-2.94 (-1.16)	-0.31 (-0.76)	-1.04 (-1.83)	-0.18 (-2.32)	-0.09 (-0.86)
Sup. board	9.81 (3.69)	0.10 (0.23)	0.89 (1.43)	0.15 (1.89)	0.16 (1.58)
R <sup>2</sup> (adj.)	0.092	0.024	0.062	0.076	0.035

**Table 5: Announcement CARs and Reporting Delays - Univariate Analysis**

The table reports cumulative abnormal returns (CARs) from a standard event study. The event date is the reporting date of an insider trade. The first line presents results from a pooled sample that includes both purchases and sales. CARs for sales have been multiplied by (-1). Lines 2 and 3 report separate results for purchases and sales, respectively. Column 1 reports results for all trades. Column 2 reports the t-statistic for a test of the mean against zero. Columns 3 and 4 report the CARs for trades that have been reported with a delay of 7 or less days and 8 or more days, respectively. The last column reports the t-statistic for a test of equality of the means.

	CAR <sub>0,20</sub>	t-statistic	CAR <sub>0,20</sub> D ≤ 7	CAR <sub>0,20</sub> D > 8	t-statistic
Pooled	2.315%	6.24	2.091%	2.955%	1.02
Purchases	2.439%	5.05	1.921%	3.670%	1.65
Sales	-2.195%	3.92	-2.240%	-2.040%	0.15

**Table 6: Announcement Day CARs and Reporting Delays - Regression Results**

The table reports the results of a regression of the reporting day CARs on the explanatory variables listed in column 1. The CARs are obtained from a standard event study. The event window is [0; 20]. The five models differ in the way the dependent variable "delay" is specified. Model 1 includes the raw data. Model 2 excludes observations where the delay exceeds 30 days. Model 3 uses a winsorized variable where values in excess of 30 are set to 30. Model 4 uses the logarithm of 1 plus the delay. The last model includes a dummy variable that takes on the value one if the delay is larger than 7 days and zero otherwise. Only transactions that, according to the law, had to be reported are included. t-values are given in parentheses and are based on heteroscedasticity-consistent standard errors.

	Delay measured by				
	Delay	Delay; D>30 excl.	Delay winsorized	Log(D+1)	Delay- Dummy
Constant	-0.020 (1.00)	-0.033 (1.44)	-0.022 (1.00)	-0.029 (1.23)	-0.025 (1.20)
Dummy sales	0.002 (0.22)	0.003 (0.39)	0.002 (0.33)	0.003 (0.45)	0.003 (0.42)
Volume (relative)	-0.196 (1.28)	-0.224 (1.43)	-0.195 (1.27)	-0.191 (1.24)	-0.193 (1.25)
Log (Market cap.)	-0.005 (2.56)	-0.006 (2.91)	-0.005 (2.55)	-0.005 (2.52)	-0.005 (2.53)
Widely held	0.052 (6.28)	0.059 (6.99)	0.051 (6.35)	0.050 (6.19)	0.050 (6.31)
International accounting standards	0.015 (2.04)	0.020 (2.70)	0.016 (2.22)	0.017 (2.41)	0.017 (2.33)
CEO	0.037 (2.31)	0.035 (2.07)	0.037 (2.31)	0.038 (2.34)	0.037 (2.34)
Executive board	0.056 (4.20)	0.064 (4.51)	0.057 (4.17)	0.057 (4.21)	0.057 (4.23)
Chair sup. board	0.063 (2.94)	0.069 (3.96)	0.064 (2.92)	0.064 (2.96)	0.064 (2.98)
Sup. board	0.008 (0.58)	0.016 (1.01)	0.008 (0.53)	0.007 (0.49)	0.007 (0.50)
Blackout Period	0.026 (3.41)	0.036 (4.64)	0.025 (3.38)	0.024 (3.29)	0.025 (3.31)
Delay (see column head for details)	-5.9 E-5 (1.68)	0.001 (0.88)	5.4 E-5 (0.11)	0.004 (1.12)	0.011 (1.30)
R <sup>2</sup> (adj.)	0.048	0.064	0.047	0.048	0.048