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Insider Trading and Corporate Governance in Latin America

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Abstract[*]

Unlike outside investors, controlling groups have the option to trade on inside information and can exercise it at the expense of outside investors. This paper computes informed trading probabilities (ITPs) for the universe of liquid stocks from seven Latin American countries, trading both at home and as ADRs, and applies ITPs in order to address corporate governance questions. Substantial heterogeneity of ITP is found within a given institutional environment. Nonetheless, significant differences in mean ITP are identified across volume ranges, countries, and security types. ITP has an intuitively appealing correlation with some (but not all) of the country-wide investor protection variables used in the literature. Substantial increases in ITP are found just before public corporate announcements, suggesting that privately-informed agents are exploiting their privilege when it is most valuable. ITP is priced in the market: companies with higher ITPs fetch lower Tobin's *q*s. It is concluded that Informed Trading Probability proxies for unobservable corporate governance quality as the heterogeneity of firm behavior seems to be recognized by the market and priced accordingly.

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1. Introduction

When illegal insider trading goes unpunished, as in most countries in Latin America, controlling groups can periodically confiscate minority shareholders' wealth in a politically low-cost way by using their privileged access to information to trade on it.[1] The expected probability that outside investors' wealth will be confiscated through poor governance and informed trading is a crucial determinant of their portfolio allocation and the ensuing cost of capital for the corporations trying to raise it.

The questions remain, however, of how prevalent insider trading is in Latin America, and to what extent is it connected to corporate governance. All the questionnaires that form the basis of the known corporate governance ratings include sections related to fair and timely disclosure of information to the market.[2] But aside from the individual analyst's judgment of the corporation's common practice, there is presently no independent, objective, quantitative, and theory-based assessment of the extent to which informed trading effectively takes place. This paper provides such estimates for the universe of liquid stocks from Latin America. It then uses them both as an explained and as an explanatory variable in regression analysis.

Is informed trading a deterministic function of corporate and country-wide institutional controls used in the literature, or does it provide substantial additional information? What corporate observables are more likely to be correlated with higher informed trading intensity? In the time-series dimension, does informed trading peak some time before material corporate announcements are disclosed to the market, or is it flat and close to zero throughout the sample? Moreover, could estimated informed trading intensity help explain corporate valuations above and beyond country-wide institutional variables used in the literature? Would such intensity also provide a better measure, in this sense, than analyst-based rankings intended to measure governance quality? As shown by Klapper and Love (2002) and La Porta et al. (2002), the market "prices" the quality of corporate governance. However, do markets charge a premium for informed trading above and beyond the punishment for bad governance?

[1] See Maug (2002), Bhattacharya et al. (2000), Bhattacharya and Daouk (2002) and Beny (1999).
[2] Examples include Questions 14, 15, 17, and 18 in Gill (2001), Questions 1 and 3 in the Information Disclosure section in Grandmont et al. (2001); and the section on Financial Transparency and Information Disclosure in Standard and Poor's (2001).

This paper addresses these questions using high-quality, ultra-high-frequency data from Bloomberg comprising over 80 million records of individual transactions and best offer quotes from October 2, 2003, to September 29, 2004.

In addition, the framework of Easley, Kiefer and O'Hara (1996, 1997a, 1997b), and of those authors with Paperman (Easley et al., 1996) is used to estimate the informed trading probability (ITP hereafter) for each individual stock at various points throughout the sample. As far as the authors of this paper know, this is the only method that allows direct estimation of how likely it is that each observed transaction comes from a privately informed party. This method contrasts with others in the literature (e.g., Keown and Pinkerton, 1981, John and Lang, 1991, Meulbroek, 1992, Cornell and Sirri, 1992, and Estrada and Peña, 2002) that only provide an indirect methodology to infer informed trading and is better suited for countries where insider trading prosecutions are rare. It is noteworthy that the method adopted here estimates the intensity of *privately informed* trading, a category that includes but is not limited to *illegal insider* trading. Legal private information trading includes acting on the basis of analysts' reports, proprietary industry or macro forecasts.

In related work, Grishchenko, Litov and Mei (2002) use a test based on the theoretical model of Llorente et al. (2002) to estimate informed trading in 19 emerging markets from almost seven years of daily closing price and volume data. According to the model, the higher the correlation between lagged volume times lagged return and current return, the higher the intensity of privately informed trading. Grishchenko, Litov and Mei find that the coefficient is statistically significant for 14 percent of the firms in their sample.[3] Although there does not seem to be a formal way to evaluate whether the Easley et al. or the Llorente et al. method is better, the method proposed here seems more powerful. For example, the Grishchenko et al. method would not detect informed trading if markets were weakly efficient at daily intervals. In this case, however, the focus is on transaction-by-transaction data that could still detect informed trading. In the model adopted here, it is the composition of buy and sell orders and no-trade intervals within the day, and not the return data, that indicates whether some agents are more informed than others.

[3] Although this positive correlation is interpreted as evidence of private information trading, they do not perform the test in Llorente et al. (2002) to show that the correlation coefficient effectively depends on informed trading measures.

The key findings are as follows: there is substantial heterogeneity of ITP across stocks, and this dispersion occurs mainly within groups (such as countries, volume quintiles, industrial sectors, security types, and ADR classifications) and not between them. In spite of this, several patterns emerge. First, ITP is much higher when stocks are less liquid. Second, Brazil and Mexico have lower mean ITP, while Colombia and Venezuela have higher mean ITP than the average. Importantly, the stocks of firms with ADR programs have lower mean ITP than those without, and countries with better information-related investor protection legal variables tend to have lower ITP.

The paper next analyzes whether ITP peaks just before material corporate announcements are disclosed to the market, and finds that this is true in general, although the magnitude and the lead time of anticipation seem higher for acquisition and divestiture announcements than for earnings and cash-dividend announcements. There is evidence of information leakage in Argentina, Chile, and Mexico, but not in Brazil. Investors might also care to know that some industrial sectors are subject to significant spikes in ITP just before public announcements.

Last, the paper finds that the market recognizes in part the heterogeneity of ITP across firms and over time: a fall of one standard deviation in ITP raises Tobin's *q* by about one to two percentage points.

The rest of the paper is organized as follows. Section 2 discusses the hypotheses tested in the paper, and Section 3 describes the informed trading estimation method. Section 4 describes the data sources and sample construction, and Section 5 discusses the empirical results. Section 6 concludes, analyzes the policy implications of the findings and highlights directions for future research. The Appendix reports the liquidity characteristics of the sample, describes the corporate announcements data and the investor protection variables used in the paper, and presents the results of a robustness check for the event study.

2. Testable Hypotheses

The theme of this paper is that, given the unobservability of illegal insider trading, its detrimental effect on minority shareholders' returns, and the history of impunity of this fraud in Latin America, controlling groups can actually choose the extent to which they will exploit their

informational advantage in securities trading.[4] This may result in possible heterogeneity of informed trading behavior across stocks subject to the same institutional or technological environment (e.g., nationality, industry, etc.). Moreover, controlling groups could signal to the market that they will abstain from exploiting their informational advantage, and the market could react to this signal by assigning higher valuations.

Controlling group discretionary powers could hurt minority shareholders, but they could also benefit them. For instance, a more powerful controlling group may internalize benefits of monitoring that are beneficial to all shareholders, or they could react more effectively to unexpected changes in the economic environment. However, insider trading is an explicit use of the discretion option that is harmful to outside investors. The presence of nationwide regulations reflects that controlling groups have options to do harm. Insider trading proxies indicate to what extent controlling groups actually exercise these options at the expense of outsiders.

Three sets of tests of these hypotheses are proposed. The first set attempts to assess the degree of heterogeneity of firm behavior regarding insider trading activity within a given institutional environment and the cross-sectional covariates of informed trading probability. Also, if corporations use the listing of ADRs as a signal to convey to the market a more fair treatment of inside information, then those corporations that do not list abroad will have a higher ITP. Also tested is whether ITP is related to the investor protection or legal environment variables used in the literature to proxy for corporate governance quality. The hypothesis is that this new measure of governance quality contains more information than previously used measures.

The second set of test focuses on the time pattern of ITP around material corporate announcements. If insiders are indeed exploiting their informational advantage, ITP should peak just before those announcements. Additionally analyzed is whether the quantitative importance of this effect depends upon firms' observable characteristics.

The first two sets of tests document that there is substantial heterogeneity of privately informed trading within countries, within investor protection environments, and over time. The third and final set of tests assesses the extent to which the market recognizes this heterogeneity.

[4] Bhattacharya and Daouk (2002) report that, while the seven countries in the present sample have regulations banning insider trading, Mexico, Venezuela, and Colombia have never had any prosecutions on this basis. A cursory look at the web sites of the national securities commissions of the countries in the present sample confirms the infrequency of insider trading accusations in Latin America.

If so, when companies manage to reduce their ITP levels, the market should respond with higher valuations. This hypothesis is tested by expressing the market value regression in La Porta et al. (2002) in panel form and adding each firm's quarterly ITP to it instead of cash flow rights.

An important recent literature pioneered by La Porta, López de Silanes, Shleifer, and Vishny, among others, has estimated how the quality of the nationwide investor protection environment affects the cost and availability of outside financing for corporate investment. This paper attempts to extend this literature by following the lead of Klapper and Love (2002) and Grishchenko, Litov and Mei (2002) in analyzing whether there is significant heterogeneity of controlling group behavior within a given institutional environment, and to what extent such behavior is recognized by the market.

Klapper and Love (2002) find that individual corporate governance quality is priced above and beyond country-wide controls. Their estimates, however, rely on the governance quality ratings of Credit Lyonnais Securities Asia (CLSA), found in Gill (2001), an analyst-based and therefore potentially subjective or endogenous measure. Moreover, since these ratings are fixed over time, they cannot compute the market valuation response to a given corporation's change in governance quality. By the same token, these ratings cannot determine whether information-based trading peaks before public announcements, as this paper attempts to do.

Grishchenko, Litov and Mei (2002) also precede this paper. Unlike the procedure used here, their method would not detect informed trading if markets are weakly efficient at daily intervals.[5] Moreover, they do not compute to what extent market valuations respond to different ratings of corporate governance quality, as Klapper and Love (2002) and this paper do.

To the best of the authors' knowledge, this paper is the first study to provide objective, quantitative, and theory-based assessments of the probability of informed trading using ultra-high-frequency data and to use these data to address corporate governance questions.

3. Estimation of the Informed Trading Probability

3.1. Methodological Review

Informed trading probability (ITP) is estimated by using the discrete time theoretical framework developed by Easley and O'Hara (1987, 1992) and implemented in several applications for

[5] While they use a wider cross-section of countries, they use fewer stocks from Latin America than this paper.

United States markets by Easley, O'Hara, and their co-authors.[6] This appears to be the only theoretical model that generates a structural equation that allows direct estimation of the probability of privately informed trading. This section briefly surveys its basic elements.

The intuition underlying the model is that sudden increases in the gap between buy and sell orders (i.e., order imbalance) may be associated with more active participation by informed parties resulting from the arrival of private information. In the model, once informed parties observe a signal, they always trade as long as they can extract a rent. If trading is not caused by private information, one would expect a more stable and balanced flow of buy and sell orders.

More formally, the model considers that a signal that is perfectly correlated with the value of the asset may be realized before the beginning of the trading day. The true value of the asset will be publicly known only at the end of the day. Both the signal and the value of the firm may take only two realizations, either high or low. However, there may be days with no signal realization at all. The trading day is divided into many discrete time periods. The asset is traded in a market with competitive market makers. Agents execute all buy and sell orders from investors at prices quoted by the market makers. There are two types of investors. Privately informed traders (or *insiders*) know the realization of the signal. Liquidity or *noise* traders may buy or sell for reasons other than information. Investors and market makers are assumed to be risk neutral.[7] There may also be no trade in some periods.

Transactions take place sequentially over the many time periods in one day, as illustrated in Figure 1. In every period, nature chooses only one trader to place an order. If nature chooses an informed trader (which happens with probability μ), this agent buys (if the signal indicated a high value) or sells (if the signal indicated a low value) one unit of the asset.[8] Nature chooses a noise trader with the remaining probability (1-μ). This agent may either trade with probability ε, or not trade. If she trades, she sells one unit with probability ρ and buys with the remaining probability 1- ρ.

[6] See Easley, Kiefer and O'Hara (1996, 1997a and 1997b) and Easley et al. (1996 and 2002).
[7] Most Latin American exchanges are organized as auction markets, not as dealer markets, so the price-setting mechanisms are not exactly the same as in the model (and in the NYSE). For a comparison between both types of markets see, for example, Heidle and Huang (2002).
[8] A more general model (e.g., Easley and O'Hara, 1987) considers two different trade sizes. However, the empirical evidence on the relevance of trade size in US stock markets is somewhat ambiguous. Therefore, the simplest version of the model is estimated, ignoring size information.

In equilibrium, given perfect competition across market makers, they set bid and ask quotes equal to the expected value of the asset conditional on either a sell or a buy, respectively. Glosten and Milgrom (1985) have shown that these are, indeed, the optimal quote policies by these market makers. Thus, each market maker extracts information from the order flow. Both Glosten and Milgrom (1985) and Easley and O'Hara (1992) have shown that, if all probabilities are bounded by (0,1), the market price converges in probability to the true value of the firm by the end of the trading day.

While μ is the informed trading probability conditional on the existence of private information, the object of interest in this paper is the probability that a given observed trade is generated by an informed investor, i.e., the probability that, conditional on a trade, that trade comes from an informed investor. This equals the probability of observing an informed trade divided by the total probability of observing a trade, whether informed or uninformed,

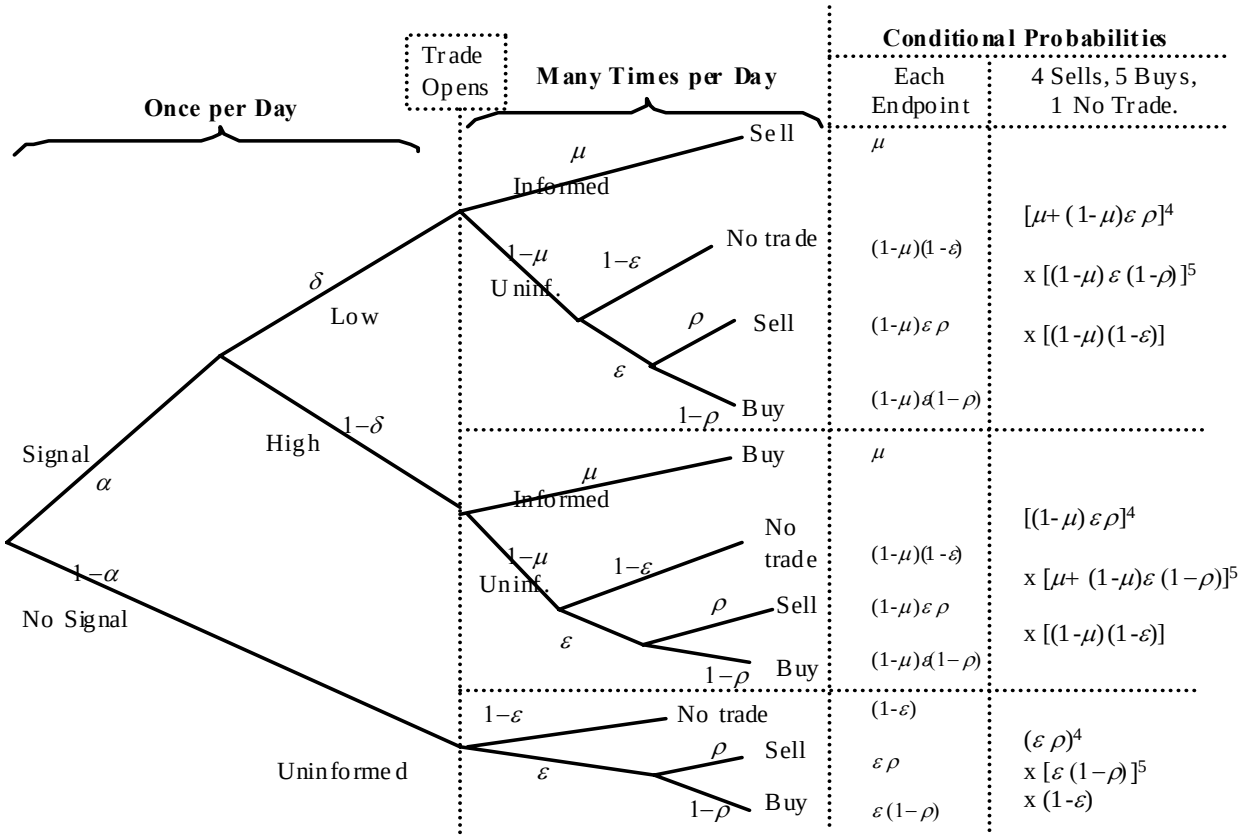
$$ITP = \frac{\alpha\mu}{\alpha\mu + (1-\alpha\mu)\varepsilon} \qquad (1)$$

This probability depends on α (the probability that an information event takes place), on μ (the joint probability of a trade and that the trade comes from an informed investor, given that an information occurs), and on ε (the probability that an uninformed investor decides to trade when nature chooses him). For any given α and μ, the greater is the propensity of the uninformed investor to trade ε, the lower should be the probability that a given trade comes from an informed investor.[9]

[9] The empirical exercises are based on the 288 most liquid Latin American stocks out of a universe of over 1,000 listed stocks. Even within this relatively very liquid sample, there is substantial heterogeneity of trading activity: 100 stocks traded more than 300 times per day on average during the sample period, while 94 stocks traded fewer than 75 times per day (see Tables A.3A and A.3B in the Appendix). Therefore, it is crucial to take into account differences in trading frequency in assessing the prevalence of informed trading among Latin American stocks.

Figure 1. The Probability Structure of Trade

This figure shows the tree diagram of the trading process. α is the probability of new information (a signal) occurring. Conditional on the appearance of new information, δ denotes the probability of a bad signal. Given any signal, μ is the probability that nature chooses an informed trader to trade. If nature chooses an uninformed trader, the latter trades with probability ε. Given that an uninformed trader trades, she sells with probability ρ and buys with probability (1-ρ). Nodes to the left of the vertical "Trade Opens" line occur only at the beginning of the trading day, while nodes to the right occur in every possible trading period within the day. As an example, the rightmost column computes the probability, for a given trading day, of observing 4 sells, 5 buys, and 1 no trade period, conditional on the existence and type of signal at each trade-opening node. The likelihood for that day is equation (1) with the value of observed trades in this day in place of S, B and N.



In the model, the number of trades is ex-ante random. For illustration, the last column of Figure 1 shows the probability of observing 5 buys, 4 sells, and 1 no-trade period in one day given three different scenarios: there is bad (private) information, there is good (private) information, or there is no new (private) information. The unconditional probability of observing 5 buys, 4 sells and 1 no-trade period during that day is simply the weighted average of these three probabilities, the weights being the probabilities of observing bad information ($\alpha\delta$), good information ($\alpha(1\text{-}\delta)$), and no information ($1\text{-}\alpha$). Generalizing this makes it possible to write the probability of observing a given amount of *B* buys, *S* sells, and *N* no trades as,

$$\begin{aligned} L[\theta \mid B,S,N] = P[B,S,N \mid \theta] = {} & \alpha\delta \; P[\,B,S,N \mid \text{low signal}\,] \\ & + \alpha(1-\delta)\; P[\,B,S,N \mid \text{high signal}\,] \\ & + (1-\alpha)\; P[\,B,S,N \mid \text{no signal}] \end{aligned} \tag{2}$$

where

$$\theta = (\alpha, \delta, \mu, \varepsilon, \rho),$$

$$P[B,S,N \mid \text{low signal}] = [\mu + (1-\mu)\varepsilon\rho]^S \; [(1-\mu)(1-\varepsilon)]^N \; [(1-\mu)\varepsilon(1-\rho)]^B,$$

$$P[B,S,N \mid \text{high signal}] = [(1-\mu)\varepsilon\rho]^S \; [(1-\mu)(1-\varepsilon)]^N \; [\mu + (1-\mu)(1-\rho)]^B, \text{ and}$$

$$P[B,S,N \mid \text{no signal}] = [\varepsilon\rho]^S \; [(1-\varepsilon)]^N \; [\varepsilon(1-\rho)]^B.$$

Equation (2) shows the likelihood of observing a trade pattern during a given day. In order to estimate the model's parameters, the literature assumes that these are fixed during a period of time, and that the number of daily buys, sells, and no-trades observed during that period is a random sample from this distribution.[10] With these assumptions, the problem reduces to maximizing the log likelihood,

$$l = \sum_{t=1}^{T} \ln L(\theta \mid B_t, S_t, N_t) \tag{3}$$

The solution to this maximization problem provides the parameter estimates used to compute ITP in (1).

3.2. Does Informed Trading Probability Really Measure What We Want to Measure?

As described above, the ITP estimation procedure relies exclusively on the observed pattern of buys, sells, and no-trades. Such pattern, however, may result from factors other than private information, such as market humor and pure heterogeneous beliefs. This section argues that ITP is a good measure of the intensity of privately informed trading, as a survey of findings in the literature indirectly validate this approach. Alternative measures of asymmetric information in stock markets include the bid-ask spread, the adverse selection component of the spread, the price impact of trades and volume.

A large portion of the literature relies on the bid-ask spread to proxy for the degree of asymmetric information, including the framework used here (see Glosten and Milgrom, 1985, Kyle, 1985, and Easley and O'Hara, 1987, for a theoretical analysis of this relationship). The idea is that the higher the degree of asymmetric information, the higher the adverse selection cost both for uninformed investors and dealers, and so the larger the spread. A number of recent empirical papers show a positive correlation between the spread and ITP. For example, Odders-White and Ready (2004) use the 3,000 largest capitalization firms listed on NYSE, AMEX and NASDAQ during 24 calendar quarters between January 1995 and December 2000 and find a correlation between the relative quoted spread (spread divided by price) and ITP of 0.35. Using a sample of 5,500 firms listed on NYSE, AMEX and NASDAQ from the fourth quarter of 1997 and the fourth quarter of 1998, Dennis and Weston (2001) estimate this coefficient to be 0.33. Finally, Vega (2004) estimates both spreads and ITPs for 1,461 stocks listed on the NYSE between January 1986 and December 2001, and finds a correlation of 0.19. In all the cases, the correlation coefficients are statistically significant at a 5 percent level or better.

On the other hand, Hasbrouck (1991) postulates that a higher price change (controlling for volume) reflects the presence of more private information. Both Odders-White and Ready (2004) and Dennis and Weston (2001) found this correlation to be strictly positive and statistically significant. Finally, Wang (1994), among others, argues theoretically that information asymmetry and volume are negatively correlated. Brown, Finn and Hillegeist (2001)

[10] Easley et al. (2002) is the only paper that explicitly estimates time-varying ITP.

likewise find a correlation of -0.45 between ITP and share volume using data from more than 230 firms listed on the NYSE, while Straser's (2002) coefficient is almost identical (-0.46).

While ITP is not free from some criticisms, the above results suggest that ITP points in the same direction as other asymmetric information measures commonly used in the literature.[11] Moreover, it has the advantage of explicitly attempting to measure the object of interest of this paper.

It is noteworthy that not all privately informed trading is insider trading, as it could be based on carefully processed public information (e.g., analysts' reports). Aslan (2004) studies the behavior of ITP before and after the introduction of the Fair Disclosure Regulation in 2000 for a sample of more than 1,500 NYSE stocks. She finds that, for medium and large stocks, the ITP fell after the regulation was put in place, which is what should occur if ITP really measures informed trading intensity. However she also finds that ITP increased for small stocks after the regulation. To solve this puzzle, she uses Wang's (1998) model to classify informed trading according to whether it is based on pure information asymmetry or heterogeneity of beliefs. She concludes that the increase in ITP for small stocks can be explained by an increase in diversity of beliefs. This suggests that informed trading (measured by ITP but also by the other proxies) is also related to investors and analysts who can better interpret publicly available information than other traders.[12]

This broader interpretation of informed trading actually states that not only the quantity of public information matters, but also its quality. Aslan's (2004) result suggests that, for small-size stocks, the publicly available information after the regulatory change lacked enough precision to be rightly interpreted by *all* market participants. Moreover, Brown, Finn and Hillegeist (2001) find that ITP is negatively correlated with the AIMR Score, a proxy for the quality of publicly disclosed information. Despite the caveats of using only one proxy of the

[11] To the best of the authors' knowledge, Aktas et al. (2004) provide the strongest criticism of the Easley and O'Hara (1987, 1992) measure of informed trading. These authors compute ITP for a sample of 87 French companies listed on the Paris Bourse around merger and acquisition announcements that took place between 1995 and 2000, and they find that that ITP drops in periods previous to the public announcement date relative to a control and post-announcement window. (Here the control window comprises the period of between 270 and 181 days previous to each announcement, the remote pre-announcement period includes the period of between 180 and 66 days before the announcement, the near pre-announcement period goes from 65 to 6 days previous to the announcement, and the post-announcement period goes from 3 to 63 days after the announcement).

[12] Note that analysts can in principle study a wide cross-section of firms, but insiders will only know about their own. In the empirical analysis, sector, country or stock-specific controls are used to remove some of the informed analyst effects that are constant across stocks or over time.

disclosure quality, this illustrates the idea that firms with better corporate governance practices (that include better publicly disclosed information) should have a lower ITP.

4. Data Sources and Sample Construction

4.1. Stock Data

The initial sample is composed of all stocks and ADRs from Argentina, Brazil, Chile, Colombia, Peru, Mexico, and Venezuela, a total of more than 1,400 tickers from about 1,000 corporations.[13] For each ticker the total volume traded in US dollars is multiplied by the fraction of days during which it traded, both using data from the 43 weekdays between October 2 and November 29, 2003. All stocks are ranked in decreasing order of this liquidity index, and intraday data are obtained from Bloomberg for the top 602 ranked tickers for the period between October 2, 2003, until September 30, 2004. The specific variables are ticker, exchange, time (hour, minute, and second), price, and volume of each transaction. For most markets additional data are obtained on the best offers and their changes prevailing at each point in time during the course of trading: time, highest bid price, total volume offered at highest bid price, lowest ask price, and total volume offered at lowest ask price.[14] In total, about 80 million records of individual transactions and offers are processed, with a focus on all non-condition-coded transactions that take place between one half hour after the official opening of each market and the close of that market.[15]

About half of the 602 stocks traded in less than three out of five days during the sample period, so the focus is restricted to a subset composed of the 288 most liquid tickers belonging to 207 corporations and accounting for about 80 percent of the trading volume in all stocks and ADRs from the seven countries.[16] The sample is restricted in this way in order to reduce the possibility of making faulty inferences induced by imprecisely estimated ITPs.

The Appendix analyzes the liquidity characteristics of these 288 tickers during the sample period. Most of the stocks in the sample are from Brazil and Mexico, which account for almost

[13] "Stock" and "ticker are hereafter used interchangeably, as both refer to a unique security-exchange combination. Note that an ADR and its underlying stock have different tickers, just like the preferred and common stock of the same corporation.

[14] The bid and ask prices are used to facilitate identifying transactions as buyer-initiated or seller-initiated. The bid and ask volumes are useful in identifying possible measurement error of transaction volume. Offer data for Colombia and for ADRs are not available.

[15] Transaction records flagged with condition codes are unusual in some sense (e.g., they pertain to the official closing price of a market, which is not a real trade, or they pertain to a trade that is subject to non-standard delivery terms).

87 percent of the region's trading. Chile, Argentina, and Peru account for about 12 percent of trading, while Colombia and Venezuela make up the remaining 1 percent (see Table A1). For the region as a whole, there is about as much trading in the ADR market as there is at home.[17] Table A2 looks at the industrial sector breakdown of the tickers by country, while Tables A3 and A4 analyze the distribution of liquidity in the sample. Table A5 analyzes the distribution of traded volume by quintiles.

While every transaction involves a purchase by one party and a sale by another party, transactions are here classified as a buy or a sell according to which action actually triggered the transaction. Accordingly, this paper follows Lee and Ready (1991) by classifying each transaction as seller-initiated or buyer-initiated. This method classifies a trade observed at the ask (bid) price as a buy (sell), and a trade above (below) the midpoint of the bid-ask spread as buyer-initiated (seller-initiated).[18] For each day in the sample, the number of buys, sells, and no trade periods is computed (B_t, S_t and N_t in equation (3)). Following Easley, Kiefer and O'Hara (1997a), this paper defines the number of no-trade periods between two subsequent trades as the maximum integer number of five-minute-long intervals between them.

With these data in hand, the parameters of the model are estimated by maximum likelihood using the Newton-Raphson algorithm on a fine grid.[19] Easley, Kiefer and O'Hara (1996, 1997a, 1997b) and Easley et al. (1996) proceed in this way to estimate the parameters using data from periods that range from six to twelve weeks. Equation (3) is estimated for each calendar quarter in the sample for these 288 tickers. With those estimates, equation (1) is used to

[16] Figure A1 in the Appendix shows the number of firms that have more than one ticker by category of stocks.

[17] The exceptions are Peru and Venezuela, for which there is about 5.5 and 1.8 times as much trading in the United States as there is at home, respectively. The bottom panel of Table A1 covers all listed stocks, not just those in the sample.

[18] When offer data are unavailable, Lee and Ready propose to use the "tick test." This test declares a given trade to be buyer-initiated (seller-initiated) when its price is higher (lower) than that of the last preceding trade with a price that was different from that given trade's price. Since this criterion proves to be very precise relative to the case with offer data, only transaction data for Colombia and the United States are used. When offer data are available, but the trade price is exactly at the midpoint of the spread, Lee and Ready suggest using the tick test.

[19] The estimation procedure a possibly non-concave optimization problem because the expression inside the logs is of the form $f(\psi)^X$, where X is greater than one (X is the number of buys, sells, or no-trade periods). These functions are strictly convex for $X>1$. Even if applying the natural log to these functions, the convexity may still remain. As standard in this literature, possible multiple local maxima are addressed by using each grid point as the initial value of the algorithm, and then choosing the highest among the local maxima attained from each starting point.

compute the ITPs, which provide the basis for all of the empirical tests except for the event study.[20]

4.2. Country Data

This paper follows the literature in using several measures of the quality of the nationwide investor protection environment. Table A6 in the Appendix precisely defines each of the variables used, while Table A7 shows their values for the countries in the sample and how their mean and standard deviation compare with those of the other countries in the La Porta et al. (1998) sample. Besides the original La Porta et al. (1998) variables, this paper uses the March 2004, reading of the Law and Order and Corruption indices of the International Country Risk Guide (ICRG), found in PRS Group (2004), to which is added the Investment Profile, also from ICRG. In addition to these variables, this paper uses the legality index of Berkowitz, Pistor, and Richard (2003), a linear combination of Judicial Efficiency, Law and Order, Corruption, Risk of Expropriation, and Risk of Contract Repudiation from La Porta et al. (1998) and ICRG. Also consulted is a second reading of this index using the updated arguments from ICRG (2004). According to Bhattacharya and Daouk (2002), from whom the Insider Trading Enforcement dummy is borrowed, the seven countries in the sample have regulations banning illegal insider trading. This variable equals one if at least one person had been prosecuted under these laws as of March 1999, and it is zero otherwise. Mexico stands out as a paradigmatic case of non-enforcement: although it banned illegal insider trading in 1975, at the end of the century no one had been prosecuted for that crime.

4.3. Corporate Announcements Data

The comprehensive list of corporate announcements used for the event study is from Bloomberg. Four types of announcements are considered: acquisitions, divestitures, cash dividends, and earnings announcements, which make up the majority of public statements by firms. The Appendix describes the announcement data in detail.

It is possible that there are different patterns of informed trading before periodic announcements than before non-periodic or aperiodic announcements. On the one hand, the

[20] The model could not be estimated for some ticker-quarters. This may be due to sudden drops in the liquidity of a security (including outright delisting), or to convergence failure of the algorithm. Therefore, the number of ticker-

market knows that a corporation will announce earnings about six weeks after the end of the quarter. While in an ideal world the magnitude of the earnings figure is secret, the approximate timing of the release is common knowledge. The situation differs for aperiodic announcements. In an ideal world, not only is their content secret, but also the frequency of their public release. It is thus conjectured that the ratio of illegally over legally privately informed trades is higher before aperiodic announcements than before periodic announcements. Therefore, Earnings and Cash Dividends announcements are classified as periodic, and Acquisition and Divestiture announcements as aperiodic, and potentially different event effects are calculated for each type.

For each announcement in the sample, three ITPs are estimated during adjacent periods, each 20 trading-days long: a control period from $\tau = -40$ to $\tau = -21$, a pre-announcement period from $\tau = -20$ until $\tau = -1$, and a post-announcement period from $\tau = 1$ to $\tau = 20$.[21] Given the requirement of 40 trading days before the first announcement and 20 trading days after the last, announcements in the event study sample run from November 24, 2003, until September 10, 2004.

The total number of announcements during this period for all the exchanges in the sample is 1,310. There are eight stocks in the 288-ticker sample that did not release any announcements during the announcement sample. There are 14 stocks from Peru, Venezuela, and Colombia, which made 58 announcements in total; these are excluded in order to avoid making inferences on country effects based on too small a sample. This leaves 266 tickers, which made a total of 1,252 announcements. Furthermore, the algorithm did not converge in estimating equation (3) for two other stocks that had made a total of five announcements. Therefore the event study is based on 1,247 announcements from 264 stocks.

Table A8 in the Appendix shows a breakdown of these announcements by type and exchange, industrial sector, security type, ADR status and volume quintiles. Figures A2 and A3 in the Appendix plot the frequency over time by type of announcement and by country. About 90 percent of announcements pertain to Earnings and Cash Dividends, with the remaining percentage corresponding to Acquisitions and Divestitures. The average ticker made about 4.7 announcements during the sample period.

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quarters (N) in the first column of Table 1.A is not necessarily a multiple of four.

[21] Here τ indicates time measured in trading days. Note that transactions taking place on the day of the announcement are discarded since it is not known whether the announcement was made before or after the opening

4.4. Firm-Specific Variables

The variables of country, industrial sector, stock classification as common or preferred, and stock ADR status are from Bloomberg. Some researchers (e.g., Leal and Carvalhal-da-Silva, 2005) argue that Brazilian preferred stocks (e.g., PN, PA, or PB shares) are in fact non-voting common stocks with no material dividend payments. They and others (e.g., Carvalho, 2000) find that control in Brazilian corporations is so concentrated that controlling groups can easily divert net income from outside shareholders. While this paper uses the Bloomberg classification, the terms "preferred" and "non-voting" shares are used interchangeably, since the only such stocks in the 288-ticker sample are from Brazil. It should be noted, though, that ADR and Common/Preferred status are independent groupings. ADR tickers were classified as common or preferred stocks according to each ADR's underlying security. The ADR classification consists of four exhaustive and mutually exclusive categories: i) the ticker corresponds to an ADR; ii) the ticker corresponds to an ADR underlying security; iii) the ticker corresponds to a company that has an ADR program, although this ticker itself is neither the ADR nor the underlying; iv) the ticker is from a company that does not have an ADR program.[22]

Individual corporate governance ratings, here referred to as CLSA ratings, are taken from Gill (2001). The average rating for each firm and for several of its subindices—management transparency, management discipline, and management independence—are used. Since this paper's market value regression expands on that employed in La Porta et al. (2002), their procedure is followed in measuring Tobin's *q* and average sales growth for the four quarters in the sample, for which use balance sheet data from Economatica are used. A proxy measure of *q* is defined as the ratio of market value of assets to book value of assets.[23] Figures A2 and A3 in the Appendix show that most firms release their quarterly accounting data before the eighth week

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of trading. The Appendix reports the results of a robustness check using event windows that are 10 trading-days long.

[22] International Depository Receipts (IDRs) and Global Depository Receipts (GDRs) trading in the United States are coded as ADRs. A few stocks labeled as "Unit" in Bloomberg (instead of "Common" or "Preferred") are coded as common stocks. Tenaris and Quilmes of Argentina, which are legally headquartered in Luxembourg, are coded as Argentine corporations. Also, Southern Peru Copper Co. and Credicorp Ltd. are two Peruvian-coded firms that Bloomberg shows as headquartered in the United States and Bermuda, respectively.

[23] The market value of assets results from summing the book value of liabilities and the market value of equity. From an accounting identity, the book value of liabilities equals the book value of assets minus the book value of equity. This is used as a proxy for the market value of liabilities, which is not easily observable. Data on deferred taxes are unavailable for the firms in the present sample, so the La Porta et al. (2002, p. 1158) definition of *q* cannot be perfectly replicated. The present measure approximates that in Klapper and Love (2002).

into the next quarter, so it is assumed that the quarterly balance sheet data have been fully incorporated into market prices two months after the closing of the quarter. Therefore, the first quarterly measure of Tobin's *q* corresponds to accounting data for the third quarter of 2003, matched with the market value of equity as of December 1, 2003. In the market value regressions, these measures of *q* are aligned with ITPs estimated from trades taking place during the fourth quarter of 2003. Similarly, the fourth reading of Tobin's *q* uses accounting data from the second quarter of 2004, matched with the market value of equity as of September 1, 2004, and with ITPs estimated with transaction data from the third quarter of 2004.[24] As pointed out by La Porta et al. (2002, p. 1158, last paragraph) this measure of equity value is assessed from the point of view of outside shareholders, investors who do not necessarily have access to the firm's control or inside information. To reduce the weight of outliers, Tobin's *q* is censored at the 5th and 95th percentiles by setting extreme values to the 5th and 95th percentiles respectively.

To proxy for the value of growth opportunities, for each quarter and firm in the sample the annual US dollar sales growth rate is computed for the three years ending 11 months before the reading of the market value of equity. So, the first observation of the sales growth rate is an average of annual sales growth from January 1999 to December 2002, and that is matched with Tobin's *q* as of December 1, 2003. The geometric annual average growth rate from up to three years is used.[25] Again, sales growth is capped at the 5th and 95th percentiles to avoid problems with outliers.

The 288 tickers used in the rest of this study correspond to 207 unique firms, and the market value regression is run at the firm (not at the ticker) level. After dropping firms with missing data, 175 firms remain, and these form the basis for this estimation.

Like La Porta et al. (2002), this paper runs the market value regression expressing sales growth and *q* in deviation from the industry medians. Following their procedure, all firms in Economatica are used, excluding the 205 firms in the present sample, and *q* and average sales

[24] Economatica only reports the sum of total shares outstanding: the result of adding all classes of common shares with different voting rights and preferred shares. Given the inability to discriminate within the different classes of common and preferred shares and across both categories of stocks, in order to compute the market value of equity, the total number of shares is multiplied by the price of the issue that was most heavily traded during the full sample period. Note that, for the majority of companies with liquid common and preferred shares to be included in the 288-ticker sample (all of them from Brazil), the traded volume of preferred shares exceeded that of common shares by a factor of between 10 and 40. The 288 tickers correspond to 207 corporations. Two were dropped for lack of data: Embratel (Brazil) and La Polar (Chile).

[25] This computation and alignment procedure for sales growth and *q* mimics that in La Porta et al. (2002).

growth are computed for the 1,135 remaining firms for which data are available.[26] These firms are from 19 different industries according to the Economatica classification, and all sectors have at least five remaining firms. The median *q* and average sales growth are determined for each of the 19 sectors and thus are computed the industry-adjusted variables thereof for the firms in the sample.

5. Results

5.1. Distribution of Informed Trading Probability

Table 1 presents summary statistics of the distribution of ITP by ticker-quarter. The top panel of Table 1.A reports the breakdown by country of corporate headquarters. For example, the mean of ITP over time across Brazilian stocks was 16 percent.[27] The Brazilian stock with the smallest average ITP gauged 2.9 percent, while that with the largest ITP gauged 76.2. This means that there was a 76.2 percent chance that any randomly selected trade in that stock-quarter was initiated by a privately informed agent.

[26] Although both active and cancelled firms in Economatica are used, for a total of 1,135, in practice the cancelled firms lack data. The count of the active-firm subset was 815.
[27] ITP figures in the tables in the text are reported in percentage points.

Table 1.A. Distribution of Informed Trading Probability by Groups of Stocks

This table shows summary statistics of the distribution by stock groups of informed trading probability (ITP). All tables are based on 100 times ITP, which is computed for each of 288 tickers during each quarter from October 2, 2003, until September 30, 2004. The algorithm based on the discrete time model did not converge for a few ticker-quarters. Note that in the top panel, ADRs are pooled with the other stocks from their home country. For comparison, the last line of the top panel reports figures based on the ITPs shown in Easley, Kiefer and O'Hara (1996) and Easley et al. (1996). ADRs were classified as common or preferred stock based on the relevant category for their underlying securities. In the ADR classification (bottom panel) a ticker can either be an ADR, an ADR underlying security, the stock of a company that has an ADR program (although this is not the underlying stock), or the stock of a company that trades only at home. The figures show that ITP is fairly diverse within countries, industrial sectors, and security types.

Country	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
Argentina	165	20.5	10.5	3.3	10.5	18.3	42.4	68.4
Brazil	540	16.0	7.8	2.9	7.1	14.6	27.7	76.2
Chile	174	22.3	7.9	6.6	11.9	20.6	37.9	53.0
Colombia	12	28.7	8.4	16.5	16.5	30.6	45.9	45.9
Mexico	186	17.0	6.0	5.8	7.9	17.0	27.5	35.4
Peru	33	19.3	7.1	6.7	7.1	18.2	31.2	37.2
Venezuela	12	23.8	9.3	13.1	13.1	23.2	45.1	45.1
USA (Easley et al.)	*150*	*17.7*	*8.8*	*0.0*	*2.3*	*17.6*	*29.6*	*68.4*
Total	1122							

Industrial Sector	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
Basic Materials	203	16.6	6.8	4.7	7.7	16.2	27.7	46.9
Communications	239	16.1	8.7	2.9	6.7	14.6	30.1	76.2
Consumer, Cyclical	98	20.5	6.1	6.2	10.9	19.9	29.0	41.5
Consumer, Non-Cyclical	123	19.3	9.2	3.3	8.7	17.5	35.1	60.1
Diversified	48	20.0	7.9	3.5	9.9	19.0	31.6	52.7
Energy	40	16.6	5.8	4.8	7.8	15.9	26.4	28.8
Financial	129	19.9	11.0	3.9	8.5	17.2	38.2	68.4
Industrial	102	19.1	8.6	7.0	8.0	18.1	35.6	55.3
Utilities	140	18.4	8.0	4.4	8.8	16.7	34.4	48.4
Total	1122							

Security Type	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
Preferred	405	15.3	7.8	2.9	7.0	14.0	26.4	76.2
Common	717	19.7	8.4	3.3	9.1	18.5	35.4	68.4
Total	1122							

ADR Status	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
ADR	306	16.8	10.2	3.3	7.2	14.9	33.0	76.2
ADR Underlying	255	16.1	7.6	5.8	7.1	14.7	30.4	52.7
Co. has ADR, but this is not the underlying	137	18.5	6.0	6.2	9.7	18.2	30.5	38.6
Co. trades only at home (no ADR program)	424	20.1	7.8	2.9	10.3	19.1	36.9	55.3
Total	1122							

The ranking of countries, from lowest to highest median ITP, is the following: Brazil, Mexico, Peru, Argentina, Chile, Venezuela, and Colombia. One should be cautious, however, about inferring that the degree of ITP across the universe of Colombian and Venezuelan firms is large, given that only three stocks from each of those countries appears in the sample. The most important insight picture from the top panel is that there is substantial heterogeneity of ITP across stocks, but that this variability occurs mainly within countries and not across them.

For purposes of comparison, the last line of the top panel reports statistics based on the ITPs of American stocks, estimated with data from 13 years before those in this paper's sample, by Easley, Kiefer and O'Hara (1996) and Easley et al. (1996). Although the US distribution tends to be shifted to the left relative to that of the Latin American countries, the gap is much smaller than expected. This prior expectation is based on the relative degree of investor protection and enforcement of insider trading bans and on the evidence in Bhattacharya et al. (2000) that Mexican corporate announcements have already been fully incorporated into prices by the time they are officially disclosed to the market. However, Easley, Kiefer and O'Hara (1996) and Table 1.B show that the distribution of ITP depends critically on the liquidity of each security, so that ignoring that dependence can significantly bias comparisons. Moreover, the substantial discrepancy in sample periods can underlie differences in the worldwide systematic component of α in (1). In general, an appropriate comparison of ITP across markets should be based on a matched sample of firms as in Easley, Kiefer and O'Hara. This type of careful comparison is left for future research, but the United States statistics are reported to place the results in the context of the previous literature.

The second panel groups stocks by industrial sector. While communications has the lowest median ITP (14.6 percent) and cyclical consumer products has the highest median ITP (19.9 percent) there seems to be even lower variability in median ITP across industrial sectors than there is across countries. The third panel reports that preferred stocks have a much lower ITP than common stocks. Given that all preferred stocks in the sample are from Brazil, and that these make up three-fourths of stocks from that country, this finding is related to the lower ITP of Brazilian stocks and will be addressed in detail in discussing Table 2.A.

Assuming that the U.S. Securities and Exchange Commission scrutinizes ADR transactions as well it does US domestic stocks, one can expect a higher punishment for trading with private information in the United States relative to Latin American exchanges. Also, if one

assumes that firms listing ADRs are thereby signaling their commitment to better corporate governance practices, one could also expect a lower ITP for ADRs. The fourth panel of Table 1.A shows that this is the case on average. ADRs and ADR underlying stocks have lower ITPs than stocks that trade only in their home countries. In line with the results from other partitionings of the ITP set, it is found that, although ADRs have lower ITPs, these are also more widely dispersed than for the other categories.

Table 1.B. Distribution of Informed Trading Probability by Volume Quintiles

This table shows statistics of the distribution of informed trading probability (ITP) by volume quintiles. Quintiles are defined for each calendar quarter based on the volume traded in each security during that time. In the top panel, quintiles are exchange-specific, so that volume classification thresholds differ across the eight exchanges (i.e., the seven countries in the sample plus the ADR market). In the bottom panel, a uniform volume classification is used across all exchanges. Daily volumes in local currency are converted to US dollars at each day's closing exchange rate from Economatica. Consequently, a security that is relatively liquid in a low volume exchange may be in the top quintile in the top panel but in a lower quintile in the bottom panel. The number of tickers is not constant across quintile bins because it was impossible to estimate ITP during some ticker-quarters. Regardless of the classification used, these figures confirm the finding of Easley et al. (1996) that ITP is substantially higher for lower volume stocks (e.g., it is about twice as high in the lowest as in the highest volume quintile).

Quintiles Defined Within Each Exchange-Quarter

Intra-Exchange	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
1st Quintile (Highest Vol.)	230	13.7	6.9	4.4	6.7	11.4	27.7	45.9
2nd Quintile	226	14.6	5.6	3.3	7.7	13.6	25.2	37.0
3rd Quintile	232	19.3	8.3	7.2	10.4	17.8	31.6	68.4
4th Quintile	227	20.5	7.0	9.2	12.5	19.3	33.0	60.1
5th Quintile (Lowest Vol.)	207	22.9	10.3	2.9	9.5	20.6	44.6	76.2
Total	1122							

Quintiles Defined For All Exchanges Within Each Quarter

Inter-Exchange	N	Mean	Std.Dev.	Min.	5th pctl.	Median	95th pctl.	Max.
1st Quintile (Highest Vol.)	222	11.7	4.8	4.4	6.6	10.6	21.7	30.8
2nd Quintile	230	15.6	8.0	3.3	7.9	14.1	26.4	68.4
3rd Quintile	227	19.6	6.8	7.4	11.3	18.7	30.7	60.1
4th Quintile	230	21.2	6.5	9.2	12.8	20.6	34.5	52.7
5th Quintile (Lowest Vol.)	213	22.6	10.4	2.9	9.5	20.1	45.0	76.2
Total	1122							

Table 1.B presents the distribution of ITP by volume quintiles, defined for each quarter. Two measures of volume are used: quintiles defined relative to the amount of trading in each of the eight exchanges (intra-exchange quintiles), and quintiles defined relative to the amount of trading in all exchanges combined (inter-exchange quintiles). Whatever the measure, the findings confirm the finding of Easley, Kiefer and O'Hara (1996) for the US, that less liquid stocks are prone to substantially higher ITP: the figure for the lowest volume quintile (23 points) is about twice as large as that for the highest volume quintile (12 points). While the econometric exercises below show that volume is one of the most robust determinants of differences in ITP, Table 1.B shows that even this partitioning of the sample leaves much within-group variance: the top 5 percent of stocks in the most liquid quintile have a higher ITP than the median stock from the lowest volume quintile.

Finally, Table 1.C shows the variation of ITP across quarters, and that the time pattern differs across categories (e.g., some are higher at the beginning, while others are higher near the end of the sample).

Table 1.C. Distribution of Informed Trading Probability by Quarters

This table shows the mean for stocks in each category of the informed trading probability (ITP) estimated using data from that quarter. Note that in the top panel, ADRs are pooled with the other stocks from their home country. See notes for Table 1.A for details on security type and ADR classifications. The figures show that ITP displays some variation over time (e.g., it was 17 percent higher on average during the second than during the first quarter of 2004 when country grouped data are considered).

Country	2003-IV	2004-I	2004-II	2004-III
Argentina	18.7	18.5	22.0	22.6
Brazil	14.9	15.7	15.9	17.5
Chile	20.9	22.7	23.3	22.2
Colombia	27.3	27.5	32.6	27.5
Mexico	17.0	15.2	16.8	19.2
Peru	22.5	17.5	18.3	19.0
Venezuela	22.9	18.9	30.5	22.9
Regional Average	20.6	19.4	22.8	21.6

Industrial Sector	2003-IV	2004-I	2004-II	2004-III
Basic Materials	16.6	16.2	17.0	16.6
Communications	15.6	15.1	15.5	18.2
Consumer, Cyclical	19.0	18.9	22.3	21.7
Consumer, Non-Cyclical	17.0	18.0	20.8	21.5
Diversified	18.8	17.8	21.6	22.0
Energy	14.5	16.9	16.4	18.6
Financial	19.9	19.8	18.8	21.0
Industrial	17.9	19.8	19.9	18.7
Utilities	16.9	16.9	19.2	20.7
Average Across Industries	17.4	17.7	19.1	19.9

Security Type	2003-IV	2004-I	2004-II	2004-III
Preferred	14.7	15.1	15.3	16.2
Common	18.6	18.6	20.3	21.3
Average Across Security Types	16.7	16.9	17.8	18.8

ADR Status	2003-IV	2004-I	2004-II	2004-III
ADR	16.4	16.2	16.4	18.4
ADR Underlying	15.2	14.6	17.4	17.5
Co. has ADR, but this is not the underlying	17.7	17.5	18.3	20.9
Co. trades only at home (no ADR program)	18.8	19.7	20.8	20.9
Average Across ADR Status	17.0	17.0	18.2	19.4

The main message so far is that there is a substantial heterogeneity of ITP within categories commonly controlled for in the literature. This underscores the importance of computing company-specific proxies of governance quality, as is done in this paper.

5.2. Cross-Sectional Determinants of Informed Trading

5.2.A. Categorical Decomposition of Informed Trading

An attempt is first made to identify categorical covariates of ITP using the pooled OLS regression,

$$\begin{aligned} ITP_{it} = \alpha &+ \boldsymbol{\beta}^{\mathbf{V}\prime}\,\mathbf{I}(\text{Vol.Quintile}_{it}) + \boldsymbol{\beta}^{\mathbf{C}\prime}\,\mathbf{I}(\text{Country}_{i}) + \boldsymbol{\beta}^{\mathbf{S}\prime}\,\mathbf{I}(\text{Sector}_{i}) + \\ &+ \boldsymbol{\beta}^{\mathbf{P}\prime}\,\mathbf{I}(\text{Common/Preferred}_{i}) + \boldsymbol{\beta}^{\mathbf{A}\prime}\,\mathbf{I}(\text{ADR status}_{i}) + \boldsymbol{\beta}^{\mathbf{t}\prime}\,\mathbf{I}(t) + \varepsilon_{it} \qquad (4) \\ i = 1,..,288; \quad t = 1,2,3,4. \end{aligned}$$

where every **I**(.) is a matrix of dummy variables for each classification. Since several sets of dummy variables are included, the standard procedure of reporting the results for each group as a difference relative to a control group is departed from in order to facilitate the interpretation of the results. In other words, dummies are used that span the full set of possibilities of a given partition of the sample, so that the coefficient on each dummy reflects to what extent behavior for that category deviates from the global average (Suits, 1984).[28] The *t*-ratios assess whether the difference is statistically significant.[29] The coefficient on the global intercept is the mean of ITP for the average stock. Given the evidence in Tables 1.B and 1.C, time and volume fixed effects and volume effects are included in all regressions. Table 2.A reports the results.

[28] When using a control group, one imposes the constraint that the coefficient on that group's dummy is zero. The constraint imposed here is that the sum of the coefficients of all group dummies is zero. The problem is mathematically identical, but the results are easier to interpret in this way, especially when more than one set of dummy variables is used. The test that all the coefficients on the dummies are jointly equal to zero is a test of equality of the group means.

[29] Given the strong indication from Tables 1.A and 1.B that the volatility of ITP differs substantially across groups of stocks, White (1980) heteroskedasticity-consistent standard errors are used.

Table 2.A. Categorical Decomposition of Informed Trading Probability

$$ITP_{it} = \alpha + \boldsymbol{\beta}^{V\prime}\mathbf{I}(\text{Vol.Quintile}_{it}) + \boldsymbol{\beta}^{C\prime}\mathbf{I}(\text{Country}_i) + \boldsymbol{\beta}^{S\prime}\mathbf{I}(\text{Sector}_i) + \boldsymbol{\beta}^{P\prime}\mathbf{I}(\text{Common/Preferred}_i) + \\ + \boldsymbol{\beta}^{A\prime}\mathbf{I}(\text{ADR status}_i) + \boldsymbol{\beta}^{t\prime}\mathbf{I}(t) + \varepsilon_{it} \quad ; \quad i = 1,..,288; \quad t = 1,2,3,4.$$

This table shows the output of pooled OLS regressions controlling for time fixed effects. The dependent variable is the informed trading probability for each ticker times 100. Dummies are used for all possible categories within a classification, so the coefficient on a dummy shows the difference between the average stock in that category and the overall average stock (Suits, 1984). See note to Table 1.A for details on the security type and ADR classifications. Volume quintiles are defined by exchange-quarter (intra-exchange classification). The industry effects are dropped in Model 5 because they are jointly insignificant. The time fixed effects are jointly significant in all specifications and are not reported. White (1980) heteroskedasticity-consistent standard errors are in parentheses. * indicates significance at 10% level, ** at 5% and *** at 1%.

Model	1	2	3	4	5
Intercept	**21.6** ***	**18.5** ***	**17.8** ***	**18.1** ***	**21.1** ***
	(0.6)	(0.3)	(0.2)	(0.2)	(0.6)
1st Quintile (Highest Vol.)	**-4.4** ***	**-4.5** ***	**-4.5** ***	**-4.4** ***	**-4.1** ***
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
2nd Quintile	**-3.5** ***	**-3.6** ***	**-3.3** ***	**-3.6** ***	**-3.3** ***
	(0.4)	(0.4)	(0.4)	(0.4)	(0.3)
3rd Quintile	**0.6**	**0.8**	**1.1** **	**0.9** *	**0.5**
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
4th Quintile	**2.1** ***	**2.1** ***	**2.0** ***	**2.1** ***	**2.0** ***
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
5th Quintile (Lowest Vol.)	**5.2** ***	**5.3** ***	**4.7** ***	**4.9** ***	**4.9** ***
	(0.7)	(0.7)	(0.7)	(0.7)	(0.7)
Argentina	**-0.9**				**-1.2**
	(0.96)				(0.96)
Brazil	**-5.3** ***				**-4.6** ***
	(0.7)				(0.7)
Chile	**0.4**				**0.4**
	(0.8)				(0.7)
Colombia	**8.0** ***				**7.7** ***
	(2.5)				(2.3)
Mexico	**-4.6** ***				**-4.7** ***
	(0.7)				(0.6)
Peru	**-2.1** *				**-2.4** **
	(1.2)				(1.1)
Venezuela	**4.6** **				**4.7** **
	(2.3)				(2.2)
Basic Materials		**-0.2**			
		(0.6)			
Communications		**-2.1** ***			
		(0.5)			
Consumer, Cyclical		**1.0** *			
		(0.6)			
Consumer, Non-Cyclical		**0.3**			
		(0.7)			
Diversified		**0.4**			
		(0.9)			
Energy		**-0.6**			
		(0.9)			
Financial		**2.3** ***			
		(0.8)			
Industrial		**-0.5**			
		(0.7)			
Utilities		**-0.6**			
		(0.6)			

The first important result is that volume is inversely related to ITP: while ITP for the average stock is 21.6 percent (model 1), the estimate is 17.2 percent for the most liquid stocks,

and it rises to about 26.8 percent for the least liquid stocks from the average country. The result is robust to different specifications and is consistent with those in the received literature (e.g., Easley, Kiefer and O'Hara, 1996, among others).

Model 1 also shows that Brazilian, Mexican, and Peruvian companies have a statistically significantly lower ITP than the average stock. The (few) firms from Venezuela and Colombia in the sample, instead, have systematically higher average ITPs, while Argentine and Chilean companies' ITPs are not significantly different from the overall mean.

Model 2 analyzes economic sector effects and shows that the ITPs of financial and cyclical consumer products firms are higher than average, while communications firms have a lower ITP.[30] Model 3 shows that common stocks have higher ITPs than preferred stocks. The Brazilian coefficient in Model 1 can be low because informed trading is not as prevalent there, or because 75 percent of Brazilian tickers in the sample are preferred stocks, which are themselves characterized by low ITP, as Model 3 shows. Model 5 checks for this possibility by including all controls simultaneously.[31]

It may seem puzzling that the estimate for Brazil is 5 percentage points lower than that for Chile, while Chile scores better in several corporate governance quality measures.[32] Various authors argue that there is an extraordinary concentration of voting power in Brazilian companies, represented in common shares that are usually not traded in public stock markets, while 90 percent of what is traded there are non-voting or preferred shares that do not pay material dividends (as discussed in Leal and Carvalhal-da-Silva, 2005, and Carvalho, 2000, among others). If this is true, the value of such "preferred" shares may be disentangled from corporate outcomes. Insiders may therefore not participate in public markets, and potentially choose to profit from their informational advantage in private transactions.[33] This situation notably contrasts with that in Chile, where firms rarely issue non-voting shares (Lefort and Walker, 2005). Moreover, about 15 percent of issued stocks are actively traded in the local

[30] One possible justification for these results is that it is harder for outsiders to properly assess the value financial firms (whose expertise is precisely the handling of critical information about their borrowers) as opposed to heavily regulated communications firms.

[31] The industrial sector effects are jointly insignificant in the combined regression and so are dropped in Model 5.

[32] Examples include "Investor Protection" in La Porta et al. (1998) and "Legality" in Berkowitz, Pistor and Richard (2003). See Table A7 in the Appendix for the actual figures.

[33] One caveat to this explanation is that the Brazil effect in Model 5 is much stronger than the Preferred effect. One possibility for this result is that the common Brazilian shares, representing a negligible fraction of voting power, are also not the means of choice of insiders to trade on information.

market, whereas about 8 percent of such stocks are kept in custody for depositary receipts traded in foreign markets. These numbers suggest that, for Chilean companies, a much higher proportion of the voting power is traded in public stock markets compared to Brazilian firms. It may thus be possible that insiders from Chilean firms trade in public stock markets more actively than in the Brazilian case.

This paper's country ranking differs from that of Grishchenko, Litov and Mei (2002), as they find that Brazil and Argentina have much higher prevalence of informed trading than Chile. This contrast may result from the difference in the sample periods and from the alternative methods used to infer informed trading. Note, however, that although those authors document a positive relation between return autocorrelation and volume, which can be interpreted as evidence of informed trading, they do not perform the test in Llorente et al. (2002) to show that the correlation coefficient effectively depends on informed trading measures. The approach used here is more direct, since the ITP is directly the probability that each trade comes from an informed trader.

Another very important result from Table 2.A is that the gap between ADRs and stocks that just trade at home is a significant amount (2.7 percentage points), relative to an overall ITP average of about 21.1. This is consistent both with the hypothesis of better enforcement of insider trading rules in the US and with the signaling hypothesis discussed above, and it also confirms the results in Von Furstenberg and Tabora (2004). These authors use price data for Telmex and Televisa stocks trading both at the Bolsa de Mexico and in New York as ADRs. They find that price discovery mainly takes place in Mexico, which conforms to a higher presence of informed traders in the home market. Model 5 shows that ADRs have an average ITP that is 1.3 points lower than that of their underlying securities.

5.2.B. Informed Trading and Corporate Governance Measures Used in the Literature

Next analyzed is the relationship between privately informed trading and governance quality variables used in the literature. The hypothesis proposed is that this paper's measure contains more information than previously used metrics. Table 2.B reports the results of estimating the panel regression,

$$ITP_{ijt} = \alpha + \beta^{G}\ Governance\ Quality_{ij} + \boldsymbol{\beta}^{\iota\prime\prime}\,\mathbf{I}(t) + \boldsymbol{\beta}^{\mathrm{V}\prime\prime}\,\mathbf{I}(\mathrm{Vol.Quintile}_{it}) + \varepsilon_{ijt}$$
$$i = 1,..,288; \quad j = \mathrm{Arg.,Bra.,Chi.,Col.,Per.,Mex.,Ven.}; \quad t = 1,...,4 \qquad (5)$$

with one *Governance Quality*$_{ij}$ variable at a time, including volume quintile and time dummies, and using exchange-stock random effects. In most cases, *Governance Quality*$_{ij}$ uses only the country subscript (*j*), since it is a nationwide measure. Consequently, there are only seven effective observations of the quality variable in those regressions, and thus the results should be interpreted with care.[34] The individual corporation subscript (*i*) is included because four lines in the table use the individual corporation ratings from CLSA.[35] The first four columns of the table report the coefficients and standard errors using intra-exchange and inter-exchange volume quintiles, respectively. The last two columns report the effect on ITP of either a one standard deviation increase in *Governance Quality*$_{ij}$ or a change in it from zero to one when it is binary. For most explanatory variables, a higher value implies a better investor protection or corporate governance environment (e.g., a higher value of Risk of Expropriation index means less risk). The exceptions are Percentage of Share Capital to Call an Extraordinary Shareholders' Meeting (a higher value means that it is more difficult for minorities to accomplish this), the Median Shares of the Three Largest Shareholders (a higher value implies more concentrated ownership), and Mandatory Dividend (the fraction of net income that a corporation is forced to pay out as dividends, which may be ambiguous for governance quality). To facilitate interpretation, regression results ranked from the lowest to the highest coefficients are reported.

[34] All pertinent variables in La Porta et al. (1998), the legality index in Berkowitz, Pistor and Richard (2003), the insider trading enforcement dummy in Bhattacharya et al. (2002), and the Investment Profile measure in ICRG (2004) are used. When country attributes are measured periodically, the original values in La Porta et al. (1998) and the 2004 readings using the more current ICRG data are included. See Section 4 for further details. Table A6 in the Appendix defines the country-wide variables, while Table A7 shows the observations by country.

[35] These are management transparency, management discipline, management independence, and the average rating.

Table 2.B. Informed Trading Probability and Investor Protection Environment

$$ITP_{ijt} = \alpha + \beta^{G}\ Governance\ Quality_{ij} + \boldsymbol{\beta}^{t\prime}\,\mathbf{I}(t) + \boldsymbol{\beta}^{V\prime}\,\mathbf{I}(\text{Vol. Quintile}_{it}) + \varepsilon_{ijt}$$

$$i = 1,..,288;\quad j = \text{Arg., Bra., Chi., Col., Per., Mex., Ven.};\quad t = 1,...,4$$

This table shows the output of panel regressions using exchange-ticker random effects and controlling for time and volume fixed-effects. The first two columns use intra-exchange volume quintiles, while the second two columns use inter-exchange quintiles. Each line corresponds to a regression that uses only that investor protection variable. All variables except the CLSA individual corporation (i) ratings are fixed within a country (j). See Appendix Table A5 for a definition of the explanatory variables and their sample moments. For most explanatory variables, a higher value implies a better investor protection or corporate governance environment (e.g., a higher value of Risk of Expropriation index means less risk). The exceptions are the following: percentage of share capital to call an extraordinary shareholders' meeting (a higher value means that it is more difficult for minorities to accomplish this), the median shares of the three largest shareholders (a higher value implies more ownership concentration), and mandatory dividend (the fraction of net income that a corporation is forced to pay out as dividends, which may be ambiguous for governance quality). The last two columns report the effect on 100 times ITP of either a one standard deviation rise in the explanatory variable or, if it is binary, the effect of it changing from 0 to 1. The time fixed effects are jointly significant in all specifications and are not reported. Volume effects are likewise not reported. Standard errors are in parentheses beside each coefficient. * indicates significance at 10% level, ** at 5% and *** at 1%.

Governance Quality/Investor Protection Variables	Definition of Volume Quintiles				Effect on ITP of Increase in Explanatory Variable	
	Intra-Exchange		Inter-Exchange			
Ownership Concentration (Median Shares of the Three Largest Shareholders in 10 Largest Privately Owned Non-Financial Firms)	**-21.1**	(3.7) ***	**-17.0**	(3.7) ***	**-2.26**	**-1.82**
Mandatory Dividend	**-5.0**	(1.6) ***	**-4.1**	(1.6) ***	**-1.20**	**-0.99**
Risk of Expropriation	**-2.0**	(0.6) ***	**-0.7**	(0.6)	**-1.58**	**-0.59**
Corruption in 1998 (from ICRG)	**-1.7**	(0.6) ***	**-2.2**	(0.5) ***	**-1.14**	**-1.45**
One Share One Vote (binary)	**-1.7**	(0.8) **	**-1.4**	(0.7) *	**-1.69**	**-1.36**
Shares Not Blocked Before Meeting (binary)	**-0.8**	(0.8)	**-0.8**	(0.8)	**-0.82**	**-0.75**

Governance Quality/Investor Protection Variables	Definition of Volume Quintiles				Effect on ITP of Increase in Explanatory Variable	
	Intra-Exchange		Inter-Exchange			
Insider Trading Enforcement, Bhattacharya et al. (2000), Binary	**-0.8**	(1.1)	**-2.4**	(1.1) **	**-0.81**	**-2.36**
Risk of Contract Repudiation	**-0.6**	(0.6)	**0.7**	(0.6)	**-0.58**	**0.68**
Legality in 1998 (Berkowitz et al. 2002)	**-0.5**	(0.4)	**-0.1**	(0.3)	**-0.77**	**-0.15**
Rule of Law in 1998 (Law and Order from ICRG)	**-0.4**	(0.4)	**-0.1**	(0.4)	**-0.80**	**-0.16**
Accounting Standards	**-0.3**	(0.1) ***	**-0.1**	(0.1)	**-2.29**	**-0.70**
Oppressed Minorities Mechanism (binary)	**-0.1**	(0.9)	**-1.1**	(0.9)	**-0.09**	**-1.15**
CLSA Management Transparency	**-0.1**	(0.03) *	**0.0**	(0.03)	**-0.77**	**-0.60**
CLSA Management Discipline	**0.0**	(0.02)	**0.0**	(0.02)	**-0.29**	**-0.19**
Investment Profile (ICRG, 2004)	**0.0**	(0.2)	**0.5**	(0.2) ***	**0.03**	**1.22**
CLSA Management Independence	**0.1**	(0.02) ***	**0.1**	(0.02) ***	**1.08**	**0.90**
CLSA Average Rating	**0.1**	(0.1)	**0.1**	(0.1) *	**0.56**	**0.73**
Rule of Law in 2004 (Law and Order from ICRG)	**0.6**	(0.2) ***	**0.7**	(0.2) ***	**1.46**	**1.83**
Legality in 2004 (Berkowitz et al. 2002)	**0.8**	(0.2) ***	**1.0**	(0.2) ***	**1.36**	**1.76**
Percentage of Share Capital to Call an Extraordinary Shareholders' Meeting	**0.9**	(3.5)	**6.7**	(3.4) *	**0.10**	**0.71**
Shareholder Rights	**1.2**	(0.3) ***	**0.7**	(0.3) ***	**1.79**	**1.02**
Preemptive Rights to New Issues (binary)	**3.6**	(0.7) ***	**3.3**	(0.7) ***	**3.61**	**3.27**

Several variables yield the expected results: higher values of Risk of Expropriation, Accounting Standards, CLSA Management Transparency,[36] Corruption in 1998, or the introduction of the One Share-One Vote or Mandatory Dividends clauses imply a lower ITP. A one standard deviation increase or a change in each of these variables from zero to one leads to a fall between 0.6 and 2.3 percentage points in ITP. When controlling for inter-exchange quintiles, Insider Trading Enforcement is also relevant, with a substantial 2.4 percentage-point fall in ITP in those markets. Some of these variables are directly related to informational issues, so these results seem reasonable.

However, there are other variables that yield the opposite result: Shareholder Rights, a better representation of minorities (e.g., the existence of Cumulative Voting or Proportional Representation rules), Judicial Efficiency, Preemptive Rights to New Issues, Ownership Concentration, as well as the 2004 scores of Rule of Law, Corruption, and Legality. These variables seem to be unrelated to private information.

The finding that higher Ownership Concentration leads to lower ITP is the Brazil vs. Chile result in a new disguise. Table A7 shows that Brazil is at the top of the concentration scale while Chile is at the bottom—in fact, the latter is about two standard deviations below the sample mean.

The sign change of the coefficients on Rule of Law and Corruption between their 1998 and 2004 observations merits an explanation. Table A7 shows that Brazil was about half a standard deviation above the cross-country mean in 1998, and it went down to about half a standard deviation below the mean in 2004 in both of these variables. This fact, given that Brazil has the lowest mean ITP in the sample, helps explain the sign reversal of these variables in equation (5). As noted above, this is essentially a regression with seven observations in the *Governance Quality*$_j$ dimension, so this big reversal in the score of Brazil can cause the unexpected sign change.

The findings of Grishchenko, Litov and Mei (2002) and of this paper agree on some important points, but they disagree on others. On the one hand, the enforcement of insider trading bans, better accounting standards and less risk of expropriation, and the existence of One Share-One Vote legislation imply less prevalence of asymmetric information trading in both

[36] These two variables are statistically significant only when using intra-exchange volume quintiles.

papers. There are also some counterintuitive results that coincide: existence of Cumulative Voting or Proportional Representation rules imply higher informed trading intensity in both papers.

On the other hand, while the effect of Percentage of Shares needed to call an Extraordinary Meeting has a counterintuitive effect in Grishchenko, Litov and Mei (2002), this paper finds no effect on ITP. On the other hand, countries with more concentrated ownership structures have asymmetric information trading according to those authors, while in the present exercise they have a lower ITP. Of course, this comparison is limited by the fact that, with a sample of 19 countries, those authors have more degrees of freedom than are available here to identify the effect of country-wide variables.

Although the regressions involving CLSA ratings are exempt from the degrees of freedom problem that pervades those using nationwide controls, using variables based on CLSA ratings gives mixed results. Management Independence and Average rating from CLSA have the "wrong" sign in at least one of the specifications though, as mentioned above, Management Transparency did have the "right" sign in one of the specifications.

In summary, while some of the often-used measures of corporate governance quality are associated with informed trading probabilities, in general, there seems be an important degree of heterogeneity in ITP that is not captured by the variables used in the literature.

5.3. Event Study: Informed Trading Probability Around Corporate Announcements

In the time series dimension, inside information is most valuable just prior to its public release. Next run is an event study attempting to analyze if ITP indeed rises during the 20 trading days before a public announcement relative to a control and a post-announcement period. Further assessed is whether this time pattern differs across categories (e.g., volume quintiles, countries, industries, common/preferred, and ADR status). As usual in these types of experiments, this is a test of the joint hypothesis that ITP is a good measure of insider trading and that insiders take advantage of their privileged access to information. With ITP computed for the three periods around each announcement, the following equation is estimated

$$ITP_{ikt} = \alpha_0 + \boldsymbol{\alpha}'\mathbf{Z}_i + \left(\beta_0 + \boldsymbol{\beta}'\mathbf{Z}_i\right) I_{it}^{PERIODIC-PRE} + \left(\gamma_0 + \boldsymbol{\gamma}'\mathbf{Z}_i\right) I_{it}^{PERIODIC-POST} + \left(\delta_0 + \boldsymbol{\delta}'\mathbf{Z}_i\right) I_{it}^{APERIODIC-PRE} + \left(\phi_0 + \boldsymbol{\varphi}'\mathbf{Z}_i\right) I_{it}^{APERIODIC-POST} + \nu_{ikt} \quad (6)$$

i=1,...,264; k=1,...,K_i; t = 1, …, T_i

where K_i is the number of announcements for firm i during the sample, and t indicates calendar time measured in days.[37] I_{it} represents an indicator function that equals 1 when day t during which the ITP of the kth announcement of stock i is estimated corresponds to I's superscript.[38]

In some cases, two announcements of a given firm are not sufficiently spaced apart so that the data for a given day are used to estimate two different ITPs. For example, if there are less than 40 trading days between two consecutive announcements, some days will fall in the post-announcement period relative to the first statement and in the pre-announcement period relative the second. Therefore the underlying ITP-generating process will be affected by these confounding effects. In order to handle this problem, each of the three ITPs pertaining to each announcement is multiplied by a 20 by 1 unit vector, where each entry pertains to the calendar day from which the number of buys, sells, and no-trade periods is taken to estimate that ITP. This is why the dependent variable in (6) has 60 different values of the t subscript for the kth announcement of firm i. On the right-hand side of the regression, the potentially different data generating processes are addressed by turning on *both* indicator functions, since day t falls in the range that activates I^{POST} relative to the first announcement and I^{PRE} relative to the second announcement. Moreover, there will be two observations for that day t. In one of them the dependent variable will be the ITP of the post-announcement period relative to the first statement, while on the other one the dependent variable will be the ITP of the pre-announcement period relative to the second announcement. This procedure appears to address the potentially confounding information in the data generating process without resorting to dropping announcements. Whenever announcements by a firm are spaced more than 40 days apart only one indicator function will be turned on for each day.[39]

[37] Naturally, only the calendar days in the 60 trading days around each announcement are used.

[38] Periodic announcements comprise earnings and cash dividends news, while aperiodic announcements consist of acquisitions and divestiture reports. See data section for details.

[39] Naturally, the 20 trading day width of the event window is arbitrary. Vega (2004) estimates ITP using data corresponding to the 40 days prior to each earnings announcement made during 15 years. Aktas et al. (2004)

Table 3 reports the results of estimating (6). Note that a specific dummy is not used for the control period. Thus α_0 reflects the mean value of ITP during the control period, and all other coefficients in the table report the incremental value of ITP either during a pre- or a post-announcement period or for stocks in a specific category or both. The vector $\mathbf{Z}_i$ contains dummies for each and every possible category within a classification: intra-exchange volume quintile, country of domicile, industrial sector, security type, and ADR status. So, in each column, the coefficient on each line shows the difference between the behavior of stocks in that category and the behavior of the overall average stock during the corresponding event period.[40]

compute the ITP in four different windows, each lasting 60 days, around announcements made during five years. Since data for only one year are available, a smaller window width is chosen here.

[40] For example, the mean ITP during the sample of a top-volume Argentine common stock from the non-cyclical consumer sector that trades only at home was 15.8 percent during the control period, rising to 17.7 percent before a periodic announcement and falling back to 15.5 percent after the announcement. Again, the average of the effects within a classification is zero, as this is the identification constraint that is imposed on the model (Suits, 1984).

Table 3. Informed Trading Probability Around Corporate Announcements

$$ITP_{ikt} = \alpha_0 + \boldsymbol{\alpha}'\mathbf{Z}_i + \left(\beta_0 + \boldsymbol{\beta}'\mathbf{Z}_i\right) I_{it}^{PERIODIC\ -PRE} + \left(\gamma_0 + \boldsymbol{\gamma}'\mathbf{Z}_i\right) I_{it}^{PERIODIC\ -POST}$$

$$+ \left(\delta_0 + \boldsymbol{\delta}'\mathbf{Z}_i\right) I_{it}^{APERIODIC\ -PRE} + \left(\phi_0 + \boldsymbol{\varphi}'\mathbf{Z}_i\right) I_{it}^{APERIODIC\ -POST} + \nu_{ikt}$$

$$i = 1,...,264;\ k = 1,...,K_i;\ t = 1, \ldots, T_i$$

This table shows the results of an event study analyzing the behavior of informed trading probability (ITP) around corporate announcements controlling for volume, country, industrial sector, security type, and ADR status of each stock. The dependent variable is ITP (in percentage points) estimated during a control, a pre-announcement and a post-announcement period relative to each announcement date. Each estimation period is 20 trading-days long. I_{it} is an indicator function that equals 1 on those days t (whose data are used to compute the ITP of the kth announcement of stock i) that fall in the range of I's superscript. Periodic announcements comprise earnings and cash dividends news, while aperiodic ones consist of acquisitions and divestiture reports. The top row reports the intercept coefficients: α_0 is the average ITP during the control period, β_0 shows the difference between ITP during the pre-periodic announcement period and ITP during the control period, and γ_0 shows the gap between ITP during post-periodic announcement days and control days, etc. The vector $\mathbf{Z}_i$ contains dummies for every possible category within a class So, in each column of the table, the coefficient on each line shows the difference between the behavior of the average stock in that category and that of the overall average stock during the corresponding event period (Suits, 1984). The model is estimated by OLS, so the mean ITP during the sample of a top-volume Argentinean common stock from the non-cyclical consumer sector that trades only at home was 15.8 percent during the control period, rising to 17.7 percent before a periodic announcement and falling back to 15.5 percent after the announcement. This table uses the universe of announcements made between November 26, 2003 and September 8, 2004, as recorded in Bloomberg, a total of 1,247 announcements from 264 stocks. Venezuela, Colombia, and Peru are excluded to avoid small-sample bias. Standard errors are in parenthesis. * indicates significance at the 10% level, ** at 5% and *** at 1%.

Explanatory Variable	**CONTROL PERIOD**	**PERIODIC ANNOUNC.**		**APERIODIC ANNOUNC.**	
		PRE	**POST**	**PRE**	**POST**
Intercept Effect in Each Window (α_0, β_0, γ_0, δ_0, ϕ_0)	**19.8** ***	**0.8** ***	**0.2**	**-0.2**	**-2.5** ***
	(0.1)	(0.1)	(0.1)	(0.3)	(0.3)
1st Quintile (Highest Vol.)	**-5.6** ***	**0.0**	**-0.4** ***	**-1.2** ***	**1.6** ***
	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
2nd Quintile	**-3.2** ***	**-0.2** *	**-0.5** ***	**-2.4** ***	**-1.4** ***
	(0.1)	(0.1)	(0.1)	(0.3)	(0.3)
3rd Quintile	**0.5** ***	**-0.5** ***	**0.7** ***	**-0.2**	**-1.1** ***
	(0.1)	(0.1)	(0.1)	(0.3)	(0.3)
4th Quintile	**2.5** ***	**0.4** ***	**0.6** ***	**1.6** ***	**-0.4**
	(0.1)	(0.1)	(0.1)	(0.3)	(0.3)
5th Quintile (Lowest Vol.)	**5.8** ***	**0.3** **	**-0.4** ***	**2.2** ***	**1.2** ***
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)

Table 3., continued

Explanatory Variable	CONTROL PERIOD	PERIODIC ANNOUNC.		APERIODIC ANNOUNC.	
		PRE	POST	PRE	POST
Argentina	**1.5** ***	**-0.3**	**-1.7** ***	**-0.5**	**0.2**
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
Brazil	**-2.6** ***	**-0.8** ***	**1.2** ***	**-1.3** ***	**2.8** ***
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
Chile	**2.0** ***	**2.2** ***	**1.8** ***	**2.2** ***	**-3.2** ***
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
Mexico	**-0.9** ***	**-1.2** ***	**-1.3** ***	**-0.4**	**0.3**
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
Basic Materials	**1.4** ***	**-1.3** ***	**-2.2** ***	**0.2**	**0.4**
	(0.2)	(0.2)	(0.2)	(0.3)	(0.4)
Communications	**-0.7** ***	**-0.3** **	**-0.8** ***	**-0.6** **	**1.3** ***
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
Consumer, Cyclical	**0.5** **	**-1.4** ***	**-1.5** ***	**-2.1** ***	**2.8** ***
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
Consumer, Non-Cyclical	**-1.4** ***	**2.3** ***	**1.3** ***	**5.1** ***	**-1.0** **
	(0.2)	(0.2)	(0.2)	(0.4)	(0.4)
Diversified	**0.6** **	**1.6** ***	**0.6** *	**-2.9** ***	**-1.6** ***
	(0.3)	(0.3)	(0.3)	(0.5)	(0.6)
Energy	**-0.2**	**-0.3**	**1.1** ***	**1.3** **	**-0.1**
	(0.3)	(0.4)	(0.4)	(0.5)	(0.5)
Financial	**0.8** ***	**-0.5** **	**0.2**	**-0.1**	**-1.0** **
	(0.2)	(0.2)	(0.2)	(0.4)	(0.4)
Industrial	**-0.5** **	**1.9** ***	**1.9** ***	**-2.9** ***	**-3.4** ***
	(0.2)	(0.2)	(0.2)	(1.1)	(1.3)
Utilities	**-0.4** **	**-2.1** ***	**-0.5** ***	**2.1** ***	**2.6** ***
	(0.2)	(0.2)	(0.2)	(0.4)	(0.4)
Common Stock	**0.3** ***	**-0.9** ***	**0.4** ***	**-0.2**	**1.1** ***
	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
Preferred Stock	**-0.3** ***	**0.9** ***	**-0.4** ***	**0.2**	**-1.1** ***
	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
ADR	**-1.5** ***	**-0.8** ***	**-0.4** ***	**2.0** ***	**0.8** ***
	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)
ADR Underlying	**0.0**	**-0.8** ***	**-0.1**	**0.2**	**-1.8** ***
	0.1	0.1	0.1	0.2	0.2
Co. has ADR, not UDL	**0.3** **	**1.5** ***	**0.5** ***	**-1.9** ***	**-2.5** ***
	0.2	0.2	0.2	0.4	0.4
Home Only	**1.2** ***	**0.0**	**-0.1**	**-0.3**	**3.5** ***
	0.1	0.1	0.1	0.3	0.3

The coefficients on the top row show the behavior of the average stock, so that ITP has a benchmark value of 19.8 percent during the control period. During the pre-periodic announcement period, this rises by 0.8 points (this increase being statistically significant). In the post-periodic announcement period, ITP is 0.2 points higher than during the control period, but

this difference is not statistically significant. So, the point estimates indicate that ITP goes from 19.8 to 20.6 percent and back to 20 percent around periodic announcements, precisely as if informed parties were speculating with private information prior to its public release. The evidence is not as compelling for aperiodic announcements, though the ITP falls by a statistically significant amount after the announcement. This indicates that there is more informed trading during the 40 days prior to an announcement than after it. If the true window width were greater than 20 days, this could imply that there is speculative trading prior to these aperiodic announcements also.

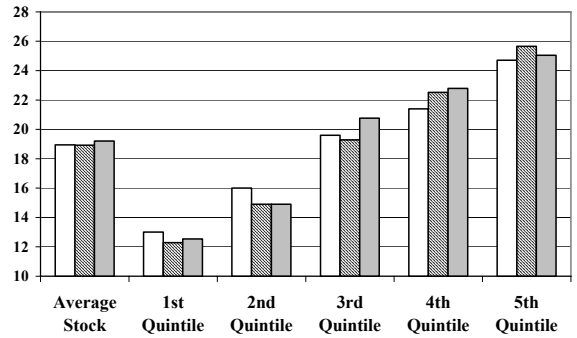
While Table 3 reports the incremental coefficients of a category or announcement type relative to the control period, in order to facilitate interpretation Figures 2.A-2.E report *total* ITP during each period for each category. Each figure has four graphs. Those on the left correspond to periodic announcements, and those on the right correspond to aperiodic ones. Graphs at the top of each figure are based on an unreported regression where the only dummies included in $\mathbf{Z}_i$ are the volume quintiles and at most the set of dummies for one other classification at a time (e.g., 2.A focuses on volume alone, 2.B focuses on volume and countries, 2.C on volume and industries, etc.). Graphs at the bottom of each figure report the results of adding the coefficients from Table 3, so they measure *partial* effects of a given category when $\mathbf{Z}_i$ includes dummies for all classifications simultaneously. For example, the first three bars (average stock) in the two bottom charts of Figure 2.A report the average ITP during each event window for the average stock from Table 3 that was discussed in the previous paragraph.

Figure 2.A. Informed Trading Probability Around Corporate Announcements by Volume Quintiles

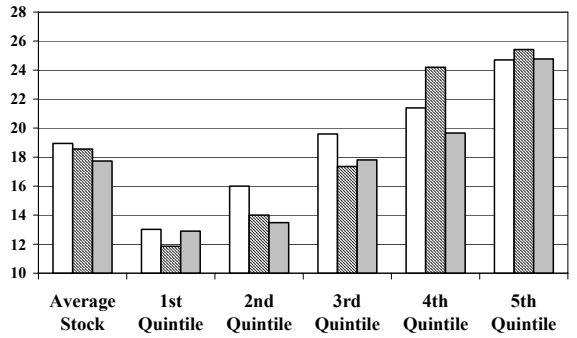
Figures 2.A through 2.E show the mean total informed trading probability estimated in the event study (for the control, pre-announcement, and post-announcement periods) for stocks in different categories. Each figure contains four graphs. Graphs on the left correspond to periodic announcements (earnings and cash dividends), while those on the right pertain to aperiodic announcements (acquisitions and divestitures). Graphs at the top correspond to OLS regressions that control only for volume beside the category analyzed in the graph. Graphs at the bottom report the total estimated ITP for stocks in the indicated category but resulting from regressions that control for other categories not explicitly depicted in the graph (i.e., they result from adding the coefficients in Table 3). The ITP in the bottom graphs is thus purged of factors other than the one being explicitly shown that could also have affected the ITP of the stocks shown in the top graph.

Top Row: Controlling Only for Volume

Periodic Announcements (Earnings and Cash Dividends)

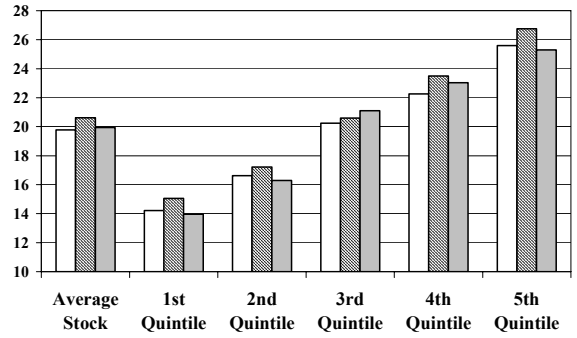


Aperiodic Announcements (Acquisitions and Divestitures)

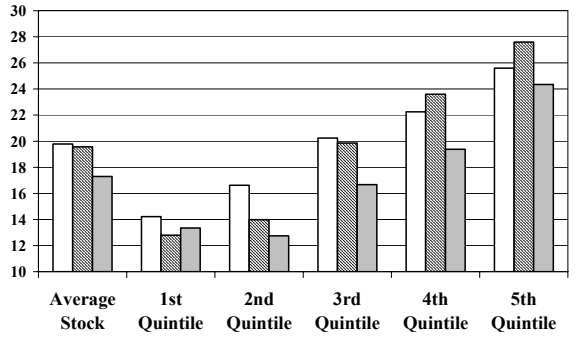


Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)

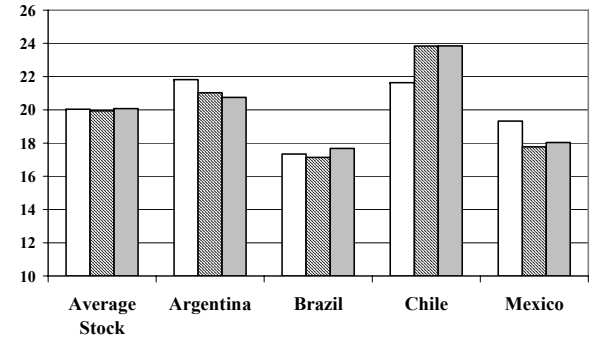


Control Pre-Announcement Post-Announcement

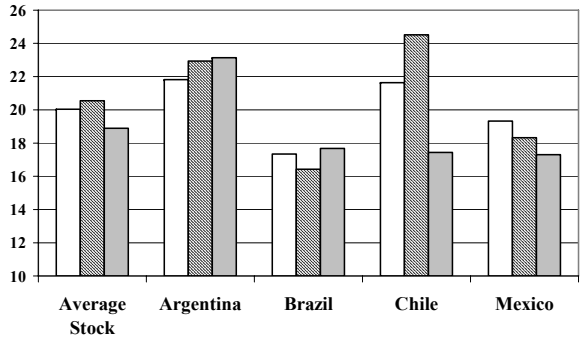
Figure 2.B. Informed Trading Probability Around Corporate Announcements by Country

Top Row: Controlling for Volume and Country

Periodic Announcements (Earnings and Cash Dividends)

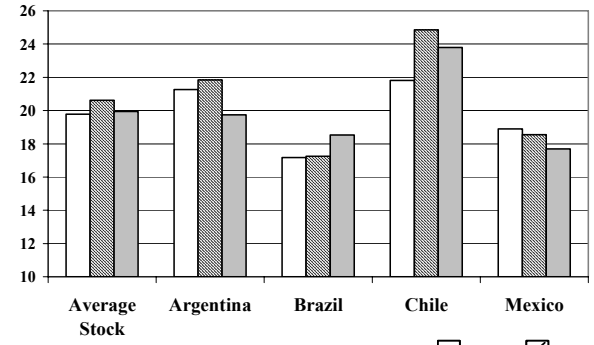


Aperiodic Announcements (Acquisitions and Divestitures)



Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)

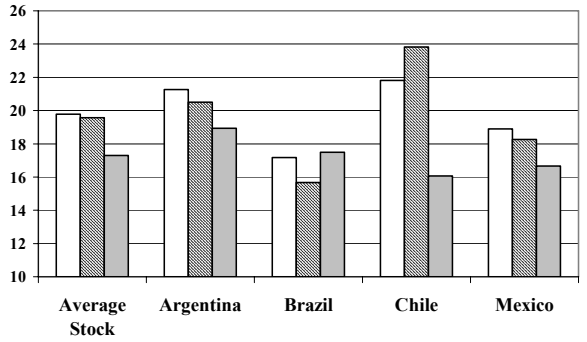
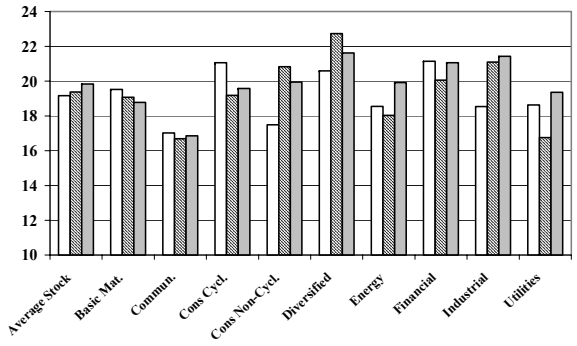


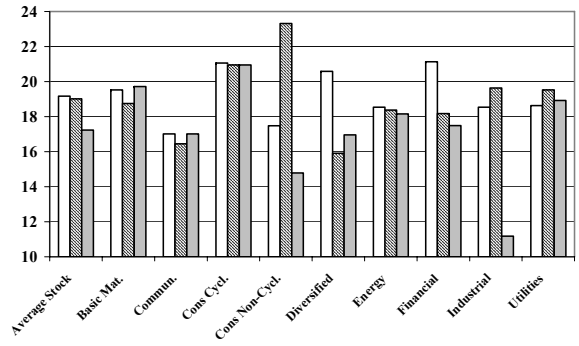
Figure 2.C. Informed Trading Probability Around Corporate Announcements by Industrial Sector

Top Row: Controlling for Volume and Industrial Sector

Periodic Announcements (Earnings and Cash Dividends)

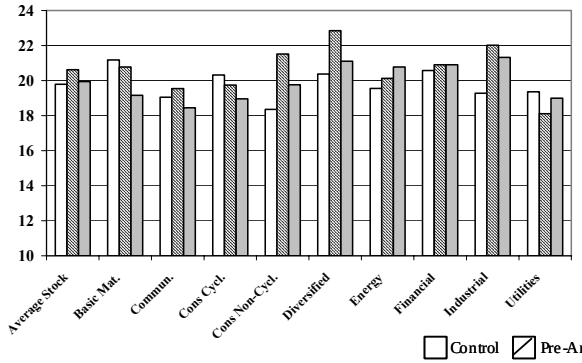


Aperiodic Announcements (Acquisitions and Divestitures)



Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)

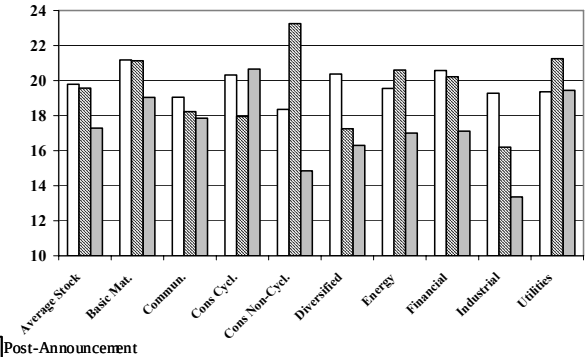
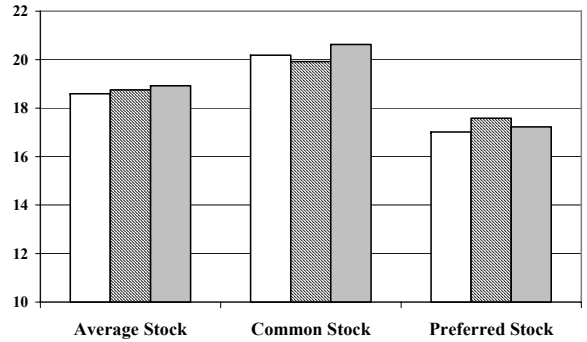


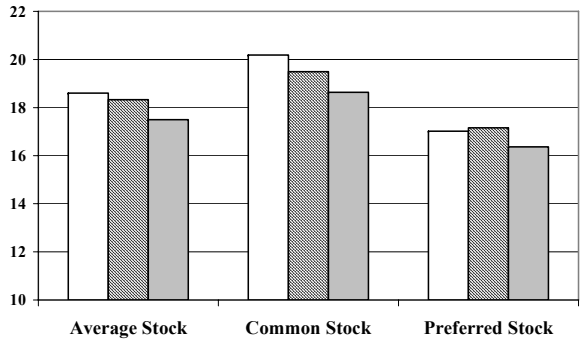
Figure 2.D. Informed Trading Probability Around Corporate Announcements by Security Type

Top Row: Controlling for Volume and Security Type

Periodic Announcements (Earnings and Cash Dividends)

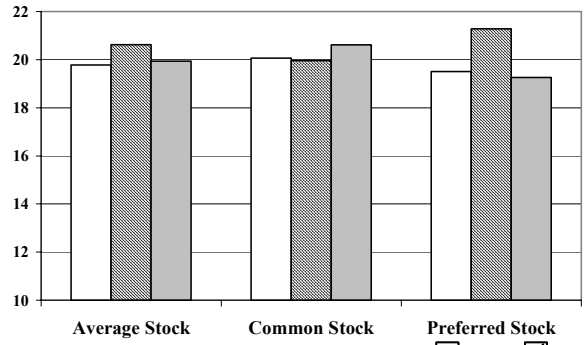


Aperiodic Announcements (Acquisitions and Divestitures)

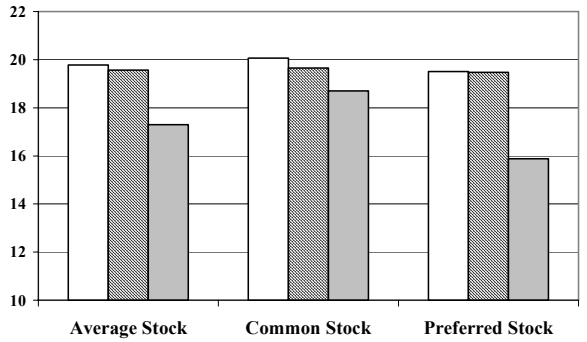


Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)



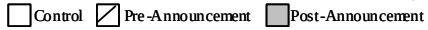
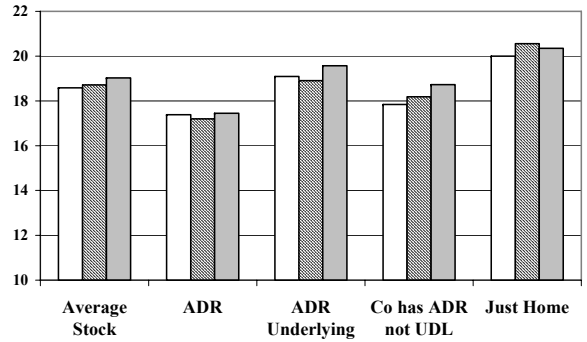


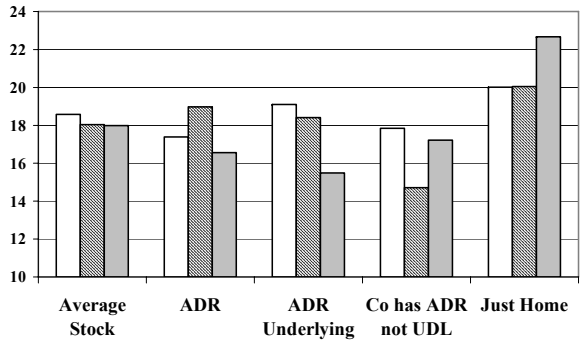
Figure 2.E. Informed Trading Probability Around Corporate Announcements by ADR Status

Top Row: Controlling for Volume and ADR Status

Periodic Announcements (Earnings and Cash Dividends)

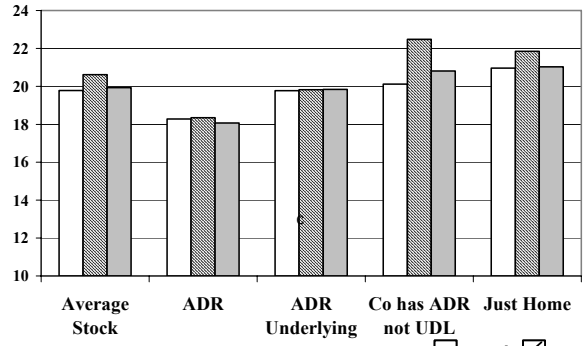


Aperiodic Announcements (Acquisitions and Divestitures)

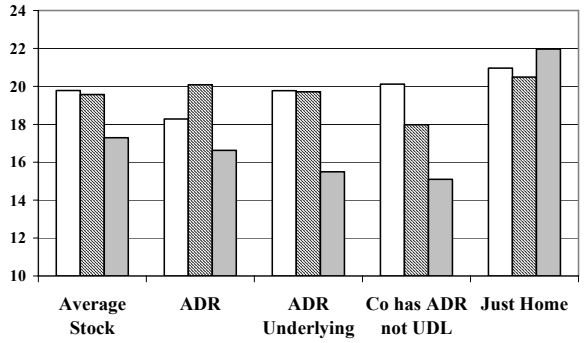


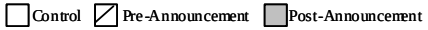
Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)





Seen from a different angle, the top graphs correspond to a different investment strategy than those at the bottom. The periodic announcement graphs of Figure 2.B serve to illustrate the point. If one buys an Argentine or Chilean equally-weighted liquid stock portfolio, one is subject to the evolution of ITP shown in the top graph. In particular, ITP does not seem to peak in the pre-announcement period. But stocks from these two countries will be different in more dimensions than just country of domicile: for example, there are more non-cyclical consumer product companies and fewer energy companies in the Chilean sample than in its Argentine counterpart (see Table A2 in the Appendix for a breakdown). The relative importance of stocks that trade only at home is also different. The bottom graphs show the pure country *partial* effect (that is, purged from the influence of these other variables). It reflects the results of a strategy that is long in the country in question and short in the different components of that portfolio that are different from the average stock in the sample of the four countries considered. When focusing on the pure country effect, the bottom charts show that there is substantial private information speculation in the pre-announcement period in both countries, something that is hidden by other factors in the top graphs.

For expository simplicity the discussion focuses on the bottom charts of Figures 2.A-2.E. Interested readers can check those results with the coefficients from Table 3 on which these graphs are based.

The bottom panels of Figure 2.A confirm that periodic announcements are subject to private information trading in all quintiles but the third. For aperiodic announcements, only stocks in the two lowest quintiles are subject to speculative trading.

The bottom row of Figure 2.B shows that Chilean stocks are subject to information-based trading before both types of announcements, while Argentine stocks suffer the same problem before periodic announcements. Mexican stocks (and Argentine stocks prior to aperiodic announcements) have the peculiar pattern that ITP peaks in the control period and falls thereafter. If the true window length were longer than 20 days, this could also indicate speculative trading there. There is no evidence of information-based trading in Brazil. The Chilean vs. Brazilian patterns are fully consistent with the findings of Table 2.A discussed above.

Speculative trading prior to public announcements also seems to differ across industrial sectors. Communications, non-cyclical consumer products, diversified, and the industrial sector

proper have the hump-shaped pattern peaking in the pre-periodic announcement period.[41] Non-cyclical consumer products, energy and utilities replicate the pattern for aperiodic announcements.

The bottom row of Figure 2.D shows that there seems to be more speculative trading in preferred than in common stocks, a feature that is not fully consistent with this paper's explanation of the preferred effect in the discussion of Table 2.A. There is not a coherent explanation for this figure.

The bottom charts of Figure 2.E are also very telling. Information-based trading of periodic announcements seems to focus on stocks that only trade at home, and on stocks that are not ADR underlying securities, although their issuers have ADR programs. The picture is very different for mergers and acquisitions, in which ITP seems substantially higher before than after the announcements, and this is particularly so for stocks of companies with ADR programs. Unfortunately, the evidence in Von Furstenberg and Tabora (2004) does not make it possible to determine whether the price discovery that takes place locally (which is confirmed to be the case in general and for periodic announcements) switches to New York just before aperiodic announcements are released, as documented here.

Two reasons may underlie the lack of speculative trading of aperiodic announcements for stocks that trade only at home. On the one hand, it may be the case that firms without ADR programs release low quality information regarding these announcements, and so analyst-based privately informed traders may become more active after such a release. On the other hand, only 25 out of the 163 aperiodic announcements were released by companies that just trade at home. Perhaps the sample is too small to draw any useful inferences.

As a robustness check, the same exercise is performed using a window length of only 10 trading days. Table A9 and Figures A4.A through A4.E in the Appendix show the counterpart results of those in Table 3 and Figures 2.A through 2.E. The graphs tend to confirm the finding of the benchmark experiment that ITP is higher before announcements than after them. This is reflected in the first three bars of each graph, which show the situation of the average stock. However, in many cases in this experiment, the total ITP is higher during the control than during the pre-announcement period. On the assumption that ITP correctly measures true informed trading, this is interpreted as evidence that the specified window length is shorter than the true

[41] Table A2 in the Appendix lists the sub-sectors in each sector.

window length. This is because during the control period, informed trading should be observed that is at most as high as during the pre-announcement period. If there is privately informed trading, it should be lower, and if there is not privately informed trading, it should be just as high. The results indicate that in many cases, ITP is highest in the control period. The case of ADRs during aperiodic announcements illustrates the point (shown on the bottom right-hand side graphs of Figures 2.E and A4.E): with the 20-day window width, ITP has the expected hump in the middle, while it is always decreasing with the 10-day window width. The latter result is attributed to window misspecification. Further evidence that a 10-trading day window width is too short is the fact that both Vega (2004) and Aktas et al. (2004) use event windows that are at least 40 trading days. Given that only 250 trading days of data and one announcement every 53 trading days are available on average, it was decided in this instance not to use a window width greater than 20 days.

In summary, the event study set out to analyze whether the time pattern of ITP around material corporate announcements was consistent with the hypothesis that privately informed parties exploit this information when it is most valuable. ITP was decomposed during three periods, and notable differences were found across volume ranges, countries, industrial sectors, and ADR status of the securities in question. The overall evidence is consistent with the hypothesis proposed.

5.4. The Market Value of Informed Trading

This paper has so far documented that there is substantial heterogeneity of ITP both within and between categories that have been controlled for in regression analysis. To complete the previous findings, now assessed is whether the market does indeed recognize both this heterogeneity and that informed trading is harmful to outside investors as reflected in the prices of the securities that those investors trade. La Porta et al. (2002) focus on nationwide controls and on corporation-specific cash-flow rights measured at one point in time. Klapper and Love (2002) use corporation specific measures of governance that are analyst-based (and so potentially subjective and endogenous), and are also fixed over time. The present contribution is to postulate the ITP measured during each quarter in the sample as a corporate governance quality indicator at the firm-quarter level. A panel regression is thus estimated

$$q_{ijt} = \alpha + \beta^{I}\ ITP_{ijt} + \beta^{G}\ Governance\ Quality_{ij} + \beta^{S}\ Sales\,Growth_{ijt} + \boldsymbol{\beta}^{t'}\mathbf{I}(t) + \varepsilon_{it} \quad (7)$$

$$i = 1,..,175;\ \ j = \text{Arg., Bra., Chi., Col., Per., Mex., Ven.}\ \ t = 1,...,4.$$

where Tobin's q_{ijt} proxies for the value of the firm *i* in country *j* during quarter *t*, and *Sales Growth*$_{ijt}$ attempts to capture the value of the firm's growth opportunities. Several regressions are run using all the governance quality or investor protection variables used in Table 2.B, both alone and interacted with ITP, with time fixed effects. Very few of these variables turned out to be significant, so the tables focus on those cases in which they were significant. Following La Porta et al. (2002), Table 4.A presents the results using raw data while, for robustness, Table 4.B uses *q* and *Sales Growth* in deviation from industrial sector medians. The bottom line of each table reports the percentage rise in Tobin's *q* that accompanies a one standard deviation fall in ITP.

Table 4.A. The Market Value of Informed Trading, Raw Data

$$q_{ijt} = \alpha + \beta^{I}\ ITP_{ijt} + \beta^{G}\ Governance\ \ Quality_{ij} + \beta^{S}\ Sales\ Growth_{ijt} + \boldsymbol{\beta}^{t'}\mathbf{I}(t) + \varepsilon_{it}$$

$$i = 1,..,175;\ \ j = \text{Arg., Bra., Chi., Col., Per., Mex., Ven.}\ \ t = 1,...,4.$$

This table shows panel regression output for a sample of 175 firms from seven countries (except the CLSA column, which uses 60 firms from five countries) measured once per quarter between October 2, 2003, and September 30, 2004. The dependent variable is Tobin's *q* for each quarter. The explanatory variables are the following: the informed trading probability (ITP) for the most liquid ticker of each company during each quarter, investor protection proxies as defined in La Porta et al. (1998) and Berkowitz, Pistor and Richard (2002), but updated using data from the March, 2004, *International Country Risk Guide* , and the average corporate governance quality rating from Gill (2001). Sales growth is three-year geometric annual growth in US dollars lagged three quarters relative to the measure of Tobin's *q* . The bottom line reports the percentage rise in Tobin's *q* for a one standard deviation fall in ITP. Standard errors are in parentheses below each coefficient. *** indicates p-value<1% , **<5%, and *<10%.

Dependent Variable: Tobin's *q*

	Base Model		**Type of Investor Protection Variable in Each Specification (Firm Random Effects)**		
	Firm Fixed Effects	**Country Random Effects**	**Legality**	**Rule of Law**	**CLSA Average**
Informed Trading Probability	**-0.15** *	**-0.33** *	**-0.17** *	**-0.17** *	**-0.03**
	(0.09)	(0.21)	(0.09)	(0.09)	(0.18)
Governance Quality			**0.03**	**0.02** *	**0.03** ***
			(0.02)	(0.01)	(0.01)
Average Sales Growth	**0.01**	**0.63** ***	**0.07**	**0.07**	**0.16**
	(0.08)	(0.13)	(0.07)	(0.07)	(0.15)
Intercept	**1.31** ***	**1.36** ***	**1.03** ***	**1.22** ***	**-0.48**
	(0.02)	(0.06)	(0.21)	(0.07)	(0.44)
Rise in *q* for a One Standard Deviation Fall in ITP	**0.99%**	**2.11%**	**1.06%**	**1.06%**	**0.21%**

Table 4.B. The Market Value of Informed Trading, Industry-Adjusted Data

$$q_{ijt} = \alpha + \beta^{I}\, ITP_{ijt} + \beta^{G}\, Governance\ \ Quality_{ij} + \beta^{S}\, Sales\ Growth_{ijt} + \boldsymbol{\beta}^{t'}\mathbf{I}(t) + \varepsilon_{it}$$

$$i = 1,..,175;\ \ j = \text{Arg., Bra., Chi., Col., Per., Mex., Ven.}\ \ t = 1,...,4.$$

This table shows panel regression output for a sample of 175 firms from seven countries (except the CLSA column, which uses 60 firms from five countries) measured once per quarter between October 2, 2003, and September 30, 2004. The dependent variable is industry-adjusted Tobin's q for each quarter. The explanatory variables are: the informed trading probability (ITP) for the most liquid ticker of each company during each quarter, investor protection proxies as defined in La Porta et al. (1998) and Berkowitz, Pistor and Richard (2002), but updated using data from the March 2004, *International Country Risk Guide* , and the average corporate governance quality rating from Gill (2001). Sales growth is three-year geometric annual growth in U.S. dollars lagged three quarters relative to the measure of Tobin's q . The bottom line reports the percentage rise in Tobin's q (not industry-adjusted q) for a one standard deviation fall in ITP. Standard errors are in parentheses below each coefficient. *** indicates p-value<1% , **<5%, and *<10%.

Dependent Variable: Industry-Adjusted Tobin's *q*

	Base Model		**Type of Investor Protection Variable in Each Specification (Firm Random Effects)**		
	Firm Fixed Effects	**Country Random Effects**	**Legality**	**Rule of Law**	**CLSA Average**
Informed Trading Probability	**-0.20** *	**-0.12**	**-0.20** *	**-0.20** *	**-0.10**
	(0.11)	(0.22)	(0.1)	(0.1)	(0.22)
Investor Protection			**0.03** *	**0.03** *	**0.03** ***
			(0.02)	(0.02)	(0.01)
Average Sales Growth	**-0.03**	**0.56** ***	**0.04**	**0.04**	**0.08**
	(0.09)	(0.13)	(0.09)	(0.09)	(0.17)
Intercept	**0.29** ***	**0.23** **	**-0.03**	**0.19** ***	**-1.36** ***
	(0.02)	(0.1)	(0.22)	(0.07)	(0.49)
Rise in q for a One Standard Deviation Fall in ITP	**1.28%**	**0.78%**	**1.28%**	**1.28%**	**0.62%**

The key result is that ITP has a negative contemporaneous effect on market value in all specifications: a one standard deviation fall in ITP is accompanied by a rise in Tobin's q of between 0.99 and 2.11 percentage points depending on the model. The effect is significant economically and statistically at the 10 percent level in most specifications, and it is slightly stronger with industry-adjusted data.

The two first columns of each table report the benchmark specifications, in which ITP is used alongside *Sales Growth* and a constant.[42] The first column uses firm fixed effects while the second one uses country random effects. In three of the four cases, ITP is significant at the 10 percent level.

The regressions in the last three columns use governance quality variables that are fixed over time. Therefore, fixed effects are not feasible and random effects are used. When using Rule

[42] The choice of random vs. fixed effects in these two cases was determined by a Hausman test. Naturally, using firm effects reduces the importance of *Sales Growth* in all specifications.

of Law and Legality (both assessed during 2004) the ITP coefficients are in the vicinity of the benchmark specifications and are statistically significant in three out of the four cases. Therefore, informed trading probability is priced above and beyond the measures of nationwide investor protection in this seven-country sample.

The last column of each table reports the results of a regression using the CLSA average rating for each corporation. These data, however, are available for only 60 firms out of the 175 used in the previous regression. Although the point estimate of the coefficient on ITP remains negative, it is no longer statistically significant. A similar result obtains using other CLSA measures of governance quality. This may result in part from the correlation between the average rating and ITP documented in Table 2.B, a fact that has interesting policy implications discussed in the next section.

Klapper and Love (2002) also regress Tobin's *q* on CLSA governance ratings and find a coefficient between 0.02 and 0.025, quite similar to this paper's point estimates of 0.03 and 0.027, respectively.

6. Conclusions, Policy Implications, and Directions for Future Research

For all practical purposes, illegal insider trading goes unpunished in Latin America. The theme of this paper is that, given the unobservability of illegal insider trading from the viewpoint of outside investors, its detrimental effect on minority shareholders' returns, and the history of impunity of this fraud in Latin America, controlling groups actually choose by how much they will exploit their informational advantage in securities trading. Therefore corporate governance and insider trading are intimately related.

While controlling group discretionary powers could hurt minority shareholders, they could also benefit them. For instance, a more powerful controlling group may internalize benefits of monitoring that are beneficial to all shareholders. However, insider trading is an explicit use of the discretion option that is harmful to outside investors. Nationwide regulations that permit this discretion give controlling groups options to harm. Insider trading proxies indicate to what extent controlling groups actually exercise these options at the expense of outsiders.

This paper uses a well-established method to estimate the probability of informed trading (ITP) for each of 288 Latin American stocks. The behavior of ITP is analyzed in the cross-section and around corporate announcements, and whether the market prices this risk is assessed

as well. One caveat to all of the findings is that ITP estimates *privately* informed trading, which is more general and not necessarily restricted to illegal insider trading.

This find that there is substantial heterogeneity of ITP across stocks and that this dispersion occurs mainly within groups (such as countries, volume quintiles, industrial sectors, security types, and ADR classifications) rather than between them. The new information that is generated may thus be valuable in assessing individual corporate behavior, which is not easily captured by groupings usually controlled for in the literature.

In spite of this, it is possible to estimate the effects of some control variables: ITP varies greatly across volume categories, with the least liquid stocks having about twice the median rate (20 percent) of the most liquid stocks (11 percent). Brazil and Mexico have lower mean ITP, while Colombia and Venezuela have higher mean ITP than the average stock. The stocks of firms with ADR programs have less ITP than those without, just like preferred stocks have lower amounts than common stocks. Also, countries with better information-related investor protection legal variables tend to have lower ITP.

Next analyzed is whether ITP rises just before material corporate announcements are disclosed to the market, and this hypothesis is generally confirmed, although the magnitude and the lead of the anticipation seems higher for acquisition and divestiture (aperiodic) announcements than for earnings and cash-dividend (periodic) announcements. While ADRs have low information leakage relative to periodic announcements, they seem to have substantial leakage relative to aperiodic announcements. Tangible information leakage is found in Argentina, Chile, and Mexico, but no evidence of information leakage is found in Brazil. Some industrial sectors are subject to significant spikes of ITP just before public announcements—a fact that might interest investors.

Last, the paper checks whether the market value of firms responds to changes in ITP, and it is found that a fall of one standard deviation in this variable raises corporate value by about one to two percentage points. This pricing seems low compared with the expected loss to an outsider from trading with a privately informed agent. This gap is attributed to the fact that the market may not be sufficiently aware of the distribution of informational asymmetries among the different stocks.

It is concluded that Informed Trading Probability does indeed proxy for unobservable corporate governance quality and that there is substantial heterogeneity of firm behavior within a

given institutional environment. Part of this heterogeneity seems to be recognized by the market and priced accordingly.

These findings have important policy implications. While the literature to date emphasizes the benefits of *macro* (legal) reforms, this paper shows that the *micro* components of the corporate governance measure are far from trivial. The traditional adverse selection literature (e.g., Leland and Pyle, 1977) shows that, with asymmetric information, the absence of signaling technologies induces uninformed investors to charge higher financing rates to all firms, precluding funding for some otherwise profitable projects. Moreover, a signal variable may be sufficient for investors to correctly discriminate across firms and projects, restoring the Pareto-efficiency of the market equilibrium. This paper proposes the creation of a corporate integrity score to fill the role of such a signal variable. By publicly disclosing the score of different companies, spontaneous market separation mechanisms would be relied upon to improve the corporate investment funding role of public securities markets.[43]

Although ITP would be an ingredient of this score, other asymmetric-information measures such as the bid-ask spread, its adverse selection component, or the price impact of trades should also be contemplated. Moreover, one could conduct the same event study of ITP around corporate announcements as this paper, but using two or three years of data, and compute the mean increase of ITP during the pre-announcement period for each individual corporation. Furthermore, it would be interesting to counterpart these trade- and offer-based data with price impact of announcements data. While Bhattacharya et al. (2000) show that Mexican stock prices are on average unresponsive to corporate announcements, it may be conjectured that the distribution of these responses is heterogeneous within countries, as is the distribution of ITP.

Because controlling groups may evolve over time in the management of inside information, in part due to the pressure caused by the integrity score, the latter could be updated once or twice a year to reflect this change in behavior.

These measures have the advantage of being objective, quantitative, theory-based proxies of corporate behavior. They are also less expensive to compute than the alternative, analyst-based measures that are potentially subjective and endogenous.

[43] Bhattacharya et al. (2000) propose creating a nationwide market integrity score. Aitken and Siow (2004) show one implementation of that idea. Again, this paper's results show that there is wide variation of informed trading *within* countries, hence the benefit of the individual corporation ratings proposed here.

This score might provide palpable benefits by encouraging investor interest in those companies that are making a genuine effort to improve the quality and access to information. Moreover, it would induce companies that have problems with inside information management to be more proactive in this area. For example, in choosing a target for a merger or an acquisition, a company may care to know how likely it is that the partner will begin trading (illegally) in the public market to tilt the negotiation in his favor before the deal is completed. Also, multilateral financial organizations could screen companies on this score when accepting them as contractors for investment projects that they help fund. But, before this happens, more research is clearly needed to assess the specific construction and robustness of this proposed individual corporation integrity score.

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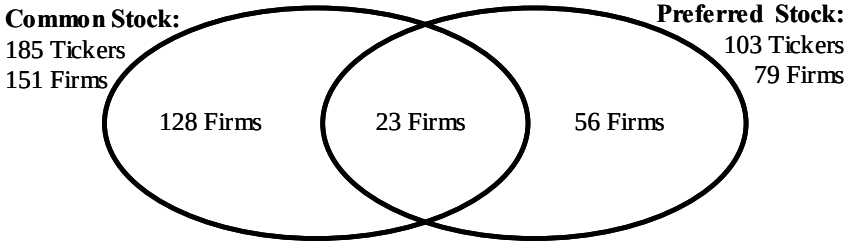
Appendix

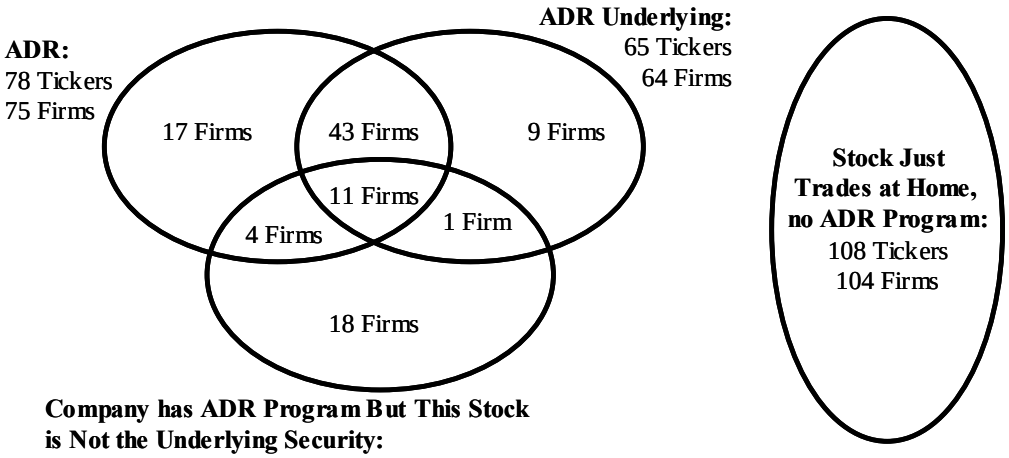
Figure A.1. Number of Tickers and Firms in Each Group that Are Sufficiently Liquid to Be in the Sample

This figure supplements the data in Tables A.1 and A.2 by indicating how many firms have individual tickers that are liquid enough to be in the sample, each pertaining to one of two (or three) mutually exclusive categories of stocks. For example, a firm that has both a common stock and a preferred stock in the sample is located at the intersection of these two sets in Panel A. There are 23 such firms among the 288 tickers in the sample. The firms at the intersection of the different sets could be used to test hypotheses on a sub-sample of tickers for which the common firm characteristics are controlled. Given the small number of firms at each intersection, it was instead chosen to perform the regression analysis of Table 2 using certain firm characteristics to control for this common information. The number of firms does not add up to the number of tickers, because many firms have more than one ticker in the sample. For instance, in Panel A, 52 firms have two tickers, 13 firms have three tickers, and one firm has four tickers all in the sample [128+56+23+52+(13x2) +3 = 288 which is the total number of tickers in the sample].

Panel A: Common vs. Preferred Stock status



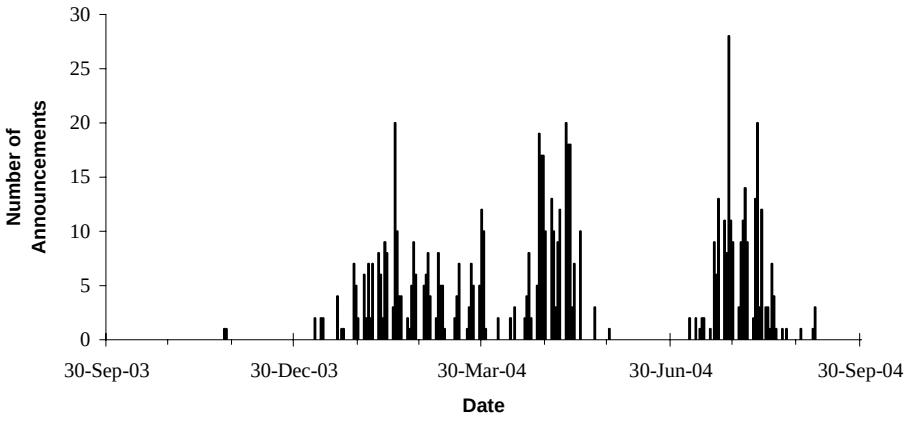
Panel B: ADR status



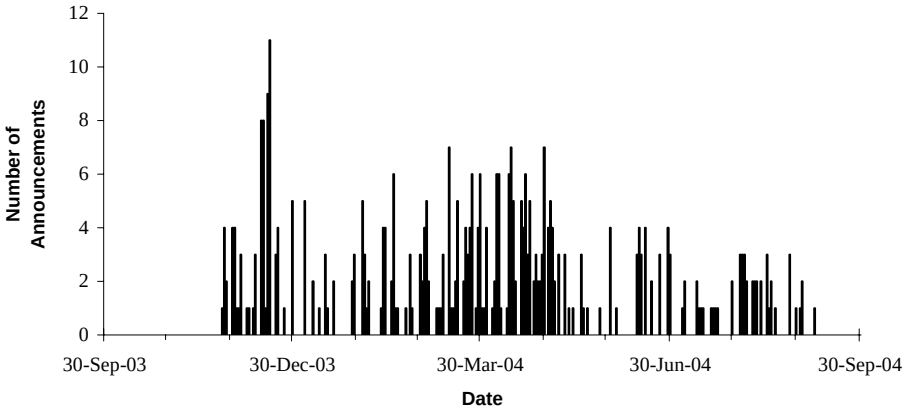
Company has ADR Program But This Stock is Not the Underlying Security:
37 Tickers , 34 Firms

Figure A2. Temporal Distribution of Announcements

Panel A: Earnings Announcements



Panel B: Cash Dividends Announcements



Panel C: Acquisitions and Divestitures Announcements

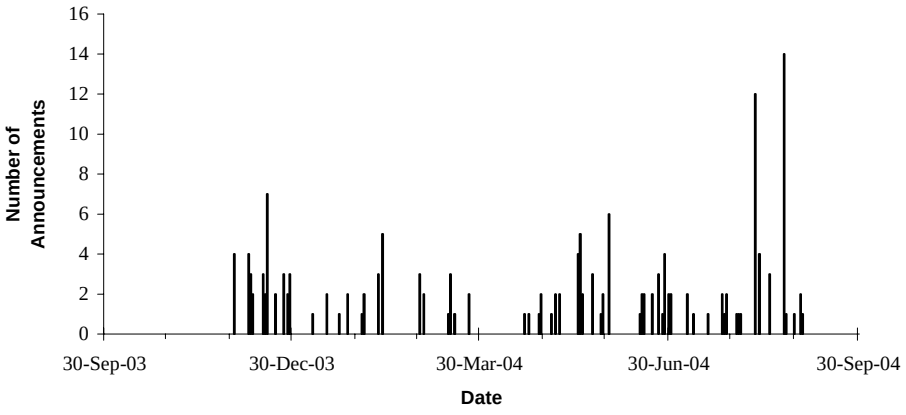
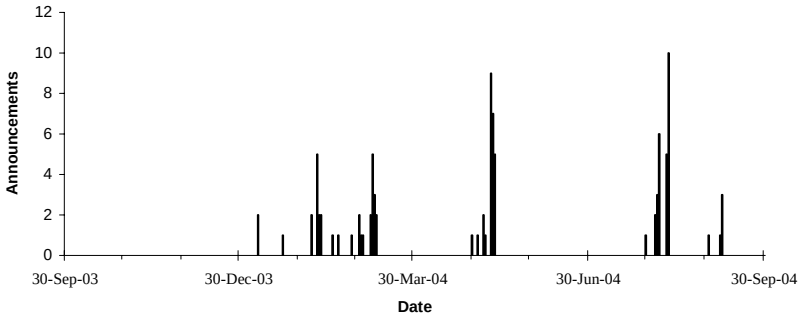
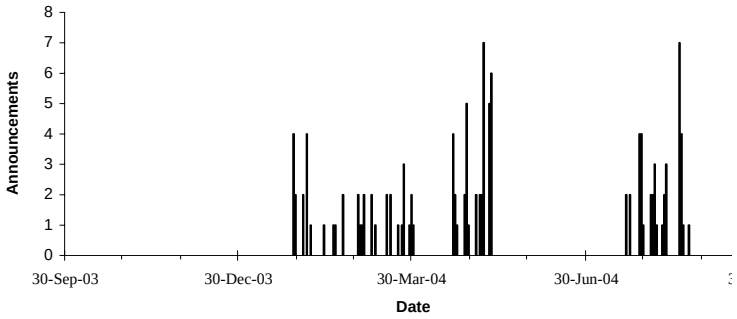


Figure A3. Temporal Distribution of Earning Announcements by Country and Date

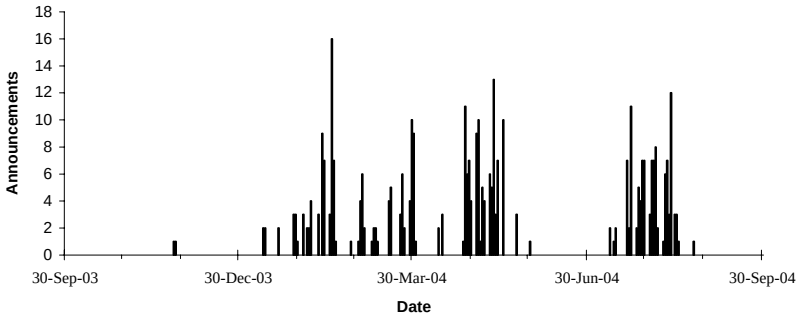
Panel A: Argentina



Panel B: Chile



Panel C: Brazil



Panel D: Mexico

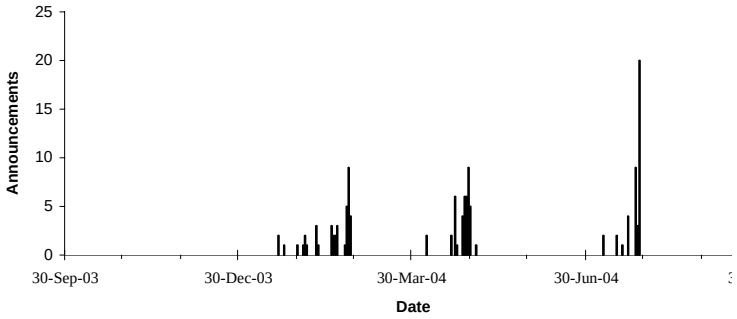
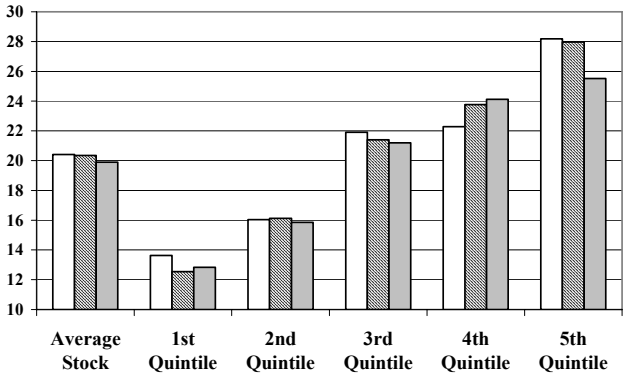


Figure A4.A. Informed Trading Probability Around Corporate Announcements by Volume Quintiles

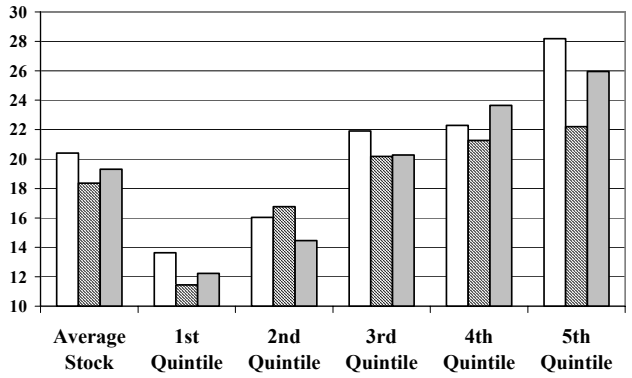
Figures A4.A through A4.E show the mean total informed trading probability estimated in the event study (for the control, pre-announcement, and post-announcement periods) for stocks in different categories. Each figure contains four graphs. Graphs on the left correspond to periodic announcements (earnings and cash dividends), while those on the right pertain to aperiodic announcements (acquisitions and divestitures). Graphs at the top correspond to OLS regressions that control only for volume beside the category analyzed in the graph. Graphs at the bottom report the total estimated ITP for stocks in the indicated category but resulting from regressions that control for other categories not explicitly depicted in the graph (they result from adding the coefficients in Table A.9). Thus the ITP in the bottom graphs is purged of factors other than the one being explicitly shown, which could also have affected the ITP of the stocks shown in the top graph.

Top Row: Controlling only for Volume

Periodic Announcements (Earnings and Cash Dividends)

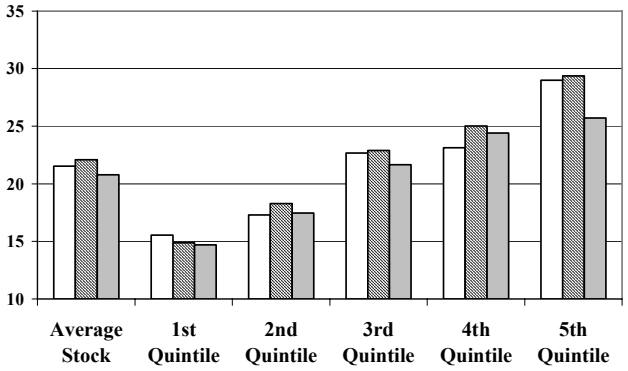


Aperiodic Announcements (Acquisitions and Divestitures)

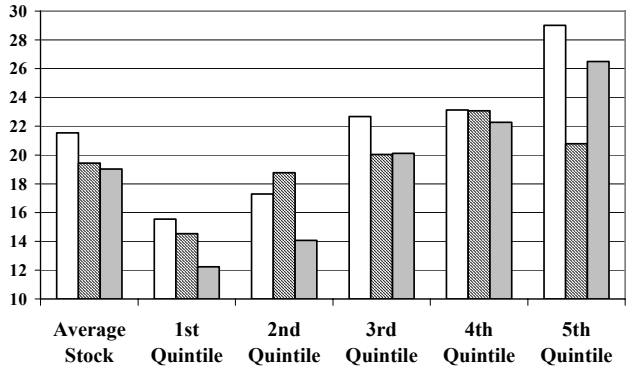


Bottom Row: Controlling for Volume, Country, Industrial Sector, Security Type, and ADR Status

Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)

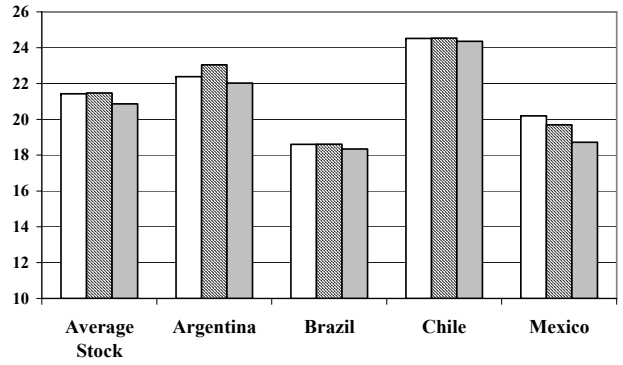


Control Pre-Announcement Post-Announcement

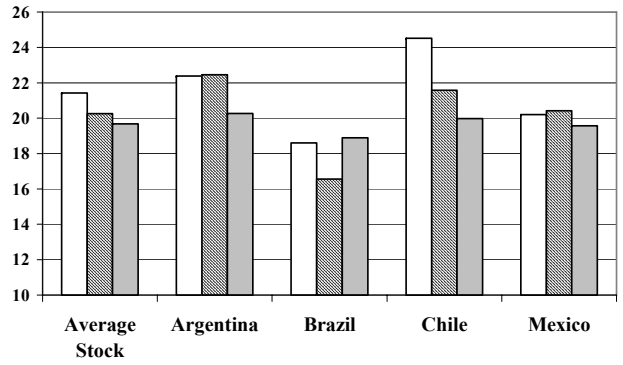
Figure A4.B. Informed Trading Probability Around Corporate Announcements by Country

Top Row: Controlling for Volume and Country

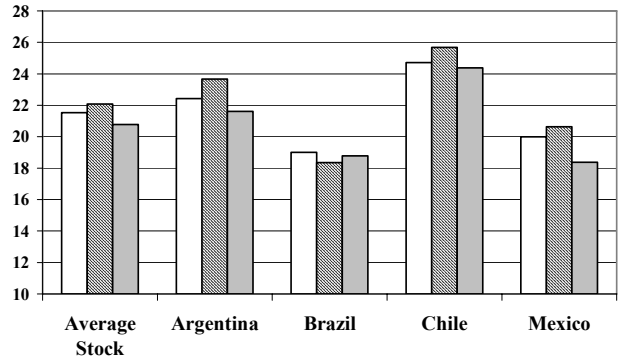
Periodic Announcements (Earnings and Cash Dividends)



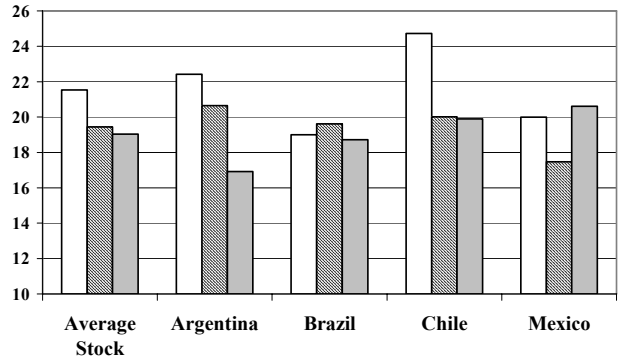
Aperiodic Announcements (Acquisitions and Divestitures)



Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)



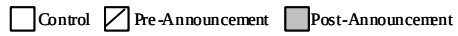
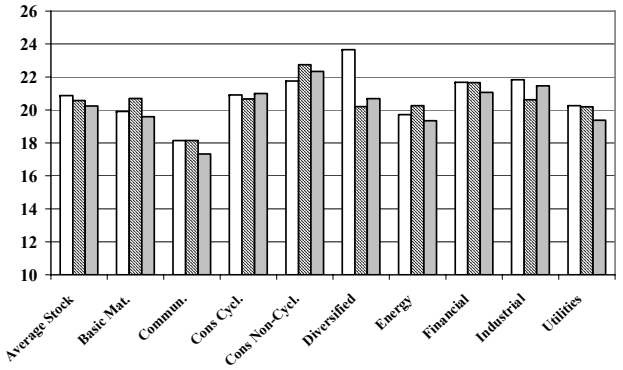


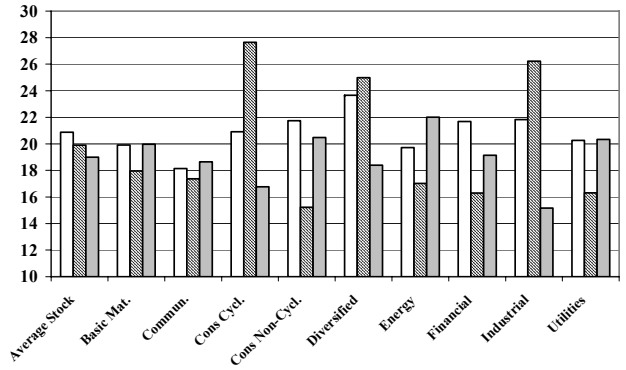
Figure A4.C. Informed Trading Probability Around Corporate Announcements by Industrial Sector

Top Row: Controlling for Volume and Industrial Sector

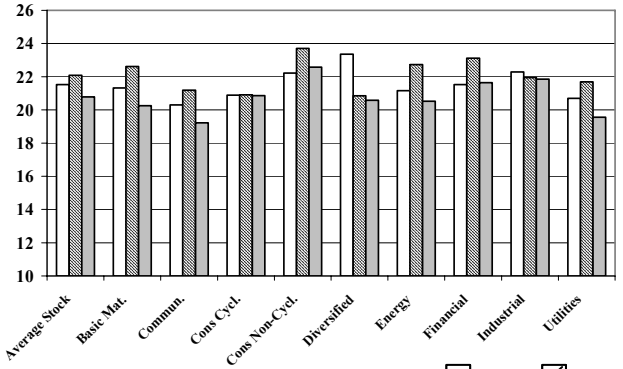
Periodic Announcements (Earnings and Cash Dividends)



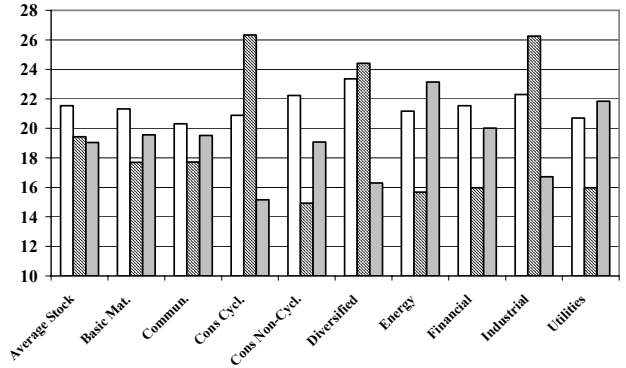
Aperiodic Announcements (Acquisitions and Divestitures)



Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)



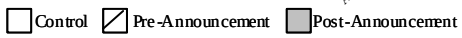
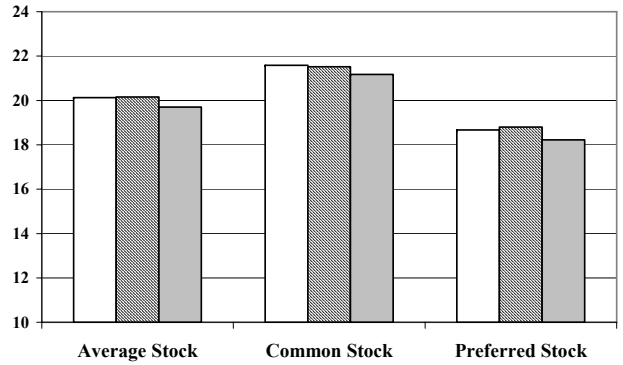


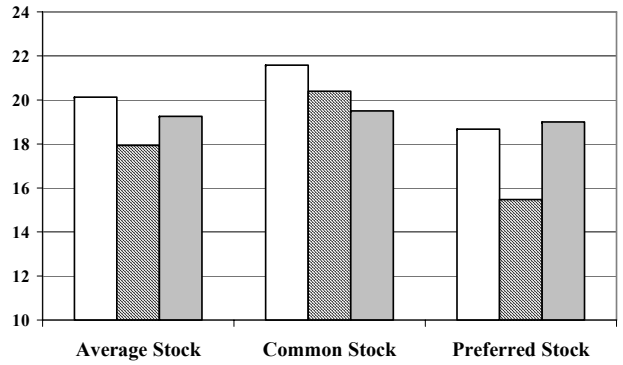
Figure A4.D. Informed Trading Probability Around Corporate Announcements by Security Type

Top Row: Controlling for Volume and Security Type

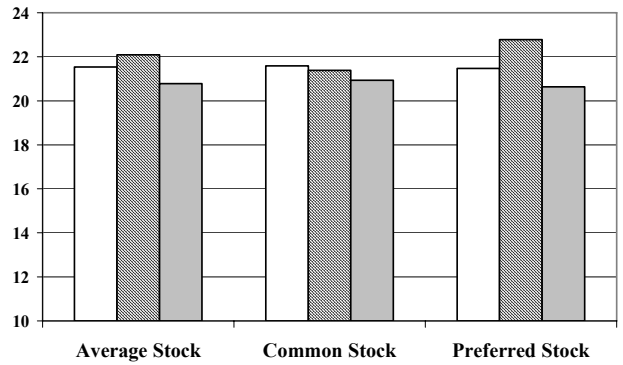
Periodic Announcements (Earnings and Cash Dividends)



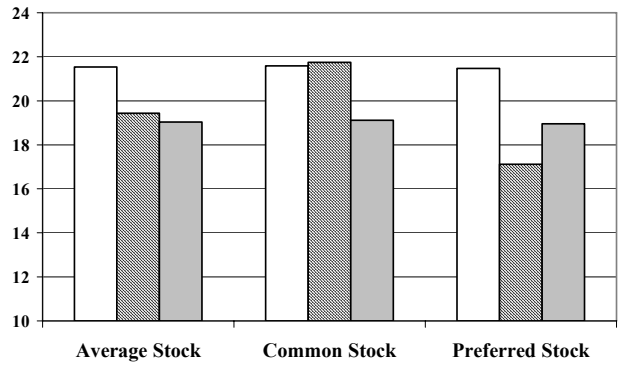
Aperiodic Announcements (Acquisitions and Divestitures)



Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)



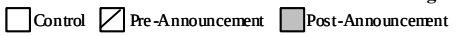
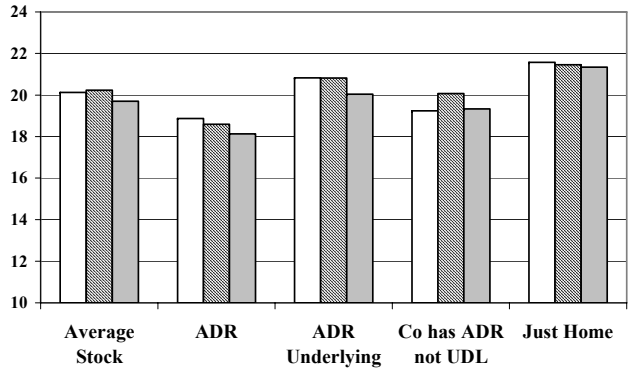


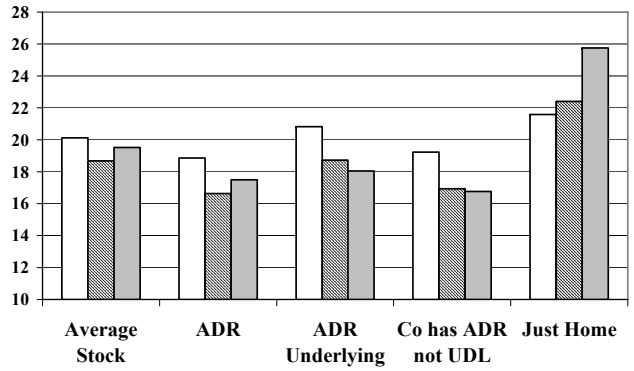
Figure A4.E. Informed Trading Probability Around Corporate Announcements by ADR Status

Top Row: Controlling for Volume and ADR Status

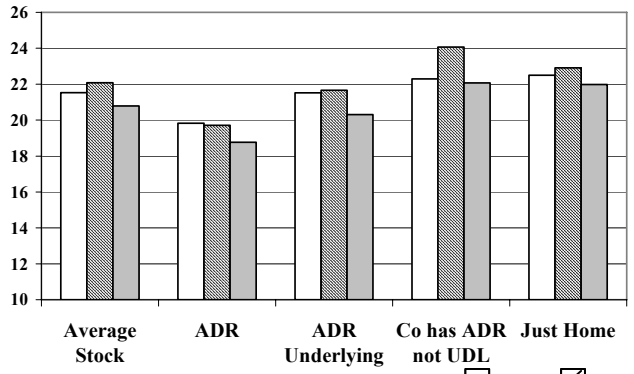
Periodic Announcements (Earnings and Cash Dividends)



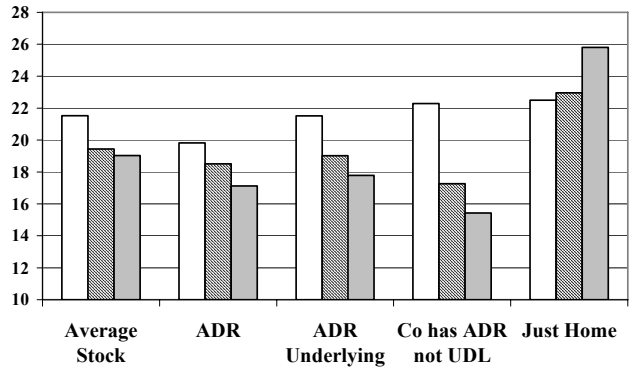
Aperiodic Announcements (Acquisitions and Divestitures)



Periodic Announcements (Earnings and Cash Dividends)



Aperiodic Announcements (Acquisitions and Divestitures)



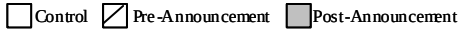


Table A1. Traded Volume in Latin American Stocks

This table shows, for each country, the average daily dollar amount of transactions in domestic stocks that took place in its home market and in the United States in the ADR market. This is as reported by Economatica for the period between October 2, 2003 and September 30, 2004. Figures are expressed in thousand of dollars. The bottom panel shows that the average daily trading volume in Latin American securities is about one billion dollars. This compares with 1.8 billion in Hong Kong, 2.6 billion in TSX Group (Toronto Stock Exchange and TSX Venture Exchange), 4.8 in Spain, 6.1 in Germany, 9.7 in Euronext (the merger of the Amsterdam, Paris, Brussels, Lisbon, and London International Financial Futures exchanges, though only spot stock trading is considered here), 13.1 in Japan, 20.5 in United Kingdom, and 83.2 in the United States (NYSE, AMEX, and NASDAQ combined) during 2004 according to the World Federation of Exchanges Annual Report (2004).

Panel A: Average Daily Volume of Transactions in Sample

Countries	Average Daily Volume from IVQ03-IIIQ04			Country's Share of Total Trade in LA Stocks	Ratio of ADR Volume to Home Market Volume	Sample Coverage Ratio
	Home Market	ADRs in USA	Total			
Argentina	14,473	14,885	29,358	3.6%	1.03	0.98
Brazil	217,521	239,229	456,750	55.6%	1.10	0.82
Chile	33,666	16,879	50,545	6.2%	0.50	0.85
Colombia	888	723	1,611	0.2%	0.81	0.30
Mexico	143,509	116,197	259,706	31.6%	0.81	0.80
Peru	1,048	18,271	19,319	2.4%	17.44	0.89
Venezuela	742	3,702	4,444	0.5%	4.99	0.77
Total	411,846	409,886	821,732	100.0%	1.00	0.82

Panel B: Average Daily Volume of Transactions in All Stocks

Countries	Average Daily Volume from IVQ03-IIIQ04			Country's Share of Total Trade in LA Stocks	Ratio of ADR Volume to Home Market Volume	Local Depository Receipts of Foreign Firms
	Home Market	ADRs in USA	Total			
Argentina	15,089	14,926	30,015	3.0%	0.99	2,672
Brazil	316,391	242,434	558,825	55.6%	0.77	159
Chile	40,321	18,848	59,169	5.9%	0.47	0
Colombia	4,670	723	5,392	0.5%	0.15	0
Mexico	148,091	176,059	324,149	32.3%	1.19	4,547
Peru	3,373	18,271	21,645	2.2%	5.42	218
Venezuela	2,045	3,734	5,779	0.6%	1.83	0
Total	529,980	474,994	1,004,974	100.0%	0.90	7,597

Table A2. Number of Tickers by Country and Sector

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	Total
Basic Materials	6	34	4	0	3	6	0	53
Communications	4	40	3	0	12	1	2	62
Consumer, Cyclical	3	5	7	0	10	0	0	25
Consumer, Non-Cyclical	4	9	8	0	9	1	0	31
Diversified	1	4	3	0	4	0	0	12
Energy	5	5	0	0	0	0	0	10
Financial	9	9	7	3	4	1	0	33
Industrial	4	10	5	0	8	0	0	27
Utilities	6	21	7	0	0	0	1	35
Total	42	137	44	3	50	9	3	288

The rows reports the total number of tickers for each country-sector among the 288 tickers.

Bloomberg provides an industry-subsector classification. The following contains all included subsectors:

Basic Materials: Agricultural Chemicals, Chemicals-Diversified, Chemicals-Plastics, Chemicals-Specialty, Coatings/Paint, Diversified Minerals, Gold Mining, Metal-Aluminum, Metal-Copper, Metal-Diversified, Non-Ferrous Metals, Paper & Related Products, Petrochemicals, Silver Mining, Steel-Producers, Steel-Specialty.

Communications: Broadcast Serv/Program, Cable TV, Cellular Telecom, Publishing-Books, Radio, Telecom Services, Telephone-Integrated.

Consumer, Cyclical: Airlines, Apparel Manufacturers, Appliances, Audio/Video Products, Auto-Cars/Light Trucks, Auto/Trk Prts & Equip-Orig, Auto/Trk Prts & Equip-Repl, Bldg-Residential/Commer, Distribution/Wholesale, Footwear & Related Apparel, Hotels & Motels, Housewares, Import/Export, Music, Retail-Appliances, Retail-Consumer Electron, Retail-Discount, Retail-Drug Store, Retail-Hypermarkets, Retail-Major Dept. Store, Retail-Misc/Diversified, Retail-Petroleum Prod, Retail-Restaurants, Textile-Apparel, Textile-Products, Toys.

Consumer, Non-Cyclical: Agricultural Biotech, Agricultural Operations, Beverages-Non-alcoholic, Beverages-Wine/Spirits, Brewery, Fisheries, Food-Baking, Food-Canned, Food-Confectionery, Food-Flour & Grain, Food-Meat Products, Food-Misc/Diversified, Food-Retail, Food-Wholesale/Distrib, Medical-Hospitals, Medical-Whsle Drug Dist, Poultry, Printing-Commercial, Public Thoroughfares, Soap & Cleaning Prepar, Sugar, Tobacco, Veterinary Diagnostics, Whsing & Harbor Trans Serv.

Diversified: Diversified Operations, Specified Purpose Acquis.

Energy: Oil Comp-Integrated, Oil Refining & Marketing, Oil-Field Services, Pipelines.

Financial: Commer Banks Non-US, Diversified Finan Serv, Finance-Invest Bnkr/Brkr, Finance-Other Services, Investment Companies, Money Center Banks, Real Estate Mgmnt/Servic, Real Estate Oper/Develop, Regional Banks-Non US.

Industrial: Aerospace/Defense, Airport Develop/Maint, Bldg Prod-Cement/Aggreg, Bldg Prod-Wood, Bldg & Construct Prod-Misc, Building & Construct-Misc, Building-Heavy Construct, Ceramic Products, Containers-Metal/Glass, Containers-Paper/Plastic, Diversified Manufact Op, Electronic Compo-Misc, Engines-Internal Combust, Explosives, Firearms & Ammunition, Mach Tools & Rel Products, Machinery-Constr & Mining, Machinery-Electric Util, Machinery-Farm, Machinery-General Indust, Machinery-Therml Process, Metal Processors & Fabrica, Miscellaneous Manufactur, Steel Pipe & Tube, Transport-Marine.

Utilities: Electric-Distribution, Electric-Generation, Electric-Integrated, Electric-Transmission, Gas-Distribution, Water.

Table A3.A. Number of Sample Stocks by Liquidity Range, Home Market

Sample Period: October 2, 2003 to September 30, 2004
Data are from Economatica.

NUMBER OF STOCKS IN EACH PRESENCE RANGE

COUNTRY	Range of percentage of trading days during which the stock traded									Total
	0-30	30-40	40-50	50-60	60-70	70-80	80-90	90-99.9	100	
Argentina				1				14	15	30
Brazil		1					1	15	88	105
Chile								13	18	31
Colombia								1	1	2
Mexico			1	1		1		5	27	35
Peru	1		1					2	1	5
Venezuela									2	2
Total	1	1	2	2	0	1	1	50	152	210

Presence is the fraction of trading-days during which a stock actually traded.

NUMBER OF STOCKS IN EACH VOLUME RANGE

COUNTRY	Range of average daily trading volume (in thousands of dollars)								Total
	0-25	25-50	50-100	100-250	250-500	500-1M	1M-3M	3M+	
Argentina	2	9	3	4	5	2	4	1	30
Brazil	3	5	8	15	12	15	23	24	105
Chile				4	5	10	10	2	31
Colombia					2				2
Mexico				2	2	5	13	13	35
Peru			1	2	1			1	5
Venezuela			1			1			2
Total	5	14	13	27	27	33	50	41	210

NUMBER OF STOCKS IN EACH RANGE OF NUMBER OF TRADES

COUNTRY	Range of average daily number of trades							Total
	0-10	10-25	25-50	50-75	75-150	150-300	300+	
Argentina		11	4	2	8	2	3	30
Brazil	1	17	17	10	11	24	25	105
Chile		10	10	7	4			31
Colombia			1	1				2
Mexico			9	8	6	7	4	34
Peru	2		2		1			5
Venezuela			1	1				2
Total	3	38	44	29	30	33	32	209

The number of trades of Wal Mart de Mexico C is not available in Economatica.

Table A3.B. Number of Sample Stocks by Liquidity Range, ADR Market

Sample Period: October 2, 2003 to September 30, 2004
Data are from Economatica and Bloomberg.

NUMBER OF STOCKS IN EACH PRESENCE RANGE

COUNTRY	Range of percentage of trading days during which the stock traded									Total
	0-30	30-40	40-50	50-60	60-70	70-80	80-90	90-99.9	100	
Argentina								3	9	12
Brazil								6	26	32
Chile							2	5	6	13
Colombia								1		1
Mexico								4	11	15
Peru			1					1	2	4
Venezuela									1	1
Total	0	0	1	0	0	0	2	20	55	78

Presence is the fraction of trading-days during which a stock actually traded.

NUMBER OF STOCKS IN EACH VOLUME RANGE

COUNTRY	Range of average daily trading volume (in thousands of dollars)								Total
	0-25	25-50	50-100	100-250	250-500	500-1M	1M-3M	3M+	
Argentina			1		3	2	5	1	12
Brazil			1	2	3	4	3	19	32
Chile				2	4	2	3	2	13
Colombia						1			1
Mexico			2	1	5		1	6	15
Peru			1		1			2	4
Venezuela								1	1
Total	0	0	5	5	16	9	12	31	78

NUMBER OF STOCKS IN EACH RANGE OF NUMBER OF TRADES

COUNTRY	Range of average daily number of trades							Total
	0-10	10-25	25-50	50-75	75-150	150-300	300+	
Argentina		1	2	2	3	3	1	12
Brazil		1	4	2	4	8	13	32
Chile		3	4	1	3	2		13
Colombia				1				1
Mexico		1	7		1	2	4	15
Peru			2				2	4
Venezuela						1		1
Total	0	6	19	6	11	16	20	78

Number of Trades data for ADR from Bloomberg.

Table A4.A. Statistics of the Liquidity of Sample Stocks, Home Market

Sample Period: October 2, 2003 to September 30, 2004
Data are from Economatica.

PRESENCE

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	30	97.4	8.4	53.8	98.4	99.8	100.0	100.0
Brazil	105	99.1	6.1	38.8	100.0	100.0	100.0	100.0
Chile	31	99.0	1.8	93.7	99.2	100.0	100.0	100.0
Colombia	2	99.6	0.6	99.2	99.2	99.6	100.0	100.0
Mexico	35	96.2	13.0	40.3	100.0	100.0	100.0	100.0
Peru	5	69.8	43.0	6.0	44.2	99.2	99.6	100.0
Venezuela	2	100.0	0.0	100.0	100.0	100.0	100.0	100.0
Total	210	97.7	10.6	6.0	99.6	100.0	100.0	100.0

Presence is the fraction of trading-days during which a stock actually traded.

AVERAGE DAILY TRADING VOLUME (IN THOUSANDS OF DOLLARS)

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	30	485.4	808.0	20.6	38.6	136.7	481.1	3,314.6
Brazil	105	2,074.6	2,988.7	6.1	185.9	695.6	2,744.0	14,403.7
Chile	31	1,089.4	1,001.5	142.8	423.8	826.4	1,364.9	4,155.1
Colombia	2	446.1	30.6	424.5	424.5	446.1	467.8	467.8
Mexico	35	4,299.6	5,583.6	105.7	907.8	1,994.7	5,167.6	22,866.0
Peru	5	937.1	1,621.4	64.9	191.7	194.8	404.8	3,829.3
Venezuela	2	370.8	387.0	97.1	97.1	370.8	644.5	644.5
Total	210	2,014.2	3,349.4	6.1	191.7	688.8	2,146.1	22,866.0

AVERAGE DAILY NUMBER OF TRADES

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	30	100.5	119.3	14.1	21.8	48.6	118.7	470.7
Brazil	105	197.2	207.0	8.7	34.4	137.9	294.3	928.5
Chile	31	44.2	25.3	16.1	24.6	37.5	61.2	112.0
Colombia	2	52.5	3.7	49.9	49.9	52.5	55.1	55.1
Mexico	34	135.6	114.2	26.7	47.6	71.8	218.6	442.0
Peru	5	35.2	32.9	2.3	6.0	37.3	48.1	82.3
Venezuela	2	40.1	16.1	28.7	28.7	40.1	51.5	51.5
Total	209	143.9	171.0	2.3	31.9	63.0	204.4	928.5

The number of trades of Wal Mart de Mexico C is not available in Economatica.

Table A4.B. Statistics of the Liquidity of Sample Stocks, ADR Market

Sample Period: October 2, 2003 to September 30, 2004
Data are from Economatica and Bloomberg.

PRESENCE

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	12	99.7	0.8	97.2	99.8	100.0	100.0	100.0
Brazil	32	99.4	1.8	91.2	100.0	100.0	100.0	100.0
Chile	13	96.3	5.3	85.3	92.8	99.6	100.0	100.0
Colombia	1	99.6	.	99.6	99.6	99.6	99.6	99.6
Mexico	15	99.5	1.2	95.6	99.6	100.0	100.0	100.0
Peru	4	84.8	29.4	40.6	69.5	99.2	100.0	100.0
Venezuela	1	100.0	.	100.0	100.0	100.0	100.0	100.0
Total	78	98.2	7.1	40.6	99.6	100.0	100.0	100.0

Presence is the fraction of trading-days during which a stock actually traded.

AVERAGE DAILY TRADING VOLUME (IN THOUSANDS OF DOLLARS)

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	12	1,241.2	1,196.5	60.6	381.9	916.1	1,604.9	4,145.5
Brazil	32	7,477.5	9,746.7	72.5	886.2	3,390.0	10,840.9	38,855.9
Chile	13	1,307.6	1,560.6	189.4	326.3	600.2	1,517.1	5,199.5
Colombia	1	725.5	.	725.5	725.5	725.5	725.5	725.5
Mexico	15	7,747.1	13,533.9	65.7	257.4	436.1	13,021.8	48,185.9
Peru	4	4,582.4	5,296.0	89.5	200.7	3,681.3	8,964.0	10,877.4
Venezuela	1	3,702.5	.	3,702.5	3,702.5	3,702.5	3,702.5	3,702.5
Total	78	5,258.2	9,052.7	60.6	326.3	1,237.0	5,199.5	48,185.9

AVERAGE DAILY NUMBER OF TRADES

COUNTRY	N	Mean	Std. Dev.	Min	Q1	Median	Q3	Max
Argentina	12.0	130.3	100.7	21.7	48.7	87.4	224.7	297.9
Brazil	32.0	300.7	251.7	20.7	106.4	227.8	458.0	1069.1
Chile	13.0	87.2	87.4	21.6	27.9	42.3	102.1	296.4
Colombia	1.0	62.3	.	62.3	62.3	62.3	62.3	62.3
Mexico	15.0	236.0	305.4	20.4	32.5	49.0	348.8	948.4
Peru	4.0	317.1	327.9	35.0	35.7	290.2	598.4	652.8
Venezuela	1.0	262.2	.	262.2	262.2	262.2	262.2	262.2
Total	78.0	223.7	239.0	20.4	42.3	123.4	297.9	1069.1

Number of Trades data for ADR from Bloomberg.

Table A5. Dollar Volume of Trading by Exchange and Quintile

Panel A shows the dollar volume (in millions) of transactions that took place from October 2, 2003 to September 30, 2004 in the 288 tickers of the sample across the eight exchanges considered. The columns correspond to the different quintiles within each exchange. The last column shows that the sample covers over 80 percent of total exchange trading volume for Argentina, Chile, Mexico, and the ADR market for Latin American stocks. Panel B shows the fraction of the total sample trading volume accounted for by each quintile. Panel C shows the accumulated trading volume accounted for up to each quintile. There is a high concentration of trading in the 40 percent of stocks that trade the most. They account for over 70 percent of trading in all but one exchange.

Panel A: Dollar volume of transactions (in millions)

	1st Quintile (Highest Vol.)	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile (Lowest Vol.)	Quintiles 1 to 5	Total in Sample / Total in Exchange
Argentina	2,728.6	594.7	187.2	61.0	32.1	3,604	96%
Brazil	37,807.5	10,949.2	3,977.2	1,349.6	296.6	54,380	69%
Colombia	123.6	0.0	93.2	0.0	0.0	217	19%
Chile	4,940.3	1,660.	1,013.3	609.6	218.8	8,442	83%
Mexico	24,087.6	6,876.4	3,216.1	1,647.1	480.6	36,308	97%
Peru	123.0	57.6	47.2	31.7	1.4	261	31%
USA (ADR Market)	78,187.3	17,337.2	5,111.3	1,738.8	506.7	102,881	86%
Venezuela	156.6	0.0	23.6	0.0	0.0	180	36%

Panel B: Fraction of sample volume accounted for by each quintile

	1st Quintile (Highest Vol.)	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile (Lowest Vol.)
Argentina	75.7%	16.5%	5.2%	1.7%	0.9%
Brazil	69.5%	20.1%	7.3%	2.5%	0.5%
Colombia	57.0%	0.0%	43.0%	0.0%	0.0%
Chile	58.5%	19.7%	12.0%	7.2%	2.6%
Mexico	66.3%	18.9%	8.9%	4.5%	1.3%
Peru	47.1%	22.1%	18.1%	12.1%	0.5%
USA (ADR Market)	76.0%	16.9%	5.0%	1.7%	0.5%
Venezuela	86.9%	0.0%	13.1%	0.0%	0.0%

Panel C: Cumulative fraction of sample volume accounted for up to each quintile

	1st Quintile (Highest Vol.)	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile (Lowest Vol.)
Argentina	76%	92%	97%	99%	100%
Brazil	70%	90%	97%	99%	100%
Colombia	57%	57%	100%	100%	100%
Chile	59%	78%	90%	97%	100%
Mexico	66%	85%	94%	99%	100%
Peru	47%	69%	87%	99%	100%
USA (ADR Market)	76%	93%	98%	100%	100%
Venezuela	87%	87%	100%	100%	100%

Table A6. Definition of Investor Protection Variables

All variables are taken from La Porta et al. (1998) unless otherwise indicated.

Shareholder Rights Variables

Shares Not Blocked before Meeting: Equals one if the Company Law or Commercial Code prohibits firms from requiring that shareholders deposit their shares prior to a General Shareholders Meeting, thus preventing them from selling those shares for a number of days, and zero otherwise.

Cumulative Voting or Proportional Representation: Equals one if the Company Law or Commercial Code allows shareholders to cast all of their votes for one candidate standing for election to the board of directors (cumulative voting) or if the Company Law or Commercial Code allows a mechanism of proportional representation on the board, whereby minority interests may name a proportional number of directors to the board, and zero otherwise.

Oppressed Minorities Mechanism: Equals one if the Company Law or Commercial Code grants minority shareholders either a judicial venue to challenge the decisions of management or of the assembly or the right to step out of the company by requiring the company to purchase their shares when they object to certain fundamental changes, such as mergers, assets dispositions and changes in the articles of incorporation. The variable equals zero otherwise. Minority shareholders are defined as those shareholders who own 10 percent or less of share capital.

Preemptive Right to New Issues: Equals one when the Company Law or Commercial Code grants shareholders the first opportunity to buy new issues of stock and this right can only be waived by a shareholders' vote. The variable equals zero otherwise.

Mandatory Dividend: Equals the percentage of net income that the Company Law or Commercial Code requires firms to distribute as dividends among ordinary stockholders. This variable takes a value of zero for countries without such a requirement.

Ownership Concentration: The median percentage of common shares owned by the three largest shareholders in the 10 largest non-financial, privately-owned domestic firms in a given country. A firm is considered privately owned if the State is not a known shareholder.

One Share-One Vote: Equals one if the Company Law or Commercial Code of the country requires that ordinary shares carry one vote per share, and zero otherwise. Likewise, this variable

equals one when the law prohibits the existence of both multiple-voting and non-voting ordinary shares and does not allow firms to set a maximum number of votes per shareholder irrespective of the number of shares she owns, and zero otherwise.

Shareholder Rights: Also referred to as "Antidirector Rights." Equals one if the Company Law or Commercial Code of the country requires that ordinary shares carry one vote per share, and zero otherwise. Likewise, this variable equals one when the law prohibits the existence of both multiple-voting and non-voting ordinary shares and does not allow firms to set a maximum number of votes per shareholder irrespective of the number of shares she owns, and zero otherwise.

Percentage of Share Capital to Call an Extraordinary Shareholder Meeting: This variable represents is the minimum percentage of ownership of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting; it ranges from one to 33 percent.

Rule of Law Variables

Efficiency of Judicial System: Assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by the country-risk rating agency Business International Corporation. It "may be taken to represent investors' assessments of conditions in the country in question." Average between 1980-1983. Scale from 0 to 10, with lower scores representing lower efficiency levels.

Rule of Law (1998 and 2004): Assessment of the law and order tradition in the country produced by the country-risk rating agency Political Risk Services (PRS) in the International Country Risk Guide. For 1998, the average of the months of April and October of the monthly index between 1982 and 1995 is reported. For 2004, March data are reported from PRS (2004). Scale from 0 to 10, with lower scores for less tradition for law and order. The original scale of this variable ranges from 0 to 6 but, following La Porta et al. (1998), this paper normalizes all ICRG data to a 0-10 scale in 2004 data.

Corruption (1998 and 2004): The PRS assessment of government corruption. Lower scores indicate "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans." For 1998, the average of the months of April and October of the monthly index

between 1982 and 1995 is reported. For 2004, March data are reported from PRS (2004). Lower scores indicate higher levels of corruption. The original scale of this variable ranges from 0 to 6 but, following La Porta et al. (1998), this paper normalizes all ICRG data to a 0-10 scale in 2004 data.

Investment Profile: This is an assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponents, Contract Viability/Expropriation, Profits Repatriation and Payment Delays. March data are reported from PRS (2004).

Risk of Expropiation: The PRS assessment of the risk of "outright confiscation" or "forced nationalization." Average of the months of April and October of the monthly index from 1982 to 1995. Scale from 0 to 10, with lower scores for higher risks. This variable was published from 1982 to 1997. At the end of 1997, the editor for ICRG changed the methodology and stopped including this assessment.

Risk of Contract Repudiation: ICR's assessment of the "risk of a modification in a contract taking the form of a repudiation, postponement, or scaling down" due to "budget cutbacks, indigenization pressure, a change in government, or a change in government economic and social priorities." Average of the months of April and October of the monthly index between 1982 and 1995. Scale from 0 to 10, with lower scores for higher risks. This variable was published from 1982 to 1997. At the end of 1997, the editor for ICRG changed the methodology and stopped including them.

Rating of Accounting Standards: Index created by examining and rating companies' 1990 annual reports according to their inclusion or omission of 90 items. These items fall into seven categories: general information, income statements, balance sheets, funds flow statement, accounting standards, stock data and special items. A minimum of three companies in each country was studied. The companies represent a cross-section of various industry groups where industrial companies numbered 70 percent, while financial companies represented the remaining 30 percent.

Legality in 1998 and in 2004: Index created by Berkowitz, Pistor and Richard (2003) combining ICRG Rule of Law variables. The index is defined as .381*(Efficiency of the Judiciary) + .5778* (Law and Order) + .5031* (Corruption) + .3468* (Risk of Expropriation) + .3842* (Risk of Contract Repudiation). Reported for 1998 using La Porta et al. (1998) data. The

value for 2004 updates Corruption, and Law and Order with the corresponding readings from ICRG (2004).

Enforcement of Insider Trading Regulations: Equals one if there are insider-trading laws established in the exchange and there was a prosecution under these laws. Equals zero otherwise. This variable comes from the answer given by national regulators and officials of all stock markets in the world to a questionnaire sent in March 1999 by Bhattacharya and Daouk (2002, Table 1, Column 8).

Table A7. Summary of Investor Protection Variables in Sample Relative to the La Porta et al. (1998) Sample

Panel A: Shareholder Rights

	Present Sample (without United States)									U.S.	LLSV Sample		Mean by Legal Origin for LLSV Sample				LLSV SD / Samp SD
	Arg	Bra	Chi	Col	Mex	Per	Ven	Mean	SD		Mean	SD	English Origin	French Origin	German Origin	Scandinav Origin	
Shares Not Blocked before Meeting	0	1	1	1	0	1	1	0.71	0.49	1	0.71	0.46	1	0.57	0.17	1	0.94
Cumulative Voting or Proportional Representation	1	0	1	1	0	1	0	0.57	0.53	1	0.27	0.45	0.28	0.29	0.33	0	0.83
Oppressed Minorities Mechanism	1	1	1	0	0	0	0	0.43	0.53	1	0.53	0.50	0.94	0.29	0.5	0	0.94
Preemptive Right to New Issues	1	0	1	1	1	1	0	0.71	0.49	0	0.53	0.50	0.44	0.62	0.33	0.75	1.03
Mandatory Dividend	0	0.50	0.30	0.50	0	0	0	0.19	0.24	0	0.05	0.14	0	0.11	0	0	0.56
Ownership Concentration: Three Largest Shareholders (Median)	0.55	0.63	0.38	0.68	0.67	0.57	0.49	0.57	0.11	0.12	0.45	0.16	0.42	0.55	0.33	0.33	1.49
One Share-One Vote	0	1	1	0	0	1	0	0.43	0.53	0	0.22	0.42	0.17	0.29	0.33	0	0.79
Antidirector Rights	4	3	5	3	1	3	1	2.86	1.46	5	3.00	1.31	4	2.33	2.33	3	0.89
Percentage of Share Capital to Call an Extraordinary Shareholder Meeting	0.05	0.05	0.10	0.25	0.33	0.20	0.20	0.17	0.11	0.10	0.11	0.07	0.09	0.15	0.05	0.1	0.64

Panel B: Rule of Law

	Present Sample (without United States)									U.S.	LLSV Sample		Mean by Legal Origin for LLSV Sample				LLSV SD / Samp SD
	Arg	Bra	Chi	Col	Mex	Per	Ven	Mean	SD		Mean	SD	English Origin	French Origin	German Origin	Scandinav Origin	
Efficiency of Judicial System	6	5.75	7.25	7.25	6	6.75	6.50	6.50	0.61	10	7.67	2.05	8.15	6.56	8.54	10	3.35
Rule of Law in 1998 (From La Porta et al., 1998)	5.35	6.32	7.02	2.08	5.35	2.50	6.37	5	1.95	10	6.85	2.63	6.46	6.05	8.68	10	1.35
Rule of Law in 2004 (Law & Order from ICRG)	2.50	2.50	8.33	1.67	5	5	1.67	3.81	2.45	8.33	6.63	2.76					1.13
Corruption in 1998 (from La Porta et al., 1998)	6.02	6.32	5.30	5	4.77	4.70	4.70	5.26	0.66	8.63	6.90	2.29	7.06	5.84	8.03	10	3.45
Corruption in 2004 (from ICRG, 2004)	4.17	3.33	4.17	5	3.33	4.17	2.50	3.81	0.81	8.33	5.29	2.27					2.79
Investment Profile(from ICRG, 2004)	4.58	6.67	9.58	7.08	9.58	6.67	3.33	6.79	2.33	9.58							
Risk of Expropiation	5.91	7.62	7.50	6.95	7.29	5.54	6.89	6.81	0.80	9.98	8.05	1.59	7.91	7.46	9.45	9.66	1.99
Risk of Contract Repudiation	4.91	6.30	6.80	7.02	6.55	4.68	6.30	6.08	0.92	9	7.58	1.79	7.41	6.84	9.47	9.44	1.95
Rating on Accounting Standards	45	54	52	50	60	38	40	48.43	7.87	71	60.93	13.40	69.62	51.17	62.67	74	1.70
Legality in 1998	12.34	14.09	14.70	11.59	12.82	10.10	13.33	12.71	1.55	20.85	16.05	4.32	15.98	14.15	19.22	21.60	2.78
Legality in 2004	9.76	10.38	14.89	11.35	11.90	11.28	9.51	11.29	1.81	19.74							
Enforcement of Insider Trading Regulations	1	1	1	0	0	1	0										

Table A8. Breakdown of Announcements by Type and Category

The panels in this table present the distribution of the 1,247 Corporate Announcements (corresponding to 264 securities) grouped by category of the announcement and country, industrial sector, security type, ADR status, and intra-exchange volume quintile, respectively.

Country	Number of Tickers	Earnings	Cash Div.	Acquisit.	Divest.	Total	Announc. per Ticker
Argentina	38	95	15	5		115	3.0
Brazil	136	360	259	74	28	721	5.3
Chile	44	119	71	21	7	218	5.0
Mexico	46	124	41	20	8	193	4.2
Total	**264**	**698**	**386**	**120**	**43**	**1,247**	4.7

Industrial Sector	Number of Tickers	Earnings	Cash Div.	Acquisit.	Divest.	Total	Announc. per Ticker
Basic Materials	46	117	72	21	12	222	4.8
Communications	53	157	79	39	8	283	5.3
Consumer, Cyclical	25	70	26	6	2	104	4.2
Consumer, Non-Cyclical	29	69	50	21	4	144	5.0
Diversified	12	32	16	6	4	58	4.8
Energy	10	20	10	11	1	42	4.2
Financial	29	76	62	6	4	148	5.1
Industrial	26	62	27	2		91	3.5
Utilities	34	95	44	8	8	155	4.6
Total	**264**	**698**	**386**	**120**	**43**	**1,247**	**4.7**

Security Type	Number of Tickers	Earnings	Cash Div.	Acquisit.	Divest.	Total	Announc. per Ticker
Common Stock	163	428	193	62	26	709	4.3
Preferred Stock	101	270	193	58	17	538	5.3
Total	**264**	**698**	**386**	**120**	**43**	**1,247**	**4.7**

ADR Status	Number of Tickers	Earnings	Cash Div.	Acquisit.	Divest.	Total	Announc. per Ticker
ADR	65	164	112	44	16	336	5.2
ADR Underlying	64	184	101	44	16	345	5.4
Co has ADR not UDL	34	97	54	11	7	169	5.0
Just Home	101	253	119	21	4	397	3.9
Total	**264**	**698**	**386**	**120**	**43**	**1,247**	**4.7**

Volume Quintile	Number of Tickers	Earnings	Cash Div.	Acquisit.	Divest.	Total	Announc. per Ticker
1st Quintile (Highest Vol.)	66	180	111	52	19	362	5.5
2nd Quintile	48	137	84	20	6	247	5.1
3rd Quintile	53	136	77	22	5	240	4.5
4th Quintile	53	129	68	14	5	216	4.1
5th Quintile (Lowest Vol.)	44	116	46	12	8	182	4.1
Total	**264**	**698**	**386**	**120**	**43**	**1,247**	**4.7**

Table A9. Informed Trading Probability Around Corporate Announcements (Event window is 10 trading-days long)

$$ITP_{ikt} = \alpha_0 + \boldsymbol{\alpha}'\mathbf{Z}_i + \left(\beta_0 + \boldsymbol{\beta}'\mathbf{Z}_i\right) I_{it}^{PERIODIC\ -PRE} + \left(\gamma_0 + \boldsymbol{\gamma}'\mathbf{Z}_i\right) I_{it}^{PERIODIC\ -POST}$$

$$+ \left(\delta_0 + \boldsymbol{\delta}'\mathbf{Z}_i\right) I_{it}^{APERIODIC\ -PRE} + \left(\phi_0 + \boldsymbol{\varphi}'\mathbf{Z}_i\right) I_{it}^{APERIODIC\ -POST} + \nu_{ikt}$$

$$i=1,...,266;\ k=1,...,K_i\ ;\ t = 1, \ldots, T_i$$

This table shows the results of an event study analyzing the behavior of informed trading probability (ITP) around corporate announcements controlling for volume, country, industrial sector, security type, and ADR status of each stock. The dependent variable is ITP (in percentage points) estimated during a control, a pre-announcement and a post-announcement period relative to each announcement date. Each estimation period is 10 trading-days long. *Iit* is an indicator function that equals 1 on those days *t* (whose data are used to compute the ITP of the kth announcement of stock i) that fall in the range of *I'*s superscript. Periodic announcements comprise earnings and cash dividends news, while aperiodic ones consist of acquisitions and divestiture reports. The top row reports the intercept coefficients: *a* 0 is the average ITP during the control period, *b* 0 shows how different is ITP during the pre-periodic announcement period relative to the control period, *g* 0 shows the gap between ITP during post-periodic announcement days and control days, etc. The vector *Zi* contains dummies for every possible category within a classification. Thus, in each column of the table, the coefficient on each line shows the difference between the behavior of the average stock in that category and that of the overall average stock during the corresponding event period (Suits, 1984). The model is estimated by OLS, so the mean ITP during the sample of a 2nd Quintile-volume Chilean common stock from the utilities sector that just trades at home was 20.7 percent during the control period, rising to 21.6 percent before a periodic announcement and falling back to 21.2 percent after the announcement. The data are drawn from the universe of announcements made from October 29, 2003 to October 8, 2004, as recorded in Bloomberg, a total of 1,437 announcements from 266 stocks. Venezuela, Colombia, and Peru are excluded to avoid small sample bias. Standard errors are in parenthesis. * indicates significance at 10% level, ** at 5% and *** at 1%.

Explanatory Variable	**CONTROL PERIOD**	**PERIODIC ANNOUNC.**		**APERIODIC ANNOUNC.**	
		PRE	**POST**	**PRE**	**POST**
Intercept Effect in Each Window (α_0, β_0, γ_0, δ_0, ϕ_0)	**21.5** ***	**0.6** ***	**-0.7** ***	**-2.1** ***	**-2.5** ***
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
1st Quintile (Highest Vol.)	**-6.0** ***	**-1.2** ***	**-0.1**	**1.1** ***	**-0.8** **
	(0.2)	(0.2)	(0.2)	(0.4)	(0.4)
2nd Quintile	**-4.2** ***	**0.4** **	**0.9** ***	**3.6** ***	**-0.7**
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
3rd Quintile	**1.1** ***	**-0.3**	**-0.3**	**-0.6**	**-0.1**
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
4th Quintile	**1.6** ***	**1.3** ***	**2.0** ***	**2.0** ***	**1.6** ***
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
5th Quintile (Lowest Vol.)	**7.5** ***	**-0.2**	**-2.5** ***	**-6.1** ***	**0.0**
	(0.2)	(0.3)	(0.3)	(0.6)	(0.6)

Table A9., continued

Explanatory Variable	CONTROL PERIOD	PERIODIC ANNOUNC.		APERIODIC ANNOUNC.	
		PRE	POST	PRE	POST
Argentina	**0.9** ***	**0.7** **	**-0.1**	**0.3**	**-3.0** ***
	(0.2)	(0.3)	(0.3)	(0.8)	(0.8)
Brazil	**-2.5** ***	**-1.2** ***	**0.5** *	**2.7** ***	**2.2** ***
	(0.2)	(0.3)	(0.3)	(0.5)	(0.6)
Chile	**3.2** ***	**0.4**	**0.4**	**-2.6** ***	**-2.3** ***
	(0.2)	(0.2)	(0.2)	(0.5)	(0.5)
Mexico	**-1.5** ***	**0.1**	**-0.9** ***	**-0.4**	**3.1** ***
	(0.2)	(0.3)	(0.3)	(0.5)	(0.5)
Basic Materials	**-0.2**	**0.7** ***	**-0.3**	**-1.5** ***	**0.7**
	(0.2)	(0.3)	(0.3)	(0.6)	(0.6)
Communications	**-1.2** ***	**0.3**	**-0.3**	**-0.5**	**1.7** ***
	(0.2)	(0.3)	(0.3)	(0.5)	(0.5)
Consumer, Cyclical	**-0.6** **	**-0.5**	**0.7** **	**7.5** ***	**-3.2** ***
	(0.3)	(0.4)	(0.4)	(0.9)	(0.9)
Consumer, Non-Cyclical	**0.7** ***	**0.9** ***	**1.1** ***	**-5.2** ***	**-0.6**
	(0.3)	(0.3)	(0.3)	(0.6)	(0.7)
Diversified	**1.8** ***	**-3.1** ***	**-2.0** ***	**3.1** ***	**-4.6** ***
	(0.4)	(0.5)	(0.5)	(1)	(1)
Energy	**-0.4**	**1.0** *	**0.1**	**-3.4** ***	**4.5** ***
	(0.4)	(0.6)	(0.6)	(0.9)	(0.9)
Financial	**0.0**	**1.0** ***	**0.9** ***	**-3.5** ***	**1.0**
	(0.2)	(0.3)	(0.3)	(0.6)	(0.6)
Industrial	**0.8** **	**-0.9** **	**0.3**	**6.1** ***	**-3.1**
	(0.3)	(0.4)	(0.4)	(2)	(2.1)
Utilities	**-0.8** ***	**0.4**	**-0.4**	**-2.6** ***	**3.6** ***
	(0.2)	(0.3)	(0.3)	(0.7)	(0.7)
Common Stock	**0.1**	**-0.8** ***	**0.1**	**2.3** ***	**0.0**
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
Preferred Stock	**-0.1**	**0.8** ***	**-0.1**	**-2.3** ***	**0.0**
	(0.1)	(0.2)	(0.2)	(0.3)	(0.3)
ADR	**-1.7** ***	**-0.7** ***	**-0.3**	**0.8** **	**-0.2**
	(0.2)	(0.2)	(0.2)	(0.4)	(0.4)
ADR Underlying	**0.0**	**-0.4** **	**-0.5** **	**-0.4**	**-1.2** ***
	0.2	0.2	0.2	0.4	0.4
Co. has ADR, not UDL	**0.8** ***	**1.2** ***	**0.5** *	**-2.9** ***	**-4.4** ***
	0.2	0.3	0.3	0.6	0.7
Home Only	**1.0** ***	**-0.1**	**0.2**	**2.6** ***	**5.8** ***
	0.2	0.2	0.2	0.5	0.5