

Revealing shorts: An examination of large short position disclosures*

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ABSTRACT

As a policy response to the recent financial crisis, France, Spain and the United Kingdom now require the disclosure of large short positions. We analyze these disclosures and the possibility of a triggering effect where one disclosure is followed by further disclosures in the same stock. The results are nuanced, but the bulk of the evidence suggests that short sale disclosures do not, in themselves, have unintended negative consequences. In our analysis, we find significant cumulative abnormal returns of -1.78% immediately following a short position disclosure. When the short position is associated with a rights issue, cumulative abnormal returns over the 30 days following a short position disclosure are -10.23%. This stock price effect is permanent, suggesting that disclosers are not manipulative but are simply well-informed, a finding consistent with Diamond and Verrecchia (1987). Outside of rights issues, we find that short position disclosures have little effect on share prices. Across the board, we find significant follow-on shorting activity: a large short position disclosure makes it much more likely that there will be another disclosure within a month in the same stock by a different short seller. Follow-on shorting is more likely when the initial discloser is large, and when follow-on disclosers are geographically close to the initial discloser. However, we find no evidence that total short interest increases after a disclosure, and we conclude that disclosures are not used as a signal for shorts to start piling on to drive down share prices. These findings shed light on the potential effects of short-sale disclosure regulation under consideration by the US Securities and Exchange Commission and by European regulators.

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1. Introduction

Although most academic research argues that short sellers improve market efficiency and stabilize share prices, policymakers, journalists, and company executives worry that short sellers may employ abusive trading strategies and damage investor confidence.^{1,2} In response, regulators have historically enacted rules that limit or discourage certain short sales.³

In contrast, disclosure has recently emerged as an alternative policy response. For example, in May 2011, the US Securities and Exchange Commission asked for input on a wide variety of potential short sale disclosure rules (release No. 34-64383) ranging from immediate disclosure of all short sales to the disclosure of large short positions, and a pan-European short sale disclosure rule began in November 2012. The hope of regulators is that the sunlight of disclosure discourages abusive short selling. However, theory suggests that short sale disclosures could do more harm than good. One possible negative consequence of such regulation is that disclosure could provide a coordination mechanism for manipulative short sellers.⁴

The UK, France and Spain recently implemented rules that require that short sellers publicly disclose large short positions. Under the UK disclosure regime, for example, any short seller with a short position exceeding 0.25% of the shares outstanding in certain stocks is

¹ See, for example, Dechow, Hutton, Meulbroek and Sloan (2001); Abreu and Brunnermeier (2002); Alexander and Peterson (2008); Boehmer, Jones and Zhang (2008); Boehmer and Wu (2013) and Diether, Lee and Werner (2009).

² For examples see “There’s a Better Way to Prevent ‘Bear Raids’” by R. Pozen and Y. Bar-Yam, *The Wall Street Journal*, 18 November 2008; “Anatomy of the Morgan Stanley Panic” by S. Pulliam et al., *The Wall Street Journal*, 24 November 2008; as well as Gerard and Nanda (1993), Brunnermeier and Pedersen (2005) and Goldstein and Guembel (2008).

³ Recent bans and restrictions are analyzed in Kolasinski, Reed and Thornock (2013); Boehmer, Jones and Zhang (2013); Battalio and Schultz (2011) and Beber and Pagano (2013), among others.

⁴ See Brunnermeier and Oehmke (2013) for a model where short sellers can force a vulnerable financial institution to liquidate assets at fire-sale prices. They argue that since their model has multiple equilibria, public disclosure may facilitate coordination by predatory short sellers.

required to publicly disclose the size of the short position, and subsequent disclosure is required if a short position changes by 0.1% of shares outstanding or more.

In this paper, we analyze the effects of the disclosure regime and the effects of the disclosures themselves. The key database we employ is a collection of short selling disclosures. This database comprises 654 unique disclosed short sale positions for the UK, France and Spain. Each disclosure includes the date of the disclosure, the name of the short seller, the name of the instrument being sold short and the size of the short position. This type of short selling data is fundamentally different from other types of short selling data. Data that have been examined in the past include short interest, market-wide shorting volume, and equity loan and settlement information (e.g., Asquith, Pathak and Ritter (2005); Boehmer, Jones and Zhang (2008) and Geczy, Musto and Reed (2002)). The database used here is the first publicly available database to show short positions at the individual short seller level. It is also the first to show the evolution of individual short positions over time, and it is the first to include the identity of the short seller.

There are several main results. First, the new disclosure requirements do not seem to affect overall shorting activity. There are no discernible changes in short interest when the short position disclosure policy comes into effect. When we look at individual disclosures, we find rich trading and share price behavior before and after the disclosure, but, on balance, we conclude that disclosures are not used as a signal to pile on, and we do not find any other evidence of manipulation. Instead, our results are consistent with the idea that large short sellers are simply well-informed.

We find that in the full sample of disclosed stocks, abnormal returns are significantly negative around the period of disclosure. Specifically, we compare the return of each disclosed

stock to the return of that stock's industry benchmark, and we find that the three-day cumulative abnormal return around the disclosure is -1.78%, significant at the 5% level. Over longer periods, short position disclosers seem to be well informed. The average daily return difference from the day of the disclosure until the tenth trading day after the disclosure is -0.25% (a cumulative abnormal return of -2.75%). Furthermore, we show that returns from a hypothetical trading strategy designed to capture this return pattern would likely be profitable, especially at the beginning of the period.

The UK disclosure regime applies to financial stocks and stocks undergoing a rights issue. It is important to look at rights issues separately because rights issue announcements, in themselves, may affect returns and because rights issues may generate different incentives for short sellers. We find that the magnitude of the return pattern is largest in the rights issue subsample. For example, in the 30-day period following the disclosure, the average daily return is -0.33%, for a cumulative abnormal return of -10.23%. In contrast, in the sample without rights issues, there is no statistically significant effect. In other words, the return pattern in the overall sample is driven by the sample of stocks with rights issues.

It is unsurprising that rights issues announcements, like other equity offerings, are associated with negative returns (e.g., Slovin, Sushka and Lai (2000)). In fact, Henry and Koski (2010) find that short sellers may push prices below fundamental values in US seasoned equity offerings. However, we find no evidence that short sale disclosures are driving down share prices of firms with rights issues. We find, for example, that the presence of a short position disclosure is not related to stock returns during the rights issue. Post-rights issue stock price behavior also points away from manipulation. If short sellers are temporarily driving share prices below fundamental value, we should see a share price reversal once the rights issue is

complete. We do not see any evidence of a share price bounceback. In the 60 days following completion of a rights issue with a short position disclosure, the mean CAR is an insignificant 1.27%. Thus, it does not appear that short sale disclosures push stock prices down during these European rights issues.

Beyond return effects, it is important to look at other trading statistics to understand whether disclosure drives abusive behavior. Our data also allow us to investigate short-selling behavior before and after a disclosure. In the days prior to the disclosure, we find an increase in short interest as the short sale discloser obtains its position. Similarly, we find increases in the number of active lenders and the number of loans. As would be expected from this increase in demand to borrow, we find an increase in the cost of borrowing. It is interesting to note that this short activity does not change significantly at or after the time of the disclosure; instead, the significant changes come before the disclosure. This finding is consistent with the idea that information is driving the short activity, not the disclosure.

Given that short sellers' trades are profitable (e.g., Asquith, Pathak and Ritter (2005); Boehmer, Jones and Zhang (2008) and Boehmer, Huszar and Jordan (2010)) and given the return finding described above, it is natural to expect market participants to respond to disclosures by shorting disclosed stocks after the public disclosure is made. However, if disclosures drive more disclosures, there would be cause for concern. Regulators have worried that disclosures of short positions could be a coordination device allowing willing short sellers to act together.

To investigate this possibility, we use a logit specification to characterize the probability of a disclosure. Using this approach, we find that the existence of a recent disclosure is a strong predictor of a disclosure today. In other words, after controlling for a number of other factors

that are likely to drive disclosures, the presence of a short position disclosure significantly increases the probability of another follow-on disclosure.

Given the fact that disclosures are clustered in this way, we consider how various characteristics of a disclosure can affect the probability of future disclosures. Specifically, we investigate the reputation of disclosing short sellers. Intuitively, if subsequent short sellers are responding to the presence of a disclosed short position (and not just fundamental information about the firm), then we would expect the response to be stronger if the disclosing short seller has a good reputation. We do in fact find that reputation is a significant driver of subsequent disclosures. A stock with a disclosure made in the past five trading days by a short seller with high assets under management is significantly more likely to experience a disclosure by another short seller on a given trading day. Similarly, we find that follow-on disclosures by others are more likely when the initial disclosed position is larger.

To further understand the link between disclosures and short selling, we also examine the geography of short sellers. Disclosures made by short sellers in New York and London are more likely to be followed by another disclosure, and short sellers with addresses that are close to other short sellers' addresses are more likely to be followed. In fact, follow-on short sellers tend to be located closer to the initial short seller than other short sellers. These clustered short sellers could be communicating with each other directly, or they could independently obtain correlated signals. Regardless of the exact channel, geographical proximity seems to matter.

On its face, this finding that one disclosure drives further disclosures appears inconsistent with the other main findings because it indicates that disclosure, not information, is driving short sales. However, the evidence does not indicate that short sellers are ganging up on a stock and driving down the share price. On the contrary, we find that overall short interest does not

increase following a disclosure. In fact, there is little change in any of our share lending metrics following a disclosure. Overall, we conclude that there do not appear to be any deleterious unintended consequences associated with the UK, French, and Spanish short position disclosure regimes.

The remainder of this paper proceeds as follows. Section 2 discusses related literature, and Section 3 discusses the disclosure regime details for each of the three jurisdictions. Section 4 describes the databases and the construction of our variables. Section 5 presents our analyses and findings, and Section 6 concludes.

2. Related literature

There are strong theoretical reasons to expect short sellers to contribute to the informativeness of prices. Diamond and Verrecchia (1987) argue that short sellers are more likely to be informed because they do not have use of the sale proceeds, though they may use short sales to hedge other risks. Miller (1977), Harrison and Kreps (1978) and Duffie, Garleanu and Pedersen (2002) show that prices can be above fundamental values when short selling is constrained. Empirical evidence almost uniformly finds that overpricing is reduced when short selling constraints are relaxed (e.g., Danielsen and Sorescu (2001); Jones and Lamont (2002); Cohen, Diether and Malloy (2007)). Similarly, Saffi and Sigurdsson (2011) find that stocks with tighter short-sale constraints have lower price efficiency.

Short sellers anticipate future returns. For example, Boehmer, Jones and Zhang (2008) find that heavily shorted stocks underperform lightly shorted stocks over the following month, and Diether, Lee and Werner (2009) find that short sellers are contrarian, though Blau, Van Ness, Van Ness and Wood (2010) find some intraday evidence of momentum trading by short

sellers. Christophe, Ferri and Angel (2004) and Boehmer, Jones and Zhang (2013) find that daily flows of short sales are concentrated prior to disappointing earnings announcements, analyst forecast revisions and analyst downgrades, which suggests short sellers have access to private information about fundamentals, while Engelberg, Reed and Ringgenberg (2010) find that short sellers trade around negative news releases.

Several theoretical papers explore the possibility that short sellers might drive share prices below fundamental value, which could account for at least some of the relationship between short sales and future returns. In Goldstein and Guembel (2008), aggressive short selling may depress a company's share price and distort the company's investment decision, thereby harming its fundamental value. Brunnermeier and Pedersen (2005), Carlin, Lobo and Viswanathan (2007) and Attari, Mello and Ruckes (2005) model predatory trading involving sellers (including short sellers) profitably exploiting investors that have a need to exit long positions or undercapitalized arbitrageurs. This type of trading would lead to return reversals. Allen and Gale (1992) and Aggarwal and Wu (2006) present theoretical and empirical evidence of "pump-and-dump" manipulation. A similar "bear raid" strategy could be used on the short side. Some market observers and participants have worried recently that these strategies may have worsened stock market volatility during the most recent financial crisis.⁵

Manipulative short selling is a particular concern around secondary equity offerings (SEOs). For example, Safieddine and Wilhelm (1996) and Corwin (2003) investigate rule changes in the US designed to curtail manipulative short selling around SEOs.⁶ Particularly relevant for this paper is Henry and Koski (2010), who examine daily US short selling data

⁵ For example, see "There's a Better Way to Prevent 'Bear Raids'" by R. Pozen and Y. Bar-Yam, *The Wall Street Journal*, 18 November 2008; "One way to stop bear raids" by G. Soros, *The Wall Street Journal*, 23 March 2009; and "Blame the bear raids" by T. Brennan, CNBC, 20 March 2008.

⁶ SEC Rule 10b-21, adopted in 1988, and its replacement Rule 105, adopted in April 1997 as part of Regulation M, limit short sales and subsequent securities purchases around an SEO.

around SEO pricing dates. In SEOs that are not part of a shelf registration and thus take longer to execute, they find that more short selling prior to the issue date is associated with larger issue discounts and the price moves are later reversed, consistent with manipulative short selling. Suzuki (2010) studies Japanese SEOs, where no such shorting restrictions exist. Kim and Masulis (2011) study trading behavior around the SEO issue date and find that underwriter market-making activity explains the heavily negative returns after the SEO.⁷

Empirical evidence of manipulative short sales is sparse outside of SEOs. Shkilko, Van Ness and Van Ness (2012) examine stocks that experience large negative intraday price moves followed by a reversal before the end of the day. They find aggressive short sales during the price decline period (though long sellers are even more aggressive than short sellers), and they suggest that short sellers may occasionally engage in predatory trading. Blocher, Engelberg and Reed (2009) find increased levels of short selling in the last hour of the last trading day of the year for stocks that have large short interest. The short selling is accompanied by poor returns and subsequent reversals at the beginning of the year, consistent with year-end manipulation by fund managers holding short positions.

Beyond the short position disclosures that we study here, there are other public releases of information about short sales, notably the twice per month release of short interest information in the US. Asquith, Pathak and Ritter (2005) find that short interest predicts returns only in the smallest stocks and report that the effect is stronger in stocks with low institutional ownership. Desai, Ramesh, Thiagarajan and Balachandran (2002) find that high short interest predicts negative returns in Nasdaq stocks, and Boehmer, Huszar and Jordan (2010) find that low short

⁷ In a related set of results on Initial Public Offerings (IPOs), Edwards and Hanley (2010) find that short sales are not as important to IPO pricing as suggested by the literature.

interest predicts high future returns. However, the relationship between high short interest and future returns is much weaker.

Long position disclosure rules have been in place longer and have been well studied. For example, Brav, Jiang, Partnoy and Thomas (2008) examine Schedule 13D filings in the US by activist hedge funds that disclose ownership stakes of at least 5%. They find average returns of around 2% associated with the disclosure, with an additional upward drift of about 2% over the next month, but they argue that these are associated with shareholder value creation rather than stock picking ability.

Examples of papers that study UK rights issues include Levis (1995); Slovin, Sushka and Lai (2000) and Ho (2005). Levis (1995) mainly studies young firms that return to the market following an IPO. Ho (2005) finds that there is little long-term equity underperformance following rights issues, while Slovin, Sushka and Lai (2000) find a rights announcement effect of -3.09%. Eckbo and Masulis (1992) develop theory that implies rights issues should have no effect on share price, since existing shareholders receive the rights. They study a small sample of US rights issues and find insignificantly negative stock price announcement effects.

Finally, our work is also related to the literature on institutional herding. For example, Sias (2004) finds that institutions follow each other's trades at quarterly horizons, and Puckett and Yan (2011) show herding at weekly frequencies.

3. Disclosure regimes in the UK, France and Spain

The short position disclosure requirements that we study were adopted at different times in the three countries and differ in some details, but they are broadly similar. All three countries have a minimum position size threshold, all three countries require additional disclosures if the

short position grows substantially or shrinks below the threshold, and all three countries require disclosure of the position and the identity of the position holder one business day after the threshold is reached. In addition, all three countries require short sellers to include positions in equity derivatives on a delta-adjusted basis, including options and total-return swaps, but do not mandate consideration or disclosure of bond or credit-default swap positions. Positions in ADRs and cross-border listings in other jurisdictions are not subject to disclosure.

3.1. United Kingdom

Effective June 20, 2008, the UK Financial Services Authority (FSA) instituted a short position disclosure regime in stocks undergoing rights issues. On September 19, 2008, the FSA banned short selling in financial stocks and expanded the disclosure regime to include financial stocks. About four months later, on January 16, 2009, the FSA lifted the short sale ban on financial stocks, but kept and clarified the short position disclosure requirements.⁸ During our 2009-2011 sample period, the disclosure requirements in the UK apply to financial sector stocks as well as any stock in a rights issue period.

In the UK during our sample period, any short seller with a short position exceeding 0.25% of the shares outstanding is required to publicly disclose the size of the short position, and subsequent disclosure is required if a short position changes by 0.1% of shares outstanding or more. The disclosures are required by 3:30 PM on the business day following the first day on which the position reaches, exceeds or falls below the disclosure thresholds. The disclosures

⁸ See FSA press release FSA/PN/057/2008 dated 13 Jun 2008, the FSA's policy statement "Temporary short selling measures," January 2009, http://www.fsa.gov.UK/pubs/policy/ps09_01.pdf and "FSA confirms extension of short selling disclosure regime," release FSA/PN/009/200, January 14, 2009, "<http://www.fsa.gov.UK/pages/Library/Communication/PR/2009/009.shtml>".

require the name of the person who has the position, the amount of the position and the name of the company in which it has the position.

3.2. France

In September 2008, the French securities regulator Autorité des Marchés Financiers (AMF) issued temporary rules mandating the disclosure of short positions in French financial stocks.⁹ However, since short sales in those stocks were banned at the same time, there were virtually no disclosures of new short positions thereafter. On February 1, 2011, the ban on shorting financial stocks was allowed to lapse, and a permanent disclosure regime came into effect for all French stocks. Short positions of at least 0.50% of shares outstanding must be reported by the next day and are published on the AMF website. Additional thresholds are at 0.1% intervals (0.60% of shares outstanding, 0.70%, 0.80% and so on), and subsequent disclosures are required every time the position crosses one of these thresholds. A final disclosure is also required when the short position falls below the 0.50% threshold. The short position disclosure rules cover all issuers trading on Euronext Paris or Alternext Paris, except firms for which the French market is not the principal trading market. Derivative positions must be included in calculating the discloser's net short position. Bona fide market-makers can apply in advance for an exemption from the short position disclosure requirements.¹⁰

3.3. Spain

Spain also adopted short position disclosure rules for 20 financial stocks in September 2008. As of June 10, 2010, changes were made to the thresholds, and the disclosure regime was

⁹ AMF News Release dated September 19, 2008.

¹⁰ Additional details on the French disclosure requirements can be found in AMF Implementing Instruction 2010-08 of November 9, 2010, available at http://www.amf-france.org/documents/general/9738_1.pdf.

expanded to all Spanish stocks. The disclosure rules thereafter are similar to those of France. The Spanish regulator Comisión Nacional del Mercado de Valores (CNMV) publishes individual short positions that are at least 0.50% of shares outstanding with additional thresholds at 0.1% intervals, just as in France. During our sample period, the main difference from the French regime is that those shorting Spanish stocks must report all positions of at least 0.20% of shares outstanding. The CNMV reports the aggregate amount of all short positions that are between 0.20% and 0.50% of shares outstanding, but does not publish any details about the individual short positions in this size category.

4. Data

We employ several databases in this study, some novel and some familiar. The key database is a collection of short selling disclosures. We also use a database on the European securities lending market, and we obtain several measures of hedge fund reputation from 13F filings to the SEC. In what follows, we describe the sets of data used in this study in more detail.

4.1. Disclosure Data

We obtain a record of 654 unique disclosed short sale positions from 1,682 disclosure announcements from the beginning of the disclosure regime to June 30, 2011, for the three countries, the UK, France and Spain.¹¹ The database has several pieces of information about each disclosure, including the date of the disclosure, the name of the short seller, the name and ISIN of the instrument being sold short and the percentage of shares outstanding being sold

¹¹ Specifically, the disclosure regimes for the UK, France and Spain begin on January 17, 2009, February 2, 2011 and June 10, 2010, respectively. A short selling ban was in place in the UK between September 18, 2008 and January 16, 2009. We restrict our analysis to exclude this period to avoid any confounding effects from the shorting ban.

short.¹² We obtain the UK portion of this database from Data Explorers, which collects the disclosure information from publicly available news sources. We have hand checked a small sub-sample (2% of the announcements) of the database against the London Stock Exchange's regulatory news database, and we find no discrepancies.¹³ We also validate the UK disclosures by checking that the disclosed short position is below the number of shares borrowed in the UK's CREST database.¹⁴ Disclosure announcements for France and Spain are hand collected from the website of the regulatory body governing the disclosure regime.

Figure 1 presents an example of a UK disclosure announcement retrieved from the Bloomberg newswire. In this example, Millennium Partners, L.P. disclosed a short position of 0.16% shares outstanding in Old Mutual, PLC, (LSEX Ticker: OML) on March 24, 2009, the day after the threshold of 0.25% was crossed from above. This disclosure closes out the position held by Millennium Partners, L.P., for the purpose of our study, and such final disclosures make it possible to describe the life cycle of a disclosed short position. Figure 2 plots the closing price of Old Mutual, PLC, against short positions held in the security for the first three months of the UK disclosure regime. Short interest in this security stays relatively stable around 2% of shares outstanding until February 17, 2009. Two days later on February 19, 2009, Lansdowne Partners Limited discloses a short position in Old Mutual, PLC, of 0.39% of shares outstanding. The following day Diamond Master Fund, Ltd., discloses a short position of 0.32% of shares outstanding. Together, these two short positions comprise 26.4% of the total aggregate short interest in Old Mutual, PLC, as reported by CREST. On March 10, 2009, Millennium Partners,

¹² For 94% of the UK observations we also have the time at which the short sales are disclosed.

¹³ We restrict the UK sample to firms listed on the London Stock Exchange to ensure data availability and to avoid double counting positions across the countries in our sample.

¹⁴ In three cases, the disclosed short position exceeds the percentage of shares that are being lent out as reported by CREST. In the case in which this discrepancy is the greatest, the disclosed short position is 0.85% of shares outstanding and CREST only reports that 0.50% of shares are being lent out. Because there is the possibility of using swap contracts to fulfill short sale requirements in the UK and because CREST data report settled transactions as opposed to initiated short positions, we consider these observations valid.

L.P., discloses a position of 0.26% of shares outstanding. This disclosure marks the origination of the position that is closed by the announcement in Figure 1. During this period of disclosures, it is worth noting that total short interest in Old Mutual, PLC, increases to a high of 5.15% of shares outstanding, more than double the pre-disclosure level.

These disclosures provide an unusually revealing view of individual short positions summarized in Table 1. Consistent with the clustering of disclosed short positions in Old Mutual, PLC, presented in Figure 2, the average number of positions per disclosed firm ranges from 2.18 in France to over 6 in the UK, the country with the longest disclosure regime. Additional disclosures are required each time the short position crosses a designated threshold. On average, each shorter-issuer pair appears 1.75 times in the UK sample and 5.95 times in Spain. The average disclosed short position ranges from 0.47% of shares outstanding in the UK with a disclosure threshold of 0.25% of shares outstanding to 0.86% of shares outstanding in France with a disclosure threshold of 0.50% of shares outstanding.

Similarly, we see that the average holding period length of a disclosed short position exceeds 15 trading days in all three of our countries after excluding positions that are still open at the end of our sample. This metric roughly aligns with prior findings on the holding period for short positions. Boehmer, Jones and Zhang (2008) estimate that the average short position is 37 days, and Geczy, Musto and Reed (2002) find that the median equity loan length is 3 days. However, unlike the prior literature that estimates holding periods, our measure of holding period length is directly reported and subject to regulatory scrutiny. Table 1 also shows that some of the individual short positions are surprisingly large. The largest single disclosure is a short position taken by Ignis Investment Services Limited in the stock of Cookson Group, PLC, which is 9.25% of shares outstanding.

As a first glimpse into the follow-on behavior of other disclosers, Table 1 presents summary statistics on the average number of short positions originated over the (0,20)-day window following disclosure. Follow-on activity is particularly prevalent in the UK, where on average there are over five follow-on short position disclosures per stock. Many of these follow-on positions cross the disclosure threshold within the first few days following a disclosure. For example, in the UK the average disclosed position has one follow-on after 2.70 trading days and another follow-on after 4.52 trading days. Moreover, multiple follow-ons can cross the disclosure threshold on the same day. In the UK, for example, this occurs 22% of the time.

Table 2 gives some indication of the largest short sellers in the UK, France and Spain. Trafalgar Asset Managers Limited and Millennium Partners, L.P. are the most prolific short position disclosers with positions in 37 and 20 UK issues, respectively. Sell-side firms also appear as frequent disclosers, with Barclays atop the list of frequent disclosers in French firms. There is also substantial variation in the average short position held by these short sellers, ranging from 2.30% of shares outstanding to 0.29%, just above the UK regulatory threshold.

Figure 3 presents the disclosures by industry and reveals that financial firms dominate the UK data, since the disclosure regime applies only to financial firms and firms undergoing rights offerings. In Spain and France, the disclosure regime is broader, and we have data from firms in a wider variety of industries. Figure 4 charts the percentage of firms disclosed by industry and country. Despite the prevalence of disclosure announcements in UK financial firms, less than 30 percent of UK financial firms have a disclosed short position over our sample period. A much higher percentage of firms in Spain have a disclosed short position.

Our subsequent analysis focuses primarily on the initial disclosed position in each firm for more precise identification. Thus, for event studies, our sample is 127 initial disclosed positions with 57 of these disclosed positions occurring during a rights issue.

4.2. European Securities Lending Data

Securities lending data were generously provided by Data Explorers. Although they are not easily available, versions of this database have been used by a number of previous papers, including Ringgenberg (2011), Saffi and Siggurdson (2011) and Berkman and McKenzie (2012). The database contains information about short selling and short-selling constraints for stocks in the UK, France and Spain markets from January 1, 2008 through July 31, 2011. The data come from two main sources: the “wholesale” data come from securities lenders, such as custodians, who lend stock to prime brokers; the “retail” data come from borrowers, such as hedge funds, who borrow stock from prime brokers. According to Data Explorers, their “wholesale” data cover at least 80% of the equity loan transactions in the market. Data Explorers is a firm whose main product is aggregate securities lending data, which they sell to individual market participants who themselves cannot see market rates for securities loans because of the significant opacity of the market (e.g., Kolasinski, Reed and Ringgenberg (2013)).

The key short activity variables that we employ in the paper are as follows. *Daily Cost of Borrowing Score* is a variable describing the borrowing cost as reported by securities lenders. The variable is a rank variable with fixed, but unreported, bin cutoffs where rank one indicates the lowest loan fees and rank ten indicates the highest loan fee. *Concentration of Open Loans* is the Herfindahl index of loans, where zero indicates small loans across many lenders and one indicates one loan at one lender. *Percent of Lenders Active* is the number of lenders with

available inventory currently making loans divided by the total number of lenders with available inventory. *Scaled Number of Open Loans* is the number of open loans in the database divided by shares outstanding (in millions), and *Short Interest* is the number of shares outstanding currently borrowed or on loan net of double counting scaled by the total number of shares outstanding.¹⁵ These variables are measured as of the settlement day, which is three days after the trade day in our sample. We adjust the variables by three days to eliminate this settlement lag and reflect data in trade time. In other words, short interest and loan variables at time t reflect positions as of trading day t , though they will not appear in short interest or loan market databases until date $t + 3$. Sometimes it is important to ensure that short interest is an element in the public information set. When this is necessary (in Table 12 and as a criterion for our matching algorithm, for example), we do not adjust for the three-day settlement lag. For clarity, we label this variable *Short Interest at Settlement*.

4.3. Measures of Hedge Fund Reputation

In addition to the variables described above, we add a number of variables for each discloser of a short position. First, we collect the geographic location of each of the short sellers from 13F filings available on EDGAR. For firms not subject to this regulation, we supplement the EDGAR filings by hand collecting the location of the firm through web search. Using these data, we construct two measures of centrality to other disclosers. *MoneyCtr* is a dummy variable equal to one if the discloser is headquartered in New York or London and equal to zero

¹⁵ For UK stocks, we also have access to data from CREST Co, the UK's electronic settlement system. The advantage of the CREST data is that it is a market-wide clearing system, as opposed to Data Explorers, which bases its aggregates on the voluntary reporting of borrowers and lenders. Within our sample, the average ratio of shares reported borrowed/loaned by Data Explorers to shares reported borrowed/loaned by CREST is 73.79%. Moreover, short interest from Data Explorers is highly correlated with short interest from CREST, with a correlation coefficient of 0.7261.

otherwise. *Centrality* is a percentile rank based on the average pairwise distance between short sellers in our sample. Thus, a centrality measure of 0.01 would be the short seller furthest on average from other short sellers, while a centrality measure of 0.99 would be the short seller closest on average to other short sellers. We are able to find geographic location information for 98.6% of the disclosed positions in our sample and 97.7% of the short sellers in our sample.

We construct two additional measures of short seller reputation from total assets under management subject to 13F filings from EDGAR. *AUM* is the natural logarithm of the discloser's most recently reported assets under management subject to 13F filings. *PositionSize* is the dollar value of the disclosed short position divided by assets under management subject to 13F filings multiplied by 10. While *AUM* potentially understates the size of long-short or short-only hedge funds, it has the benefit of being publicly available; unlike other databases of hedge fund characteristics, disclosure is not discretionary. We are able to find performance variables for 74.9% of the disclosed positions in our sample and 75.1% of the short sellers in our sample.

4.4. Additional Data and Match Criteria

We also employ the following securities-level data. Daily stock returns and trading volume are from Yahoo! Finance;¹⁶ shares outstanding data are from Data Explorers or from DataStream where unavailable. *Share Turnover* is equal to trading volume scaled by total shares outstanding. Country-level one-digit Industry Classification Benchmark (ICB) sector indices are obtained from DataStream.¹⁷

¹⁶ For the rights issue subsample, we cross-check using Datastream to ensure that all distributions are included in returns. Also, returns are filtered to delete potentially erroneous values following Griffin, Kelly and Nardari (2010). Specifically, we delete single-day returns in excess of 200%. We also delete two-day returns in which either of the single-day returns is in excess of 100% and the two-day cumulative return is less than 20%.

¹⁷ Results are qualitatively similar using three-digit Industry Classification Benchmark (ICB) sector indices; however, these indices are often sparse with fewer than five firms in a given sector portfolio. Results using this alternative set of benchmarks are available from the authors upon request.

Our analysis investigates disclosed short positions in stocks undergoing rights issues separately from disclosed short positions in stocks without rights issues, in an effort to disentangle the effects of the announcement of a known corporate event and the disclosure announcement of a short position. We obtain a list of rights issues occurring during our sample period in our sample countries from Data Explorers. In addition to the announcement and completion dates of the rights issue, the data include two measures of rights issue quality.¹⁸ *Ratio of Rights to Total Shares* is equal to the number of rights shares divided by total shares outstanding at the announcement date. *Discount to Share Price* is the difference in price between the share price and the rights price at announcement scaled by share price. Of the 86 rights issues we obtain, 57 have the disclosure of a short position occurring within the window between the announcement and the completion date. The other 29 rights issues without a disclosed short position comprise our sample of undisclosed rights issues.

For subsequent analysis, we match each disclosed firm to a control firm that did not undergo a rights issue and did not have a disclosed short position over our sample period. We select a control firm in the same country as the disclosed firm by minimizing the sum of the squared differences between the disclosed firm and the control firm as of the disclosure date for four match criteria: percentile *Short Interest at Settlement*,¹⁹ percentile *Market Capitalization*, percentile *Share Turnover* and percentile *Change in Short Interest at Settlement* over the past month (22 trading days). Percentiles are calculated each trading day and for each country.

Table 3 presents summary statistics for the match criteria and short activity measures for both the disclosed group and the control group. We find no significant differences in mean

¹⁸ For uncompleted rights issues or other rights issues with missing completion dates, we define the completion date to be 180 days after the announcement date of the rights issue.

¹⁹ Using short interest at settlement versus short interest in trade time assures that our match criteria are in the information set at the disclosure date.

between the two groups for any of our four match criteria. At the date of initial disclosure, the average disclosed stock has short interest of 5.88% of shares outstanding, roughly two percentage points more than the control group.²⁰ The average disclosed stock also has slightly more than one open loan per million shares outstanding. Disclosed firms have a significantly higher percentage of lenders active than the control group, 53.52% versus 44.80%. Disclosed firms are also significantly more costly to borrow than their counterparts.

5. Results

5.1. Effects of the disclosure regime

We begin by considering the overall effects of the change in disclosure regime. For example, in assessing this new policy, regulators should know whether a short position disclosure regime increases, decreases, or has no impact on overall shorting activity. Changes in overall shorting behavior could also help us understand whether short-sellers are choosing to advertise or mask their shorting activity by choosing to hold positions that are respectively above or below the disclosure threshold.

To investigate the overall effects of the change in policy, we want to examine short interest and other measures before and after the implementation of a short position disclosure regime. The challenge is to rule out other contemporaneous influences. This is a particular concern for the UK, because a short sale ban and the short position disclosure regime were applied to financial stocks at the same time in September 2008. There is a similar problem for France, as the disclosure regime came into effect for all stocks on the same day that the ban on short sales in financial stocks ended. The best natural experiment can be found in Spain, where the disclosure regime was expanded to all stocks as of June 10, 2010. Before that date, short

²⁰ Short interest here is measured in trade time, adjusted for the three-day settlement lag.

position disclosure requirements applied only to financial stocks. Thus, we can measure the pre- vs. post-event effect of the disclosure regime on Spanish non-financial stocks, using Spanish financial stocks as a control group.

The results of a standard diff-in-diff regression analysis on daily data can be found in Table 4. We exclude the month of June 2010 in case it takes a few days before or after the regime comes into effect for market participants to adjust. May 2010 is the pre-event period, and July 2010 is the post-event period. Panel A shows that the disclosure regime has virtually no differential effect on short interest (based on Data Explorers share lending data), with an insignificant point estimate of only -0.01% of shares outstanding for the differential effect on non-financials.

To investigate changes in liquidity associated with the disclosure policy, we also calculate the Amihud (2002) ratio for each stock-month as the average of the absolute daily return scaled by the day's volume in millions of euros. The Amihud ratio is an illiquidity measure, and when we estimate the diff-in-diff specification, we find an economically large but only marginally significant ($p = 0.051$) worsening of liquidity due to the disclosure regime. Spanish non-financial stocks have an Amihud ratio of 0.39²¹ in the pre-disclosure regime month, and the illiquidity measure increases by almost doubleseighty percent to 0.709²² during July 2010. The control group of Spanish financial stocks experiences little change in their Amihud measure over the same time period.

As an alternative test, we compare the treatment group of Spanish non-financials to a different control group of UK non-financials in the FTSE 350 index. We continue to compare short interest and Amihud ratios for May 2010 vs. July 2010. The results are in Panel B of Table

²¹ $0.3716+0.0177=0.3893$

²² $0.3716-0.0890+0.0177+0.4003=0.7006$

4, and they match the other results. There is no significant effect on short interest associated with the imposition of the disclosure regime, and there is a marginally significant effect on the Amihud illiquidity ratio. Note that this second test is not completely independent of the first test, as we use the same treatment group in both.

It is not clear how to jointly interpret the short interest and illiquidity. There is considerable evidence from other equity markets that short sellers are important providers of liquidity, so it is tempting to conclude that the disclosure regime discourages some liquidity provision by short sellers. However, the short interest numbers show that there is no aggregate change in behavior by short sellers. More work on liquidity effects with better data is warranted, but our tentative conclusion is that we should not overinterpret the marginally significant coefficient on illiquidity.

To summarize, the imposition of the disclosure regime does not seem to cause changes in the overall amount of shorting. Although it is possible that the presence of disclosure thresholds causes marginal changes in short-seller position size as short sellers alter positions slightly to be either below or above the threshold, if these effects are present, they are not manifesting themselves in the overall short interest data.

5.2. Stock Returns Around Short Sale Disclosure

To investigate the possibility of abusive behavior, one of the essential facts to establish is how the market responds to the disclosure of a short position. As a first pass, we examine a relatively simple setting: the abnormal returns around the first disclosure of a short position in a particular stock.

Examining the full sample of disclosed stocks in Table 5, we see that the abnormal returns are often significantly negative around the period of disclosure. Specifically, we compare the return of each disclosed stock to the return of that stock's one-digit Industry Classification Benchmark (ICB) index, and using a calendar-time portfolio approach we find that the cumulative difference is negative for many of the windows around the day of disclosure. For example, there is an immediate stock price response to the disclosure. The cumulative abnormal return from the day of the disclosure through the second day after the disclosure is -1.78%, which is significant at the 5% level. Stock prices continue to fall thereafter. Cumulative abnormal returns from disclosure until the tenth day after the disclosure average -2.75%. Figure 5 displays these results graphically. In both the full sample and the rights issue subsample, we see cumulative abnormal returns decrease until roughly 30 days post-disclosure. These returns then remain relatively stable with no obvious reversal until up to 90 days following the disclosure of a large short position.

Figure 6 sheds a bit more light on the negative returns post-disclosure. In this figure, we present results from a hypothetical trading strategy that buys each stock on the day it is initially disclosed and short sells that stock's one-digit Industry Classification Benchmark (ICB) index.²³ Each position is held for 30 trading days. Panel A shows that the distribution of monthly returns from this strategy is well-behaved and that the mean and median of the distribution are both negative. Similarly, Panel B shows that the trading strategy has a negative return in most months, with much of negative return coming in the beginning of the sample. Overall, Figure 6 shows that it would likely be profitable to short sell stocks with disclosed short positions, especially at the beginning of the period.

²³ Since this strategy captures the abnormal returns of disclosed stocks, a strategy that short-sold disclosed stocks would have a return that is -1 times the returns presented here.

The size of the short position also matters. When we partition disclosures into two groups based on the size of the short position as a fraction of shares outstanding, we find that returns are more negative for larger disclosed short positions. Table 6 shows that short positions that are at or above median size have statistically significant average CARs of -2.32% in the (0,1)-day window, compared to a statistically insignificant -0.91% for smaller short positions.

It is also interesting to note that only the first disclosure of a short position in a particular stock is associated with negative returns. Table 6 also reports industry-adjusted returns following various kinds of short position disclosures.²⁴ Increases in short positions (which we call upticks), decreases in short positions (referred to as downticks), and moving below the disclosure threshold (“close-outs”) are not associated with significant returns. Neither is the first short position disclosure by a particular short seller in a given stock. The two-day announcement abnormal return is only -0.34%, which is statistically indistinguishable from zero. Thus, there is no evidence that follow-on disclosures by other short sellers are associated with negative returns.

Since we know the identity of the short seller, we can also investigate whether certain types of disclosers are associated with more negative stock returns. We suspect, for instance, that short-seller reputation should matter. Disclosures might have a greater stock price effect if they come from firms with greater assets under management (AUM). Indications of a stronger negative signal should also affect the share price response to a disclosure. For example, the share price response might be stronger if the short position is a bigger fraction of the overall manager’s portfolio. To investigate this, we regress event window stock returns on these and

²⁴ It is worth noting that some disclosures in the database are unnecessary. For example, we find 29 disclosures (all of which are in the non-rights issue subsample)- where there is no change in the position. These disclosures suggest that some short sellers perceive a benefit from disclosure, an idea developed in Fishman and Hagerty (1989). Although we do not include these non-mandatory disclosures in our sample, we find that there is a negative price reaction around these events. The average daily abnormal return is -0.38% (two-day announcement cumulative abnormal return of -0.77%) with a standard error of 0.22% and is statistically significant at the 10% level.

other discloser characteristics. We include as regressors the log AUM and the variable PositionSize, which is the ratio of the size of the short position disclosed to the firm's AUM. The results are in Table 7. Surprisingly, there is no support for any of these cross-sectional hypotheses. Share price responses to the disclosure are not reliably related to these discloser characteristics.

5.4. Results for Rights Issues

Recall that in the UK, the disclosure regime applies to financial stocks and to stocks undergoing rights issues. There are two reasons to look at rights issues separately. First, the announcement of a rights issue could affect the share price, and it is important to take this corporate news into account in measuring the incremental effect of a short position disclosure. Second, short sellers could have different incentives during a rights issue, so the disclosure rules could have a different effect in that environment. For instance, in a rights issue short sellers might benefit more from coordination, as they might be able to drive share prices below the rights exercise price or otherwise force the rights issue to fail. Thus, it is important to examine returns and trading during rights issues to see if this concern is justified. We have identified 57 rights issues in UK, French and Spanish stocks where a short position disclosure occurs during a rights issue. There are also 29 rights issues subject to the disclosure requirements where there is no short position disclosure during the rights issue. Of these 86 rights issues, 84 are in the UK and 2 are in Spain.²⁵

²⁵ Additionally, there are five rights issues in UK financial firms that occur during the 2008-2009 short selling ban. Due to the small sample size and the unusual macroeconomic events in this interval, we do not attempt to analyze these events.

Additional summary statistics on the rights issues can be found in Table 8. On average, firms undergoing rights issues are slightly larger in terms of market capitalization than the rest of the firms in our sample, but this difference is fairly modest, with the median rights issue firm at the 52nd percentile of the distribution of market caps across all sample firms. Of the rights issues we examine, 82.6% are successfully completed. The mean rights issue in our sample is 31.1% of the (pre-rights offering) shares outstanding, though the distribution is somewhat skewed because the median rights issue is only 19.7% of shares outstanding. The average discount of 44.2% is fairly substantial, with the discount ranging from 34.0% to 58.0% for the two middle quartiles.

We start by examining the return pattern around disclosure announcements for stocks with rights issues. In Table 5 Panel B, we see that the magnitude of the return pattern is largest in the rights issue subsample. For example, in the 30-day period following the disclosure, the cumulative abnormal return is -10.23%. Furthermore, in the subsample without rights issues (Panel C), there is no statistically significant effect. In other words, the return pattern in the overall sample is driven by the sample of stocks with rights issues.²⁶ Although the full sample return pattern is driven by rights issues, it is not yet clear whether disclosures incrementally drive return in these stocks. To this end, we construct a set of experiments wherein the event date is the rights-issue announcement and we try to measure the incremental effect of the disclosure.

What effect should a short position disclosure have on stock returns during a rights issue? There are reasons to expect less of an effect during this time period. Some shareholders may not wish to exercise their rights, for example. When the stock goes ex-rights, these shareholders can sell their rights on the open market. Before this date, however, they might hedge the price risk

²⁶ Note that, due to the calendar-time portfolio approach used to measure abnormal returns, the full sample returns need not be exactly equal to the weighted average of returns for the two subsamples.

associated with the value of the right by shorting the underlying shares. If these types of short positions are hedges rather than directional views on the company's fundamentals, we might expect returns to be unaffected by short position disclosures around the rights issue, since the disclosures are not conveying negative information to the market.²⁷

Second, after the ex-rights day, there may also be some relative-value trading between the rights and the shares, which could lead to disclosed short positions in the shares. Again, if market participants are aware that this type of trading is likely and does not reflect fundamentals, a short position disclosure during this time period would be less likely to move the share price.

Returns are calculated beginning on the announcement day of the rights issue and ending one week later (post-announcement day 5), one month later (post-announcement day 20) or upon completion.²⁸ Prior to February 10, 2009, UK rights issues had to remain open for at least 21 calendar days; UK FSA Policy Statement 09/2 reduced this minimum to ten business days. Rights issues typically remain open for a slightly longer period. In our sample, the interval from announcement to completion averages 26.29 trading days. Abnormal returns are computed relative to the stock's one-digit Industry Classification Benchmark (ICB) sector index, and we use cross-sectional regressions to characterize the cross-sectional variation in the abnormal returns. The results are summarized in Table 9.²⁹

²⁷ During the sample period, most issuers prohibit underwriters from taking a short position (or an economic equivalent) in the shares or rights in order to limit any downward price pressure from underwriter hedging. Investment banks often syndicate the risk to subunderwriters, including other banks, institutional shareholders, and hedge funds. Subunderwriters are also usually prohibited from taking a short position in the underlying shares or rights.

²⁸ We calculate stock returns in the usual way. On the ex-rights day, returns are adjusted to include the value of the rights (now trading separately), and after the ex-rights day, returns are calculated on the shares alone, excluding the value of the rights.

²⁹ Our focus here is on the announcement date for rights issues, and in later results, we focus on the completion date of the rights issue. However, there is a third date between the two, the date on which trading goes from including the right to excluding the right. While this date may play a key role for the implementation of any trading strategy, we fail to find a significant difference in cumulative abnormal returns between disclosed and undisclosed rights issues over the (0,5)-day, (0,20)-day or (0,Completion) intervals.

Short position disclosures are not associated with bigger share price declines during the rights issue, consistent with our hedging explanation. For example, Specification 1 in Panel A shows that the cumulative abnormal return (CAR) over the (0,5)-day interval is -2.16% for rights issues where there is no short position disclosure and $-2.16\% + 1.47\% = -0.69\%$ for rights issues where a large short position is disclosed in this time interval. These CARs are statistically indistinguishable from zero and from each other. The statistical conclusions are the same over longer horizons, which are reported in Panels B and C.³⁰ Specification 2 shows that the number of disclosers doesn't matter, either. The incremental return effect of each additional disclosing short seller beyond the first one is very close to (and statistically indistinguishable from) zero. We also control for the publicly available details of the rights issues to see if this is masking a disclosure effect. We include as regressors the size of the rights issue relative to the number of existing shares, as well as the rights issue discount to the pre-announcement share price. Our priors were that the larger the equity issue relative to the shares already outstanding, the bigger should be the negative share price reaction. Larger discounts to the pre-announcement share price might be interpreted as a negative signal about the expected share price post-announcement.

Panel B Specification 3 has the results for the 20-day returns, and Panel C Specification 3 has the results from announcement to completion of the rights issue. The size of the rights issue is not significant, but bigger rights issue discounts are reliably associated with more negative stock returns. Adding these two variables does not change the main result on the number of

³⁰ We also have a sample of 47 rights issues that take place when there was no short position disclosure regime. This sample includes: 9 UK rights issues from February 28, 2008 to June 26, 2008; 25 French rights issues from April 17, 2008 to September 28, 2010; and 13 Spanish rights issues from November 10, 2008 to April 14, 2010. The average 20-day CAR for these earlier rights issues is -6.91%, which is statistically indistinguishable from the average CAR of -2.80% for rights issues undertaken in the disclosure regime ($t = -0.92$). That is, rights issues are generally associated with negative stock returns, whether or not there is a disclosure regime. On average, the presence of the short position disclosure requirement does not affect stock returns during the rights offering.

disclosers. There continues to be virtually no association between the number of short position disclosers and returns during the rights issue, consistent with our hedging interpretation.

We also investigate whether short position disclosures are associated with a rights issue's failure to complete. Table 8 notes that 82% of announced rights issues are completed. For rights issues without a short position disclosure, only 61% complete. In contrast, if there is at least one disclosure, completion is extremely likely, at 97%. Thus, there is no evidence that the presence of a short position disclosure decreases the likelihood of completion, and if anything the evidence points in the opposite direction.

Overall, there is no evidence that short sellers are pushing share prices down during a rights issue. To confirm this, we look at what happens after the rights issue is completed. If short sellers are temporarily manipulating the price downward during the rights issue, we would expect a reversal once the rights expire. Table 10 has 5-day, 20-day, and 60-day returns after the rights issue is completed. There is no statistical evidence of a reversal in rights issues with a short position disclosure. For rights issues with no large short position, prices continue to fall over the next three months, with 60-day post-completion returns averaging -11.02%. This is statistically different from zero and statistically different from the corresponding return for rights issues with short disclosures. Thus, the post-completion evidence provides no evidence of abusive shorting activity. In fact, the continued negative returns in rights issues without short position disclosures could reflect shorting constraints. If there are significant impediments to shorting in some firms, prices might not immediately adjust to negative news during the rights issue period, but might instead adjust more gradually over time.

5.3. Shorting Activity Around Disclosure

One of the overarching results in the short selling literature is that short sellers' trades are profitable (e.g., Asquith, Pathak and Ritter (2005); Boehmer, Jones and Zhang (2008) and Boehmer, Huszar and Jordan (2010)). Furthermore, the results above show that returns are negative following disclosures of short positions. So it stands to reason that market participants may respond to disclosures by shorting disclosed stocks after the public disclosure is made. In this section we look at a number of measures of shorting activity to gauge the magnitude of this potential follow-on behavior.

In our empirical setup, we conduct a difference in difference analysis. The first difference is between disclosed stocks and a matched sample of control stocks without disclosures. Specifically, we match every disclosed stock to a control firm in the same country as the disclosed firm by minimizing the sum of the squared differences in percentile *Short Interest at Settlement*,³¹ percentile *Market Capitalization*, percentile *Share Turnover* and percentile *Change in Short Interest at Settlement* over the past month (22 trading days). The second difference is the change in the measured statistic over the given event window.

Table 11 reports the cross-sectional differences in the time-series changes. We start by looking at a daily measure of short interest from our data provider. *Short Interest* in disclosed stocks does increase significantly, but nearly all of the increase is before the public disclosure. Compared to the matched sample of firms without disclosures, short interest increases by 0.89% of shares outstanding during the period from three days to one day before the announcement. This pre-disclosure short position increase is strongest among rights issue stocks. In the first five days after the disclosure, there is virtually no change in relative short interest, and the increase in

³¹ Using short interest at settlement versus short interest in trade time assures that our match criteria are in the information set at the disclosure date.

short interest is reversed in the next few days thereafter. This is shown graphically in Figure 7: on average, the pre-disclosure increase in short interest is reversed about 10 trading days after the disclosure, and short interest in disclosed stocks then continues to drift downward for the next 20 trading days.

We next turn to the percentage of lenders actively lending a particular stock, or *Percent of Lenders Active*, and again we see an increase in lending activity for disclosed stocks during the three days leading up to a disclosure. Turning to the number of open loans, or *Scaled Number of Open Loans*, we see that the number of loans is also increasing during the pre-disclosure period. *Concentration of Open Loans* does not appear to change either before or after the disclosure, indicating that shorting is not dominated by small positions or large positions; the distribution of position size remains constant despite the overall increase in number of positions. Finally, the *Daily Cost of Borrowing Score* shows a dramatic increase in the days immediately preceding the short sale disclosure. Specifically, we see a statistically significant increase of 0.2385 in the full sample in the three days before the day of the disclosure.³²

Taken together, a clear picture emerges. Just before the disclosure, short interest increases, as does the number of lenders and loans in the equity loan market, and this increase in borrowing drives borrowing costs up. Although the build-up of the soon-to-be-disclosed position could drive some of the increase, the increase in short interest is larger than the average disclosed short position, as reported in Table 1. This suggests that other short sellers are also adding to or initiating short positions at the same time as the discloser.

Next we compare shorting market activity in rights issues with a short position disclosure versus those rights issues without a short position disclosure. The goal is to determine whether,

³² Since the bin cutoffs are not reported by Data Explorers, it is difficult to interpret the economic magnitude of this finding.

and to what extent, disclosure is associated with changes in shorting activity. To separate these effects, we match each rights issue to a non-rights issue stock that is similar along the dimensions of share turnover, market capitalization, level of *Short Interest at Settlement* and change in *Short Interest at Settlement*. Then we compare disclosed rights issues shorting activity (versus activity in the matched control firms) to non-disclosed rights issues (versus their matched non-rights issue control firms) during various windows after the rights issue announcement.

Figure 8 demonstrates the result graphically.³³ In this relatively closely matched setting, we see a dramatic difference in short interest between disclosed stocks and undisclosed stocks. In the stocks with disclosures, abnormal short interest is much higher at the time of disclosure. Interestingly, abnormal short interest remains fairly constant for about two weeks after the short position disclosure, followed by a return to normal levels. For stocks without short position disclosures, there is no obvious increase in short interest relative to control stocks. Results are similar whether we benchmark disclosed rights issues against undisclosed rights issues during the regime period or the sample of rights issues occurring during the pre-regime period.

Formal statistical tests using differences-in-differences are in Table 12. From one day before to one day after the rights issue announcement, short interest in disclosed stocks rises by 2.04% of shares outstanding compared to stocks without a disclosure, and this is strongly statistically significant. Compared to rights issue stocks without a disclosure, rights-issue stocks with a disclosure experience little change in short interest during the (0,5)-day interval post-announcement, matching the graphical evidence from Figure 8. The bump in short interest is completely reversed by the tenth day after the announcement of the rights issue. The increase in overall short interest is much larger than the size of the disclosed short, indicating that a rights

³³ To eliminate the possibility of differing periods between rights issue announcements and disclosures, we graph only the disclosures that occur on the second day after the rights issue announcement. This criterion captures 58.7% of the sample of rights issues with short sale disclosures.

issue with a large short position disclosure is associated with more shorting overall, not just more shorting by the initial discloser.

As noted earlier, if there are no disclosed short positions during a rights issue, the share price continues to fall gradually after its completion. For example, in the 20 trading days after completion, stocks without a short position disclosure have a CAR of -5.94%, and this CAR worsens to -11.02% over the 60-day post-completion window. We suspect that shorting constraints are at work. As noted in Reed (2007), prices may adjust slowly to negative information when shorting is costly. This could easily account for the post-completion negative price response.³⁴

While we find no evidence that short sellers are inappropriately driving down the share price, there is some evidence that this effect occurs in other contexts. For instance, Mitchell, Pulvino and Stafford (2004) find price pressure around mergers due to short selling by merger arbitrage traders, and Henry and Koski (2010) find that short sellers create downward price pressure in the US during secondary equity offerings (SEO's) despite the existence of certain restrictions on shorting then.

While rights offerings and SEO's both raise equity capital, the two procedures contain different incentives to short sell, and this could explain the lack of price pressure in rights offerings. To be specific, in SEO's the underwriters typically price the new shares at a slight discount to the closing share price on the pricing date. By driving down the price, a short seller in an SEO can cause the issuer to sell new shares at a lower price, thereby reducing the overall

³⁴ Consistent with this hypothesis, we find that the mean specialness in disclosed stocks is lower than in their undisclosed counterparts over all the completion windows. This difference increases monotonically over the completion windows from -0.288 over the (Completion, 5) window to -0.417 over the (Completion, 60) window; however, none of these differences are significant. Moreover, we fail to find evidence that specialness at the completion date subsumes the observed difference in CAR between disclosed and undisclosed rights issues. We attribute this lack of significance to power issues stemming from the small number of rights issues in our sample (73 total rights issues and 61 with non-missing daily cost of borrowing score) coupled with the coarseness of our data on specialness.

value of the firm and leading to profits on the short sale. This is a classic example of a Goldstein and Guembel (2008) strategic complementarity associated with short sales. More mechanically, an SEO short seller can drive down the price and then cover with shares issued in the SEO, with no upward price impact on the covering transaction. For this reason, the US SEC Rule 105 sharply limits short selling around SEOs.

Rights offerings do not have the same strategic complementarity. The exercise price is fixed, so short sellers cannot easily force the issuer to take an action that reduces firm value.³⁵ There might be relative-value trading strategies involving the share and the transferable right, but these would have no overall effect on firm value, nor would such relative-value trading strategies provide a useful signal to the market about firm value. Given these institutional differences, it makes sense that short selling in rights issues is associated with less price pressure than shorting in SEO's. Nevertheless, in the next section, we look at the time-series of short sales by disclosers and others to see if there is any remaining cause for concern.

5.5. Follow-on Behavior

Some practitioners have worried that disclosures of short positions could be a coordination device among short sellers, with a disclosure inducing other short-sellers to pile on. When commenters were asked by the FSA (DP09/1, Q15) whether they agreed with the FSA's analysis that the benefits of public disclosure of significant short positions outweigh the costs, "a smaller, but significant, group actively disagreed with us..." (FSA FS09/4, paragraph 3.9)

³⁵ If the rights offering is not underwritten, it is conceivable that short sellers could drive prices down below the rights exercise price, in which case the rights might not be exercised. This could be quite damaging to the issuer. For this reason, rights offerings are typically underwritten, and if not, exercise prices are typically set quite low to ensure that such a trading strategy is not appealing, and the new equity capital is successfully raised.

“Those who did not agree with us all raised similar concerns. Namely, the risk of ‘herding’ behaviour when the identities of big-name short sellers are revealed, forced disclosure of companies’ intellectual property (i.e. the information they have garnered that led them to take the position), the risk of short ‘squeezes’ by competitors, compliance costs and, as a result of all of these factors, deterring short selling and damaging market quality.” (paragraph 3.10)

The FSA responded (also in paragraph 3.10) that “we have not seen any evidence of these phenomena occurring.”

To provide direct empirical evidence on some of these issues, we use a logit specification to characterize the persistence of short position disclosures. Our specification has an observation for each stock-day, and the dependent variable is equal to one if there is an initial short position disclosure by a short seller in a given stock on a given date and zero otherwise. The explanatory variables of interest are lagged indicator variables indicating recent short position disclosures, often interacted characteristics of these previous disclosers, such as their assets under management (AUM), the size of their disclosed short position, and their location. In addition to country fixed effects, unreported control variables include the level of *Short Interest at Settlement*, the stock’s log trading volume in shares and its log market capitalization on date $t-1$, along with abnormal stock returns on dates $t-1$, $t-2$, and $t-3$ relative to the industry return (using the one-digit ICB sector index).

What do we expect to find? It is possible that nothing emerges from these size and location variables, but if there is a relationship, we would expect *AUM* and *PositionSize* might proxy for the quality of the short selling signal. The better the signal, the more likely other short sellers would take a similar position. Other literature, such as Huberman (2001), indicates that proximity is associated with similar investor positions, and we might expect something similar here. Such a correlation could be due to actual information sharing between the two short

sellers, either privately or through the disclosure process, but follow-on shorting might simply reflect the unrelated acquisition of correlated signals by multiple asset managers.

The results are in Table 13. Panel A deals with the full sample, including stocks with and without rights issues underway. Panel B has the subsample of rights issues, and the complement is in Panel C.

Specification 1 includes only lagged disclosure dummies and is designed to simply measure whether there is time-series persistence and clustering of large short positions for a given stock. There are two lags: an indicator variable equal to one if there is a disclosure in the previous week ($t-1$ to $t-5$) and an indicator if a short position disclosure occurs at lags -6 through -30, inclusive. Both lagged indicator variables are significant in the full sample and in both subsamples. In the full sample, for example, a disclosure in the previous week in the same stock more than doubles the probability of a disclosure on a given day from the baseline probability of 0.10% to 0.28%. A disclosure in the earlier period increases the disclosure probability by an additional 0.04%. Comparing the rights issue subsample in Panel B with the non-rights issue sample in Panel C, large short positions are more prevalent in rights issues (the baseline probability is 0.29% versus 0.07% for the non-rights issue sample), but the magnitude of the (log odds ratio) persistence is similar.

We then add *AUM* for the prior discloser interacted with the prior disclosure dummies; this estimation is Specification 2 in Table 13. Follow-on short positions are significantly more likely when the previous discloser is large, and this increase in the predicted probability of follow-on disclosure holds for both the rights issue and non-rights issue subsamples. The cross-sectional standard deviation in assets under management is 2.61, so each increase of one standard deviation in *AUM* by a short position discloser is associated with an increase of 0.02% to 0.03%

in the probability of a follow-on disclosure relative to the baseline probability of 0.10%. The results are similar in both rights and non-rights issue subsamples.

In Specification 3, we replace *AUM* with the size of the prior disclosed short position, measured as a fraction of assets under management. The average disclosed short position is 0.306% of assets under management, with a standard deviation of 1.717%. Consistent with the *AUM* results, larger weights on a given disclosed short are associated with a higher probability of a follow-on disclosure in the next week or month, and the magnitude is quite similar to that of the *AUM* effect. Interestingly, the statistical relationship is stronger in non-rights issues (Panel C) than it is in our rights issue subsample (Panel A).

5.6. Geography and Follow-ons

It is possible that the likelihood of follow-on shorting is related to the physical location of the short sellers. To begin to look into this, we replace the *AUM* interaction variable with an interacted indicator variable that is equal to one if the lagged discloser is headquartered in New York or London. Here the evidence is somewhat mixed in terms of statistical significance. However, the full-sample coefficient estimates in Specification 4 of Panel A are quite similar in magnitude for both the $\{t-1, t-5\}$ lag and the $\{t-6, t-30\}$ lag, and a short position discloser located in New York or London increases the probability of a follow-on disclosure by 0.04%.

We also examine whether a follow-on disclosure is more likely when the initial disclosing short seller is closer to other short sellers. The results are in Specification 5 of Table 13, and they indicate that a short position disclosure by a centrally located short seller is significantly more likely to result in a follow-on disclosure within the next week or month. Recall that the centrality variable is defined as a quantile and thus has an approximately uniform

distribution. Thus, a unit standard deviation increase in centrality of 0.292 increases the probability of a follow-on disclosure by $0.30\% * 0.292 = 0.09\%$.

To further investigate the connection to physical location, we examine the distance between pairs of short position disclosers in the same stock. We identify the principal location of each discloser using web searches and fund databases. When we compare the physical distance between an initial discloser and a follow-on short seller, we find evidence that the follow-on discloser tends to be located closer to the original discloser.³⁶ The results are in Table 14. For example, we find that in the full sample follow-on disclosers between 6 and 30 days after the initial disclosure are 397.2 miles away from the initial discloser, while the unconditional average distance between a pair of disclosers is 470.6 miles. The difference in these average distances is statistically significant. Similarly, 42.09% of follow-on disclosers between 6 and 30 days after the initial disclosure are within 100 miles of the initial discloser, whereas only 34.92% of other discloser pairs are within 100 miles of one another. While the distance differences are broadly similar for the rights issue and non-rights issue subsamples (Panels B and C, respectively), the statistical significance is stronger for the rights issue subsample. Clearly, large short position disclosure sequences are characterized by significant geographical clustering.

Overall, our results indicate the possibility that the disclosure regime encourages herding by short sellers. However, it is important to emphasize that we cannot rule out the alternative explanation that multiple short sellers independently receive similar information or apply similar analyses, leading to approximately contemporaneous short positions.

³⁶ One potential concern is that disclosures may cluster within fund families thus biasing our results. To address this concern, we repeat this analysis after excluding 8 out of 593 pairs where the distance was close to zero (less than 0.01 miles). While two of the pairs had exactly zero distance, none of the excluded pairs appeared to belong to the same fund family. Results are quantitatively similar with or without these excluded pairs.

6. Conclusion

Disclosure is becoming an important tool in short sales regulation. For example, the UK, France and Spain have recently promulgated rules forcing short sellers to disclose their positions as well as details, such as their identity, that have never been required before. This new kind of regulation raises some unique concerns among regulators and market participants alike. For example: Does disclosure lead to stock price declines? Or, perhaps more worryingly, does disclosure provide a means for short sellers to coordinate their actions? These questions are likely at the forefront of regulatory discussions as the US Securities and Exchange Commission responds to Section 417 of the Dodd-Frank Act, which requires a study of “the feasibility, benefits, and costs of requiring reporting publicly, in real time short sale positions of publicly listed securities.”

In this paper, we provide the first analysis of a new post-crisis regulatory regime that mandates the disclosure of large short positions in UK, French and Spanish stocks. We characterize the disclosers and the disclosures, stock price behavior around the disclosure, and equity lending market effects.

Our results indicate that in some ways the effects of disclosure are not economically meaningful. First of all, we find no abnormal return for stocks with disclosed short positions that are not involved in rights issues. Furthermore, we find little evidence that the level of short interest increases in response to disclosure. Among stocks with rights issues, we find that disclosed rights issues have virtually the same returns as their non-disclosed counterparts. The evidence suggests that the modest negative returns during a rights issue are not the result of manipulative shorting, because there is no price reversal after the rights issue is completed. There is mixed evidence on the effects of a disclosure on other short sellers. We do find

significant follow-on shorting activity: a large short position disclosure makes it much more likely that there will be another disclosure within a month in the same stock by a different short seller. Furthermore, follow-on shorting is more likely when the initial discloser has greater assets under management or is located near other short sellers. However, there is no increase in short interest after the first disclosure. While these two results seem at odds, one possible explanation is that at the time of the first disclosure, the follow-on already has a substantial but undisclosed short position, and thus it only takes a small increase in the follow-on short position to cross the disclosure threshold.

Even if this follow-on behavior is caused by the disclosure regime, our results suggest that the new rules do not dramatically affect the behavior of share prices. Effective November 1, 2012, the European Union has introduced short position disclosure rules that are similar to the Spanish regime, and our results should provide some comfort that severe deleterious effects are unlikely.

Our work also has implications for regulatory policy towards short selling around equity offerings. Abusive shorting during secondary equity offerings has long been a concern of regulators. Regulation M in the US limits shorting during a secondary equity offering, for example. In a recent release (DP09/1), the UK FSA suggested that disclosure could serve as an alternative to shorting restrictions, asking commenters, “Do you agree that, subject to having a satisfactory disclosure regime, we should not ban short selling of the stocks of companies engaging in rights issues?” The FSA recently concluded (in FS09/4) that it would not ban shorting (including shorting by underwriters) during equity issuances. Overall, our evidence suggests that the price declines during rights issues are not the result of manipulative short sales, implying that the UK’s current policy is on the right track.

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Figure 1: Sample Disclosure

This figure presents a sample disclosure of a short position in Old Mutual, PLC, (LSEX Ticker: OML) as it appears on the web-based newswire, Bloomberg. The web clip was retrieved September 22, 2011 from <http://www.bloomberg.com/apps/news?pid=21070001&sid=a49bgTzL0tt4>.

Bloomberg	
OML: Millennium Partners, L.P.: Short Selling Disclosure	
Mar 24, 2009	
OML: Millennium Partners, L.P.: Short Selling Disclosure	
UK Regulatory Announcement	
LONDON	
Form TR-4. FSA Version 1.0 September 2008	
TR-4^1:	Disclosure of Short Position relating to UK Financial Sector Company^2
1. Full name of person(s) holding the disclosable short position^3:	Millennium Partners, L.P.
2: Name of the issuer of the relevant securities	Old Mutual Plc
3: Disclosable short position^4	0.16%
4. Date that disclosable short position was held	23 March 2009

Figure 2: Example of Short Selling Disclosures

This figure presents price and short interest in Old Mutual, PLC, (LSEX Ticker: OML) during the UK disclosure regime for short positions. Stock price is from Yahoo! Finance. *Short Interest* is defined as the number of shares on loan divided by the total number of shares outstanding. *Undisclosed Short Interest* is defined as the aggregate short interest from the CREST database less the total short interest held by disclosed positions.

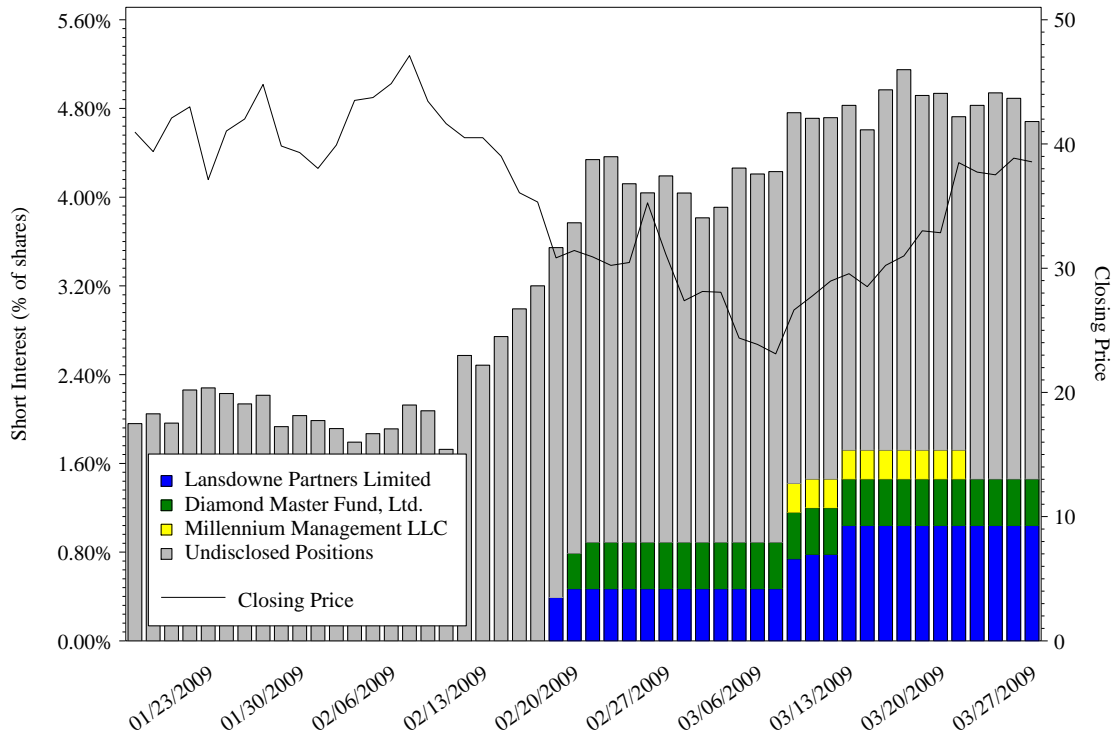
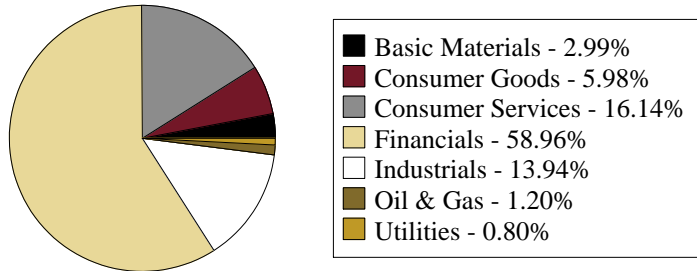


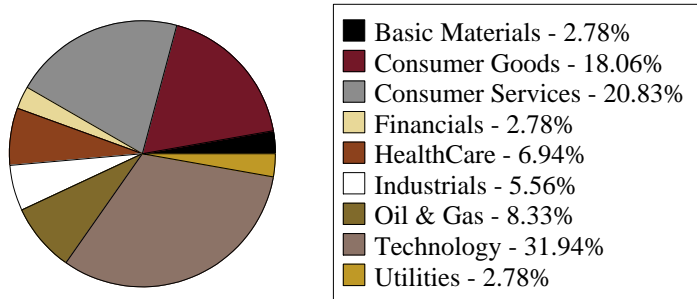
Figure 3: Disclosures by Industry

This figure presents the distribution of disclosed position by country and one-digit Industry Classification Benchmark (ICB) sector. A disclosed position is opened by the disclosure of a short position above the regulatory threshold and is closed by the disclosure of the same position below the regulatory threshold. [**Note:** Each chart begins with the Basic Materials classification in the 3 o'clock position and proceeds counterclockwise.]

United Kingdom



France



Spain

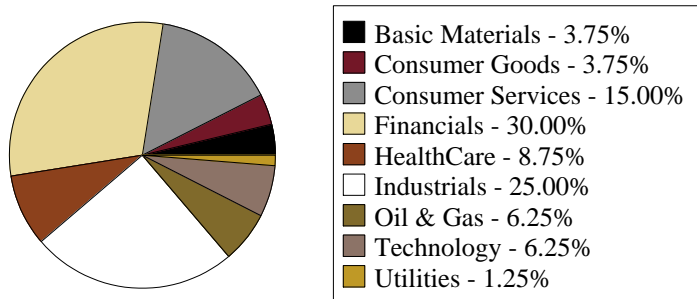


Figure 4: Percentage of Firms Disclosed

This figure reports the ratio of disclosed firms to total firms in our sample by country and one-digit Industry Classification Benchmark (ICB) sector. The specifics of each country's disclosure regulations are discussed in the text.

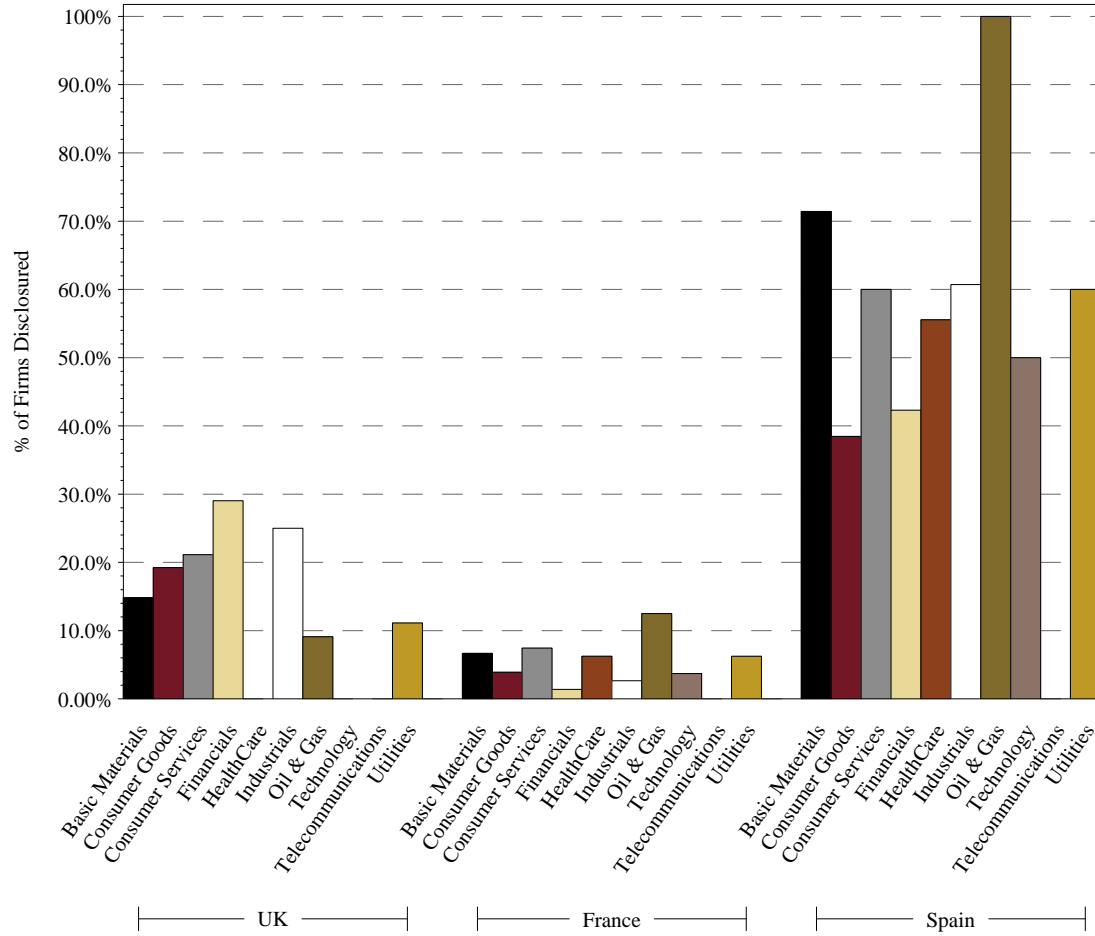


Figure 5: Portfolio Cumulative Abnormal Returns

This figure plots the cumulative abnormal returns generated by the trading strategy presented in Table 5. Specifically for each date in the event window, the equally-weighted portfolio is long the disclosed stock and short the stock's one-digit Industry Classification Benchmark (ICB) sector index. The event window is relative to the date of a stock's initial disclosure. *CAR* is the mean daily abnormal return multiplied by the length of the event window. Disclosed firms are as defined in the text.

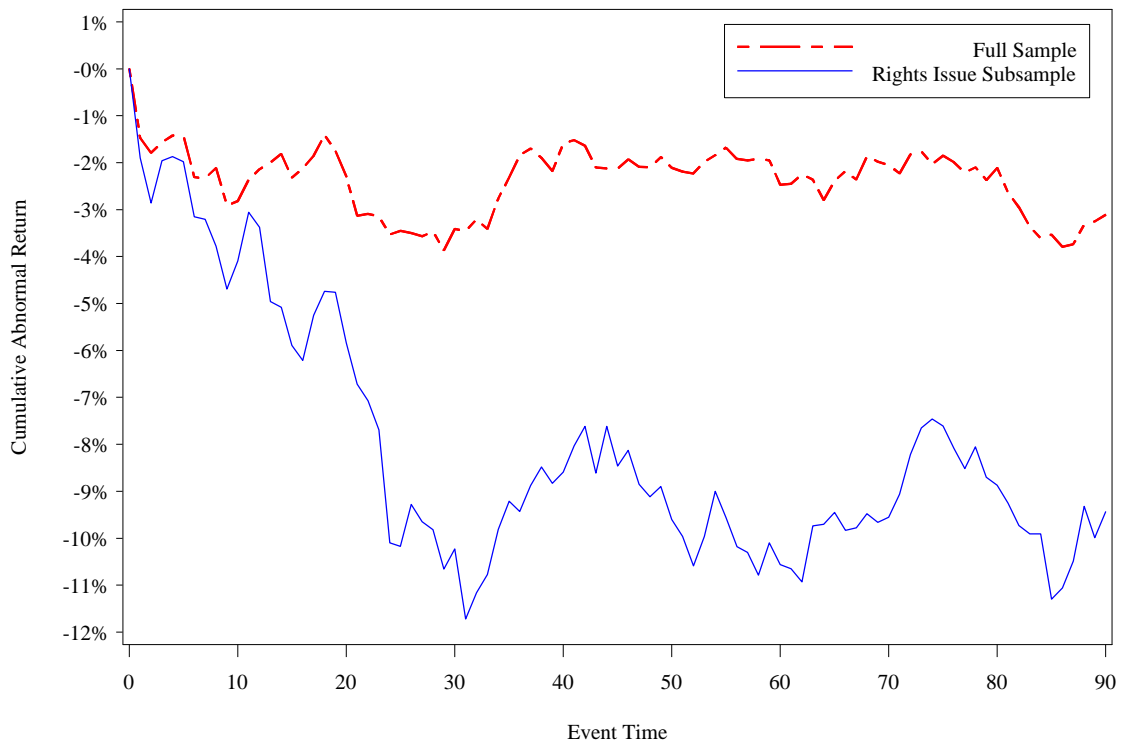
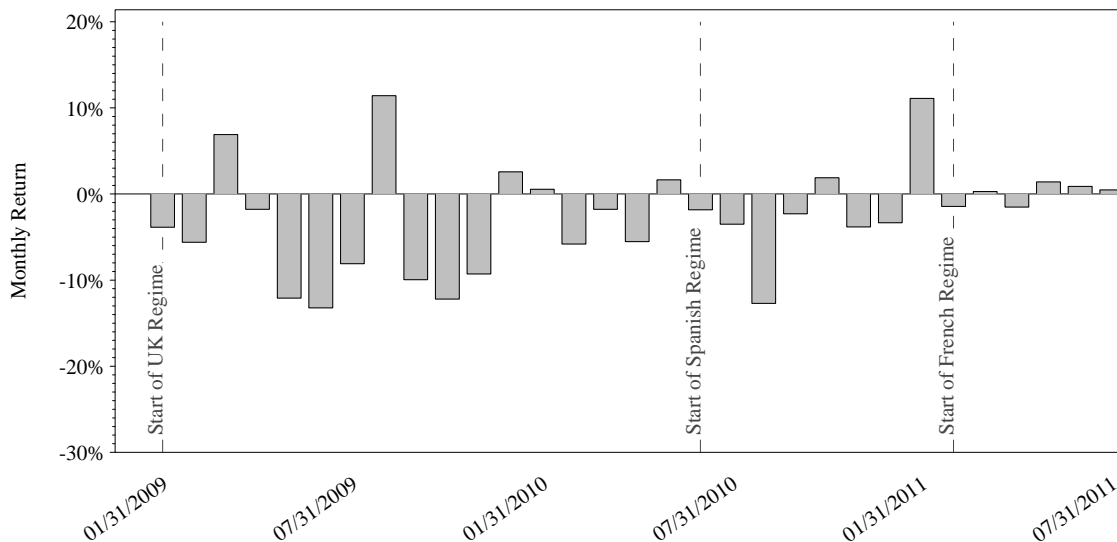


Figure 6: Monthly Returns Post-disclosure

This figure presents the monthly returns from a calendar-time portfolio holding disclosed stocks. For each date in the (0,30)-day window, the equally-weighted portfolio is long the disclosed stock and short the stock's benchmark portfolio. The event window is relative to the date of a stock's initial disclosure. In Panel A, this benchmark is the stock's one-digit Industry Classification Benchmark (ICB) sector index. In Panel B, this benchmark is the set of stocks listed on the same exchange and in the same decile of short interest as the disclosed stock on the date of initial disclosure. Disclosed firms are as defined in the text.

Panel A: Monthly Returns in Calendar Time - Sector Benchmark



Panel B: Monthly Returns in Calendar Time - Short Interest Decile Benchmark

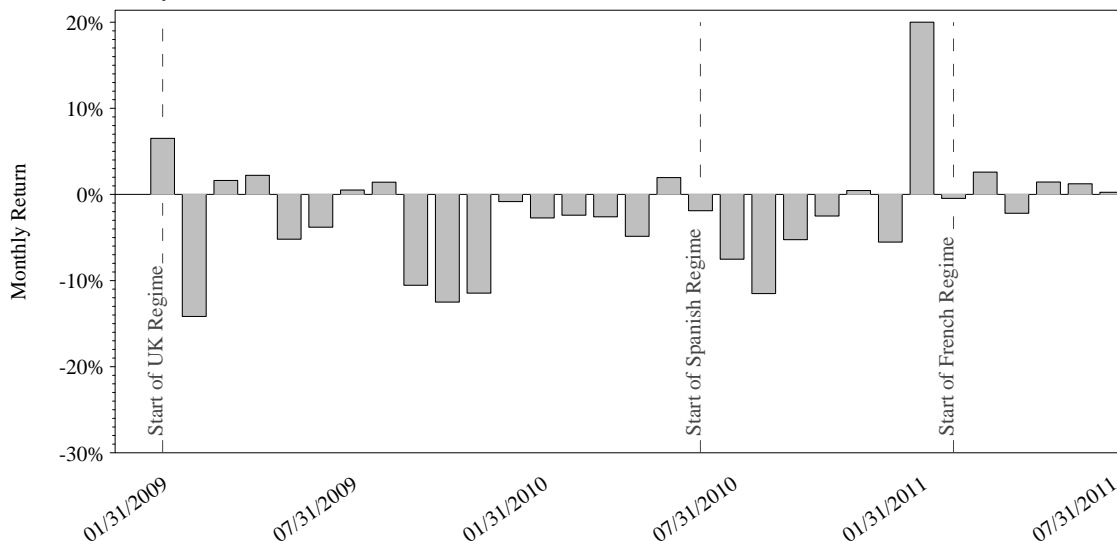


Figure 7: Short Interest Around Disclosure

This figure plots the average short interest around the first disclosed position in a stock relative to the matched counterpart over the event window. Each firm is matched on the disclosure date to a firm listed in the same country by minimizing the sum of the square differences of percentile *Share Turnover*, percentile *Market Capitalization*, percentile *Short Interest at Settlement* and percentile *Change in Short Interest at Settlement* over the previous month (22 trading days).

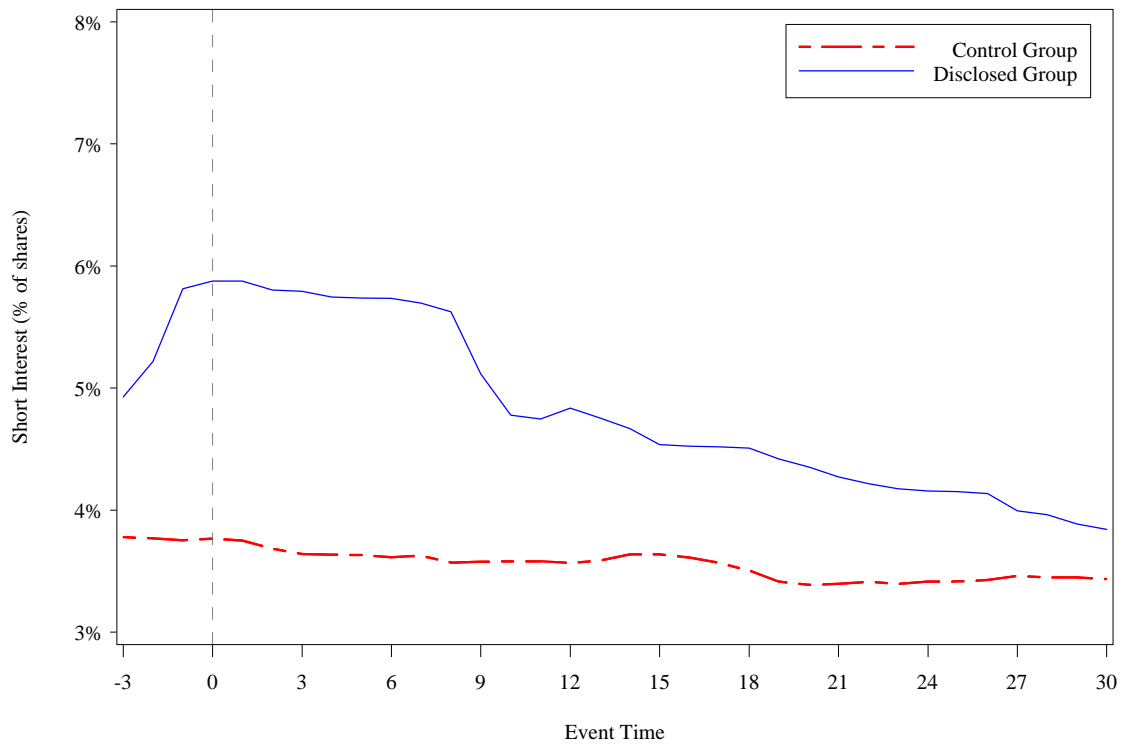
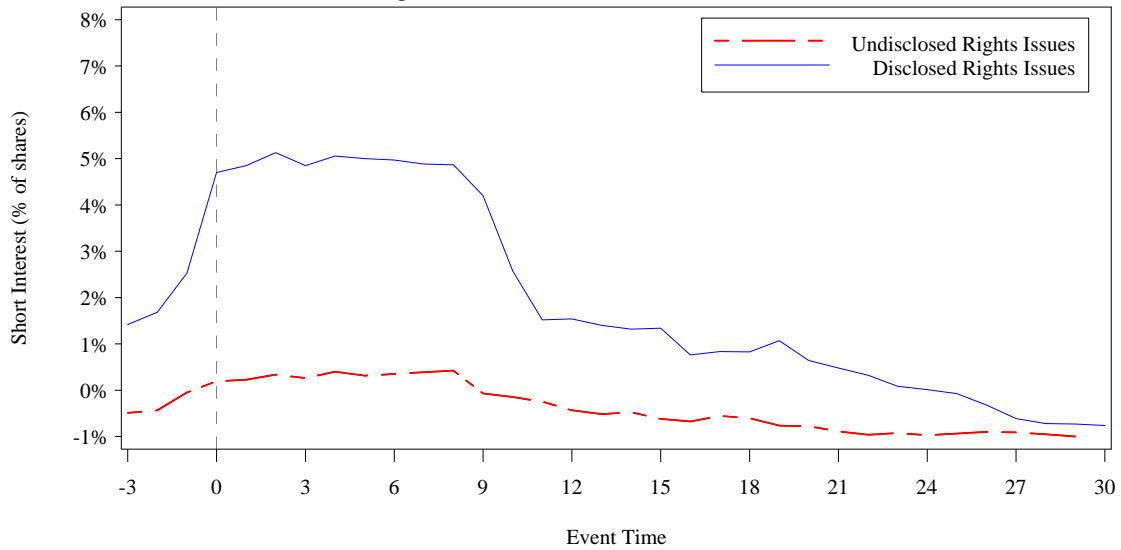


Figure 8: Short Interest Around Rights Issue Announcement

This figure plots the average short interest around a rights issue announcement relative to the matched counterpart over the event window. Each firm is matched to a control firm one trading month prior to the announcement of a rights issue by minimizing the sum of the square differences of percentile *Share Turnover*, percentile *Market Capitalization*, percentile *Short Interest at Settlement* and percentile *Change in Short Interest at Settlement* over the previous month (22 trading days). Disclosed rights issues are the subsample of stocks with a rights issue announcement and a disclosed short position within the (0,1)-day event window. Panel A benchmarks against undisclosed rights issues, which are the subsample of stocks with a rights issue announcement and no disclosed short position within the window between the announcement and completion of the rights issue. Panel B benchmarks against rights issues occurring before the disclosure regime took effect.

Panel A: Disclosed vs. Undisclosed Rights



Panel B: Disclosed vs. Pre-Regime Rights

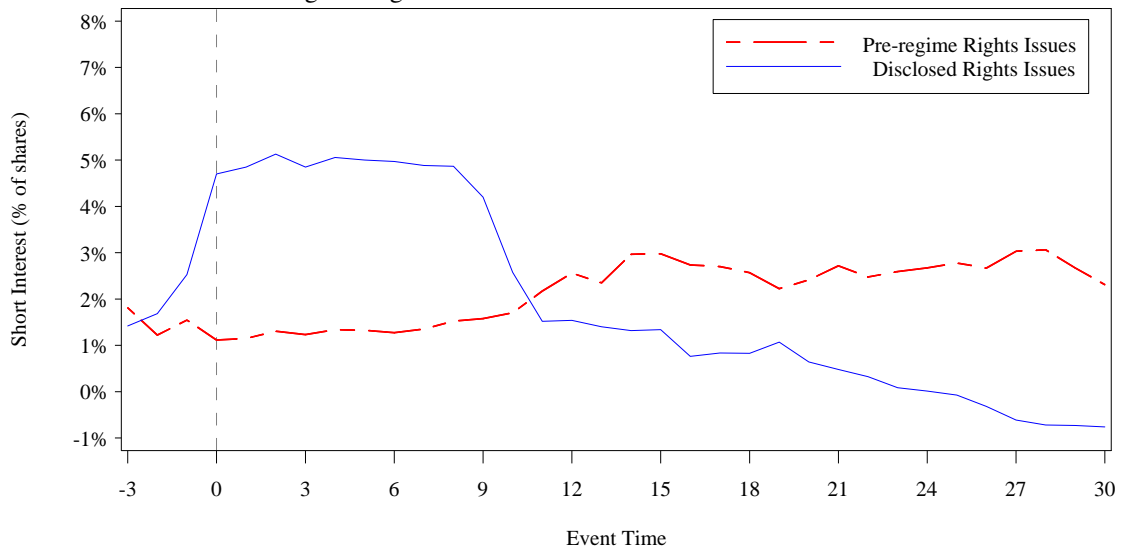


Table 1: Summary Statistics of Disclosures by Country

This table reports summary statistics concerning the number of disclosed short positions since the onset of the disclosure regime by country. The specifics of each country's disclosure regulations are discussed in the text. *Average Length of Holding Period*, *Average Length of Build-up Period* and *Average Length of Unwind Period* are calculated excluding positions that are still open (above the regulatory threshold). *Length of Build-up Period* is defined as the number of trading days between the initial disclosure of the short position and the maximum disclosed position. *Length of Unwind Period* is defined as the number of trading days between the maximum disclosed position and the closure of the short position. *# of Follow-on Disclosures* is the number of short positions originated over the (0,20)-day window following the first disclosure.

	United Kingdom	France	Spain
Number of Positions	502	72	80
Number of Disclosed Firms	81	33	28
Average Number of Positions Per Disclosed Firm	6.20	2.18	2.86
Ratio of Disclosed Firms to Total Firms	0.21	0.04	0.41
Average Disclosures Per Position	1.75	4.54	5.95
Percentage Initiations	57.05	22.02	16.81
Percentage Decreases in Short Interest	22.50	39.76	34.66
Percentage Increases in Short Interest	18.41	38.23	48.11
Average Length of Holding Period	25.23	16.37	52.05
Average Length of Build-up Period	6.10	0.93	14.74
Average Length of Unwind Period	19.13	15.43	37.31
Average Disclosed Short Position	0.47	0.86	0.80
Maximum Disclosed Short Position	9.25	3.91	4.23
Average # of Follow-on Disclosures	5.05	1.70	1.18
Average # of Trading Days to 1 st Follow-on	2.70	5.25	7.91
Average # of Trading Days to 2 nd Follow-on	4.52	8.89	17.00
Percentage of Dates with Multiple Originations	22.09	6.12	1.89

Table 2: Most Active Disclosers by Country

This table reports the ten most active disclosers, as defined by the highest number of disclosed short positions, by country. *Number of Short Positions* is the total number of short positions disclosed since the beginning of the disclosure regime. *Average Short Position* is the average percent of shares outstanding shorted by a discloser in a particular position.

Discloser	Number of Short Positions	Average Short Position
United Kingdom Disclosers		
Trafalgar Asset Managers Limited	37	0.43%
Millennium Partners, LP	20	0.38%
ABC Arbitrage SA	18	0.34%
Lansdowne Partners Limited	14	1.05%
Davidson Kempner International Ltd	13	0.39%
Guevoura Fund Limited	12	0.51%
Davidson Kempner European Partners	11	0.41%
Odey Asset Management LLP	10	0.36%
Highbridge Capital Management, LLC	9	0.29%
GLG Partners LP	8	0.38%
French Disclosers		
BNP Paribas Arbitrage SNC	4	0.89%
Barclays PLC	4	0.66%
Oceanic Hedge Fund	4	0.56%
JABCAP Multi Strategy Master Fund Limited	3	0.82%
AKO Master Fund Limited	2	2.30%
Samana Capital, LP	2	1.36%
Lansdowne UK Equity Fund Limited	2	1.11%
Egerton Capital Limited	2	1.02%
Pictet Asset Management SA	2	0.68%
AQR Capital Management, LLC	2	0.68%
Spanish Disclosers		
Amber Capital LP	6	1.25%
Morton Holdings, INC	6	1.13%
Egerton Capital Limited Partnership	4	0.77%
Discovery Capital Management, LLC	4	0.72%
Highbridge Capital Management, LLC	4	0.71%
Marshall Wace LLP	4	0.64%
Eminence Capital, LLC	3	0.77%
Conatus Capital Management LP	3	0.64%
TT International	3	0.62%
Wellington Management Company, LLP	2	1.34%

Table 3: Summary Statistics

This table reports summary statistics for the market and short activity variables for disclosed firms, their matched controls, and the full sample of firms. Each firm is matched on the disclosure date to a firm listed in the same country by minimizing the sum of the square differences of percentile *Share Turnover*, percentile *Market Capitalization*, percentile *Short Interest at Settlement* and percentile *Change in Short Interest at Settlement* over the previous month (22 trading days). *Market Capitalization* is in millions of euros. *Share Turnover* is the volume of shares traded divided by shares outstanding. Short activity measures are defined in the text. Data are provided by Data Explorers. For the test of the difference in means, *, **, and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively. Standard errors are clustered at the firm-level for this test and the difference is relative to the set of disclosed stocks.

	<u>Disclosed Group</u>		<u>Control Group</u>			<u>Full Sample</u>		
	Mean	Std Dev	Mean	Std Dev	Difference in Means	Mean	Std Dev	Difference in Means
Market Measures:								
Market Capitalization	219.7213	637.4020	207.7210	514.8743	12.0003	186.2029	878.6962	33.5184
Share Turnover	0.0093	0.0121	0.0055	0.0052	0.0038***	0.0017	0.0021	0.0076***
Short Activity Measures:								
Short Interest	0.0588	0.0443	0.0376	0.0315	0.0212***	0.0147	0.0191	0.0441***
Percent of Lenders Active	0.5352	0.1621	0.4480	0.1654	0.0872***	0.2949	0.2274	0.2403***
Scaled Number of Open Loans	1.1545	2.2800	0.8908	1.3475	0.2637	0.4766	1.1139	0.6779***
Concentration of Loans	0.2452	0.1804	0.2759	0.1774	-0.0307	0.2570	0.2535	-0.0118
Daily Cost of Borrowing Score	2.3670	1.6024	1.6422	1.1182	0.7248***	2.2008	1.5081	0.1662
Match Criteria:								
Percentile Market Capitalization	58.7982	27.8358	62.2752	27.1828	-3.4771			
Percentile Share Turnover	78.1468	21.5122	75.2936	19.2951	2.8532			
Percentile Short Interest at Settlement	73.4495	26.8464	70.4312	24.9864	3.0183			
Percentile Δ Short Interest at Settlement	62.6147	38.2620	59.6881	35.9930	2.9266			

Table 4: Impact of the Disclosure Regime on Market Measures

This table reports the model estimates for measures of market quality around the start of the disclosure regime for non-financial stocks traded in Spain (June 10, 2010). *Short Interest* is the average number of shares outstanding currently borrowed or on loan net of double counting for a given firm-month scaled by the total number of shares outstanding. *Amihud Ratio* is defined as in Amihud (2002) as the average of 10^6 times absolute daily return scaled by dollar volume for a given firm-month. *Disclosure Regime* is a dummy variable equal to 1.0 if the observation occurs the month following the start of the disclosure regime (July 2010) and equal to 0.0 if the observation occurs the month prior to the start of the disclosure regime (May 2010). *Subject to Disclosure* is a dummy variable equal to 1.0 for non-financial stocks traded in Spain and equal to 0.0 otherwise. Panel A benchmarks non-financial stocks in Spain against financial stocks in Spain, which were subject to disclosure requirements beginning in September 2008. Panel B benchmarks non-financial stocks in Spain against non-financial stocks in the UK. Data are provided by Data Explorers. Standard errors are clustered at the firm-level. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	Short Interest	Amihud Ratio
Panel A: Non-financials in Spain vs. Financials Spain		
Intercept	0.0178***	0.3716**
Disclosure Regime	0.0005	-0.0890
Subject to Disclosure	-0.0020	0.0177
Disclosure Regime \times Subject to Disclosure	-0.0001	0.4003*
Panel B: Non-financials in Spain vs. Non-financials in the UK		
Intercept	0.0263***	0.0005***
Disclosure Regime	-0.0023**	0.0003*
Subject to Disclosure	-0.0105***	0.3889***
Disclosure Regime \times Subject to Disclosure	0.0027	0.3109*

Table 5: Abnormal Returns Around Disclosure - First Disclosed Position in Each Stock

This table reports the mean daily abnormal returns from a calendar-time portfolio holding disclosed stocks. For each date in the event window, the equally-weighted portfolio is long the disclosed stock and short the stock's one-digit Industry Classification Benchmark (ICB) sector index. The event window is relative to the date of a stock's initial disclosure. *CAR* is the mean daily abnormal return multiplied by the length of the event window. Disclosed firms are as defined in the text. Panel A has 127 disclosures, Panel B has 57 disclosures and Panel C has 70 disclosures. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

Event Window	CAR	Abnormal Return	Std Err
Panel A: Full Sample			
(-30,-3)	0.0235	0.0008	0.0015
(-3,-1)	-0.0152	-0.0051	0.0033
(0,1)	-0.0146**	-0.0073**	0.0033
(0,2)	-0.0178**	-0.0059**	0.0026
(0,5)	-0.0136	-0.0023	0.0016
(0,10)	-0.0275**	-0.0025**	0.0011
(0,20)	-0.0225	-0.0011	0.0008
(0,30)	-0.0339	-0.0011	0.0007
(0,60)	-0.0243	-0.0004	0.0006
(0,90)	-0.0300	-0.0003	0.0005
Panel B: Rights Issue Subsample			
(-30,-3)	-0.0547	-0.0020	0.0022
(-3,-1)	-0.0340*	-0.0113*	0.0057
(0,1)	-0.0190	-0.0095	0.0062
(0,2)	-0.0286**	-0.0095**	0.0047
(0,5)	-0.0198	-0.0033	0.0029
(0,10)	-0.0409*	-0.0037*	0.0020
(0,20)	-0.0584*	-0.0028*	0.0016
(0,30)	-0.1023**	-0.0033**	0.0013
(0,60)	-0.1056**	-0.0017**	0.0009
(0,90)	-0.0944	-0.0010	0.0007
Panel C: Non-Rights Issue Subsample			
(-30,-3)	0.0327	0.0012	0.0026
(-3,-1)	0.0031	0.0010	0.0031
(0,1)	-0.0053	-0.0027	0.0025
(0,2)	-0.0044	-0.0015	0.0020
(0,5)	-0.0054	-0.0009	0.0017
(0,10)	-0.0142	-0.0013	0.0013
(0,20)	-0.0071	-0.0003	0.0010
(0,30)	-0.0042	-0.0001	0.0009
(0,60)	0.0127	0.0002	0.0007
(0,90)	-0.0078	-0.0001	0.0007

Table 6: Abnormal Returns Around Alternative Events

This table reports the mean daily abnormal returns from a calendar-time portfolio holding disclosed stocks. For each date in the (0,1)-day window, the equally-weighted portfolio is long the disclosed stock and short the stock's one-digit Industry Classification Benchmark (ICB) sector index. *CAR* is the mean daily abnormal return multiplied by the length of the event window. Disclosed firms are as defined in the text. *N* is the number of disclosures included in the portfolio. For *First Disclosed Position in Each Stock*, the event date is the date of the origination of the first disclosed position in a stock. *Size of Disclosed Position* is the percentage of shares outstanding held by the discloser and its median is calculated by country. For *First Disclosed Position by Each Fund-Stock Pair*, the event date is the date of the origination of any disclosed position by a fund in a stock. For *Close-Outs*, the event date is the date on which the position is reported to be below the regulatory threshold thus indicating a closure of that position. For *Upticks*, the event date is the date of an upward adjustment in the size of the disclosed position. For *Downticks*, the event date is the date of a downward adjustment in the size of the disclosed position. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

(0,1)-day Event Window	N	CAR	Abnormal Return	Std Err
Panel A: Full Sample				
First Disclosed Position in Each Stock	127	-0.0146**	-0.0073**	0.0033
Below Median Size of Disclosed Position	59	-0.0091	-0.0046	0.0040
At or Above Median Size of Disclosed Position	68	-0.0232**	-0.0116**	0.0053
First Disclosed Position by Each Fund-Stock Pair	427	-0.0034	-0.0017	0.0018
Close-Outs	185	-0.0033	-0.0016	0.0018
Upticks	579	0.0023	0.0012	0.0015
Downticks	408	-0.0014	-0.0007	0.0013
Panel B: Rights Issue Subsample				
First Disclosed Position in Each Stock	57	-0.0190	-0.0095	0.0062
Below Median Size of Disclosed Position	27	0.0005	0.0003	0.0067
At or Above Median Size of Disclosed Position	30	-0.0350*	-0.0175*	0.0100
First Disclosed Position by Each Fund-Stock Pair	212	-0.0152**	-0.0076**	0.0032
Close-Outs	41	-0.0099	-0.0050	0.0047
Upticks	70	-0.0069	-0.0034	0.0051
Downticks	58	0.0027	0.0013	0.0059
Panel C: Non-Rights Issue Subsample				
First Disclosed Position in Each Stock	70	-0.0053	-0.0027	0.0025
Below Median Size of Disclosed Position	31	-0.0033	-0.0016	0.0043
At or Above Median Size of Disclosed Position	39	-0.0082	-0.0041	0.0034
First Disclosed Position by Each Fund-Stock Pair	215	0.0054	0.0027	0.0018
Close-Outs	144	-0.0011	-0.0005	0.0017
Upticks	509	0.0024	0.0012	0.0012
Downticks	350	-0.0013	-0.0006	0.0013

Table 7: Abnormal Returns and Discloser Reputation

This table reports the estimates from the regression of abnormal daily returns on variables related to the reputation of a discloser of a short position. Each row presents results from a separate set of regressions. The unit of observation is firm-day abnormal returns within the window around the first disclosed position in each stock. Abnormal daily returns are defined as the stock's daily return in excess of the stock's one-digit Industry Classification Benchmark (ICB) sector index. These returns are regressed on discloser-level fixed effects to obtain an estimate of the daily profits attributable to each discloser. Disclosed firms are as defined in the text. *AUM* is the natural logarithm of the discloser's most recently reported assets under management subject to 13F filings. *AUM above Median* is a binary variable equal to 1.0 if the discloser's *AUM* is above the median *AUM* calculated by country and equal to 0.0, otherwise. *PositionSize* is the ratio of the size of the short position disclosed and *AUM* multiplied by 10. *PositionSize above Median* is a binary variable equal to 1.0 if the discloser's *PositionSize* is above the median *PositionSize* calculated by country and equal to 0.0, otherwise. *MoneyCtr* is a binary variable equal to one if the discloser is headquartered in New York or London and equal to zero otherwise. *Centrality* is defined in the text. Country-level effects are fixed, and standard errors are clustered at the firm-level. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	Full Sample		Rights Issue Subsample		Non-Rights Issue Subsample	
	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
Panel A: (0,2) Event Window						
AUM	0.0000	0.0002	0.0004	0.0005	-0.0004	0.0003
AUM above Median	0.0002	0.0048	0.0015	0.0084	-0.0079	0.0050
PositionSize	0.0030*	0.0018	0.0022	0.0020	0.1136	0.4605
PositionSize above Median	0.0082	0.0060	0.0107	0.0084	0.0052	0.0079
MoneyCtr	-0.0077	0.0047	-0.0034	0.0081	-0.0114**	0.0047
Centrality	-0.0021	0.0069	-0.0139	0.0121	0.0053	0.0073
Panel B: (0,10) Event Window						
AUM	0.0001	0.0001	0.0003	0.0002	-0.0001	0.0001
AUM above Median	0.0008	0.0022	0.0035	0.0038	-0.0004	0.0024
PositionSize	0.0004	0.0008	0.0000	0.0008	0.2344	0.1729
PositionSize above Median	0.0070***	0.0026	0.0069*	0.0037	0.0072*	0.0037
MoneyCtr	-0.0021	0.0023	-0.0015	0.0039	-0.0025	0.0024
Centrality	0.0036	0.0031	0.0055	0.0063	0.0019	0.0031
Panel C: (0,30) Event Window						
AUM	-0.0000	0.0001	-0.0000	0.0001	-0.0000	0.0001
AUM above Median	-0.0003	0.0010	-0.0006	0.0017	0.0003	0.0012
PositionSize	0.0003	0.0004	0.0001	0.0004	0.0475	0.0738
PositionSize above Median	0.0029**	0.0012	0.0028	0.0018	0.0031*	0.0017
MoneyCtr	-0.0001	0.0009	0.0006	0.0016	-0.0007	0.0010
Centrality	-0.0001	0.0015	0.0011	0.0025	-0.0012	0.0017

Table 8: Summary Statistics for Rights Issue Subsample

This table reports summary statistics for the subsample of firms undergoing rights issues. *Percentile Market Capitalization* is calculated each trading day and for each country. *Ratio of Rights to Total Shares* is the number of rights shares offered scaled by total shares outstanding. *Discount to Share Price* is the difference in price between the share price and the rights price at announcement scaled by share price.

Total Number of Rights Issues	86.00
Number of Rights Issues in UK	84.00
Number of Rights Issues in France	0.00
Number of Rights Issues in Spain	2.00
Percentage of Rights Issues Completed	82.56
Average Trading Days to Completion	26.29
Percentile Market Capitalization	
Mean	49.73
Std Dev	31.35
5 th Percentile	1.00
Lower Quartile	22.00
Median	52.00
Upper Quartile	72.00
95 th Percentile	96.00
Discount to Share Price	
Mean	0.4415
Std Dev	0.3128
5 th Percentile	-0.0100
Lower Quartile	0.3396
Median	0.4905
Upper Quartile	0.5798
95 th Percentile	0.8274
Ratio of Rights to Total Shares	
Mean	0.3109
Std Dev	0.4413
5 th Percentile	0.0111
Lower Quartile	0.1175
Median	0.1969
Upper Quartile	0.3278
95 th Percentile	0.8825

Table 9: Determinants of Rights Issue Cumulative Abnormal Returns

This table reports the model estimates for cumulative abnormal returns (CARs) around the announcement date of a rights issue. Abnormal returns are relative to the stock's one-digit Industry Classification Benchmark (ICB) sector index. *Disclosed* is a dummy variable equal to 1 if a short position in the stock was disclosed during the event window and 0 otherwise. *# of Follow-on Disclosures* is the number of short positions originated over the event window beyond the first disclosure. *Ratio of Rights to Total Shares* is the number of rights shares offered scaled by total shares outstanding. *Discount to Share Price* is the difference in price between the share price and the rights price at announcement scaled by share price. Effects are fixed at the country-level, and standard errors are clustered by firm. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	<u>Specification 1</u>		<u>Specification 2</u>		<u>Specification 3</u>	
	Estimate	Std Err	Estimate	Std Err	Estimate	Std Err
Panel A: (0,5) CAR						
Intercept	-0.0216	0.0184	-0.0216	0.0185	-0.0275	0.0274
Disclosed	0.0147	0.0347	-0.0022	0.0378	0.0090	0.0444
# of Follow-on Disclosures			0.0106	0.0111	0.0095	0.0113
Ratio of Rights to Total Shares					0.0021	0.0244
Discount to Share Price					0.0060	0.0480
Panel B: (0,20) CAR						
Intercept	-0.0424	0.0370	-0.0424	0.0372	-0.0074	0.0736
Disclosed	0.0201	0.0478	0.0156	0.0509	0.1083	0.0714
# of Follow-on Disclosures			0.0012	0.0092	0.0052	0.0086
Ratio of Rights to Total Shares					0.0091	0.0543
Discount to Share Price					-0.2711**	0.1155
Panel C: (0, Completion) CAR						
Intercept	0.0058	0.0462	0.0058	0.0465	-0.0017	0.0676
Disclosed	-0.0410	0.0561	-0.0905	0.0628	0.0384	0.0601
# of Follow-on Disclosures			0.0107	0.0072	0.0132*	0.0070
Ratio of Rights to Total Shares					-0.0116	0.0437
Discount to Share Price					-0.2352*	0.1369

Table 10: Rights Issue Cumulative Abnormal Returns around Completion

This table reports the mean cumulative abnormal returns (CARs) around the completion date of a rights issue. Abnormal returns are relative to the stock's one-digit Industry Classification Benchmark (ICB) sector index. *Disclosed* is the set of rights issues in which a short position in the stock was disclosed between the announcement date and the completion date of the rights issue. Similarly, *Undisclosed* is the set of rights issues in which a short position in the stock was not disclosed between the announcement date and the completion date of the rights issue. Effects are fixed at the country-level, and standard errors are clustered by firm. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	<u>Disclosed</u>		<u>Undisclosed</u>		Difference in Means
	Mean	Std Err	Mean	Std Err	
(Completion, 5) CAR	-0.0012	0.0112	0.0034	0.0181	-0.0046
(Completion, 20) CAR	0.0100	0.0166	-0.0594**	0.0284	0.0695**
(Completion, 60) CAR	0.0127	0.0308	-0.1102*	0.0605	0.1229*

Table 11: Changes in Short Activity Around Disclosure

This table reports the difference-in-difference estimate for stocks with a disclosed short position relative to their matched counterparts over the event window. Each firm is matched on the disclosure date to a firm listed in the same country by minimizing the sum of the square differences of percentile *Share Turnover*, percentile *Market Capitalization*, percentile *Short Interest at Settlement* and percentile *Change in Short Interest at Settlement* over the previous month (22 trading days). Short activity measures are defined in the text. Data are provided by Data Explorers. Standard errors are clustered at the firm-level. *, **, and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

Window	Short Interest	Percent of Lenders Active	Scaled Number of Open Loans	Concentration of Loans	Daily Cost of Borrowing Score
Panel A: Full Sample					
(-3,-1)	0.0089***	0.0337***	0.0686***	-0.0090	0.2385***
(-1,0)	0.0005	-0.0016	0.0026	0.0012	0.0642
(-1,1)	0.0009	0.0008	0.0037	0.0009	-0.0185
(0,2)	0.0002	-0.0006	0.0043	-0.0102	-0.0550
(0,5)	0.0001	-0.0014	-0.0280	-0.0117	-0.0642
(0,10)	-0.0087**	0.0002	-0.0937	-0.0105	-0.1468
(0,20)	-0.0116***	-0.0017	-0.0541	-0.0221	-0.0642
Panel B: Rights Issue Subsample					
(-3,-1)	0.0188***	0.0514***	0.1234***	-0.0146	0.3778**
(-1,0)	0.0003	0.0068	0.0038	0.0024	0.2000*
(-1,1)	0.0004	0.0086	-0.0133	0.0036	0.0682
(0,2)	-0.0004	-0.0119	-0.0344**	-0.0158	-0.0667
(0,5)	0.0008	-0.0104	-0.0337	-0.0168	-0.0667
(0,10)	-0.0209***	-0.0184	-0.2150***	-0.0160	-0.3778*
(0,20)	-0.0335***	-0.0576**	-0.2610***	-0.0307	-0.2444
Panel C: Non-Rights Issue Subsample					
(-3,-1)	0.0020	0.0213***	0.0300	-0.0051	0.1406
(-1,0)	0.0007	-0.0075	0.0017	0.0003	-0.0313
(-1,1)	0.0012	-0.0046	0.0154	-0.0011	-0.0781
(0,2)	0.0006	0.0074	0.0315	-0.0062	-0.0469
(0,5)	-0.0004	0.0050	-0.0239	-0.0080	-0.0625
(0,10)	-0.0002	0.0132	-0.0084	-0.0066	0.0156
(0,20)	0.0038	0.0375**	0.0913	-0.0161	0.0625

Table 12: Changes in Short Activity Around Rights Issue Announcement

This table reports the difference-in-difference-in-difference (DDD) estimate for stocks with a rights issue announcement and a disclosed short position relative to their undisclosed counterparts over the event window. Each firm is matched to a control firm one trading month prior to the announcement of a rights issue by minimizing the sum of the square differences of percentile *Share Turnover*, percentile *Market Capitalization*, percentile *Short Interest at Settlement* and percentile *Change in Short Interest at Settlement* over the previous month (22 trading days). Disclosed rights issues are the subsample of stocks with a rights issue announcement and a disclosed short position within the (0,1)-day event window. Panel A benchmarks against undisclosed rights issues, which are the subsample of stocks with a rights issue announcement and no disclosed short position within the window between the announcement and completion of the rights issue. Panel B benchmarks against rights issues occurring before the disclosure regime took effect. Short activity measures are defined in the text. Data are provided by Data Explorers. Standard errors are clustered at the firm-level. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

Window	Short Interest	Percent of Lenders Active	Scaled Number of Open Loans	Concentration of Open Loans	Daily Cost of Borrowing Score
Panel A: Disclosed vs. Undisclosed Rights					
(-3,-1)	0.0067	0.0405	0.0702**	-0.0067	0.2580
(-1,0)	0.0193***	0.0463**	0.1355***	-0.0323**	0.5217***
(-1,1)	0.0204***	0.0526**	0.1387***	-0.0383*	0.4087
(0,2)	0.0028	-0.0170	-0.0016	-0.0192	-0.2493
(0,5)	0.0018	0.0075	0.0471	-0.0485	-0.3333
(0,10)	-0.0178*	0.0037	-0.1695*	-0.0729*	-0.7478*
(0,20)	-0.0301**	0.0432	-0.2709***	-0.0841*	-0.3091
Panel B: Disclosed vs. Pre-Regime Rights					
(-3,-1)	0.0138*	0.0351	0.0873***	0.0091	0.3913**
(-1,0)	0.0260***	0.0798***	0.1355***	-0.0145	0.5217***
(-1,1)	0.0272***	0.0720***	0.1380***	-0.0237	0.6087***
(0,2)	0.0024	0.0072	0.0012	-0.0086	0.2174
(0,5)	0.0009	-0.0180	0.0238	-0.0168	0.0000
(0,10)	-0.0271**	-0.0235	-0.1899**	-0.0617	-0.3478
(0,20)	-0.0528***	0.0066	-0.2641***	-0.0645	0.0909

Table 13: Likelihood of the Disclosure of a Short Position

This table reports the marginal effects for a logit model of the disclosure of a short position. The sample includes stock-day observations for all firms in our sample and the two subsamples defined in the text. The dependent variable is a binary variable equal to one if a short position in the stock was disclosed on day t and equal to zero otherwise. $Disclosure_{\{t-i,t-i-k\}}$ is a binary variable equal to one if a short position in the stock was disclosed on day $t-i$ to day $t-i-k$ and equal to zero otherwise. AUM is the natural logarithm of the discloser's most recently reported assets under management subject to 13F filings. $PositionSize$ is the ratio of the size of the short position disclosed and AUM multiplied by 10. $MoneyCtr$ is a binary variable equal to one if the discloser is headquartered in New York or London and equal to zero otherwise. $Centrality$ is a percentile rank based on the average pairwise distance between short sellers in our sample. Thus, a centrality measure of 0.01 indicates the short seller furthest on average from other short sellers, while a centrality measure of 0.99 indicates the short seller closest on average to other short sellers. Country-level effects are fixed, and standard errors are clustered at the firm level. Additional controls (unreported) include *Short Interest at Settlement* on day $t-1$, log trading volume on day $t-1$, log market capitalization on day $t-1$ and return in excess of the stock's one-digit Industry Classification Benchmark (ICB) sector index on days $t-1$, $t-2$ and $t-3$. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Panel A: Full Sample					
(Baseline Probability = 0.0010)					
Disclosed $_{\{t-1,t-5\}}$	0.0018***	0.0007***	0.0018***	0.0016***	0.0009***
Disclosed $_{\{t-6,t-30\}}$	0.0004***	-0.0000	0.0004***	0.0002	-0.0000
Disclosed $_{\{t-1,t-5\}} \times AUM$		0.0001***			
Disclosed $_{\{t-6,t-30\}} \times AUM$		0.0001***			
Disclosed $_{\{t-1,t-5\}} \times PositionSize$			0.0017***		
Disclosed $_{\{t-6,t-30\}} \times PositionSize$			0.0015***		
Disclosed $_{\{t-1,t-5\}} \times MoneyCtr$				0.0004	
Disclosed $_{\{t-6,t-30\}} \times MoneyCtr$				0.0004**	
Disclosed $_{\{t-1,t-5\}} \times Centrality$					0.0022***
Disclosed $_{\{t-6,t-30\}} \times Centrality$					0.0030***

Table 13: Likelihood of the Disclosure of a Short Position (cont.)

	(1)	(2)	(3)	(4)	(5)
Panel B: Rights Issue Subsample					
(Baseline Probability = 0.0029)					
Disclosed _{t-1,t-5}	0.0049***	0.0011**	0.0049***	0.0038***	0.0017***
Disclosed _{t-6,t-30}	0.0012***	-0.0007***	0.0011***	0.0015***	-0.0008***
Disclosed _{t-1,t-5} × AUM		0.0003***			
Disclosed _{t-6,t-30} × AUM		0.0003***			
Disclosed _{t-1,t-5} × PositionSize			0.0031*		
Disclosed _{t-6,t-30} × PositionSize			0.0008		
Disclosed _{t-1,t-5} × MoneyCtr				0.0014	
Disclosed _{t-6,t-30} × MoneyCtr				-0.0005	
Disclosed _{t-1,t-5} × Centrality					0.0083***
Disclosed _{t-6,t-30} × Centrality					0.0090***
Panel C: Non-Rights Issue Subsample					
(Baseline Probability = 0.0007)					
Disclosed _{t-1,t-5}	0.0011***	0.0006***	0.0011***	0.0011***	0.0008***
Disclosed _{t-6,t-30}	0.0003***	0.0001	0.0003***	0.0000	0.0001
Disclosed _{t-1,t-5} × AUM		0.0000***			
Disclosed _{t-6,t-30} × AUM		0.0001***			
Disclosed _{t-1,t-5} × PositionSize			0.0038***		
Disclosed _{t-6,t-30} × PositionSize			0.0069***		
Disclosed _{t-1,t-5} × MoneyCtr				0.0000	
Disclosed _{t-6,t-30} × MoneyCtr				0.0005***	
Disclosed _{t-1,t-5} × Centrality					0.0009*
Disclosed _{t-6,t-30} × Centrality					0.0018***

Table 14: Distance between the Disclosers in the Same Stock

This table reports summary statistics on the distance between disclosers of a follow-on position and the discloser of a position in the same stock between day $t - i$ and day $t - i - k$. Statistics on the distance between all discloser pairs in our sample are reported for comparison. *Percentage within 100 miles* is the percentage of disclosers of a follow-on position that are within 100 miles of the discloser of a position in the same stock over the prior window. For the test of the difference in means, *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.

	Mean Distance	Difference in Means	Percentage within 100 miles	Difference in Means
All Pairs	470.60		34.92	
Panel A: Full Sample				
Days ($t - 1, t - 5$)	412.30	-58.30***	36.59	1.67
Days ($t - 6, t - 30$)	397.20	-73.40***	42.09	7.17***
Panel B: Rights Issue Subsample				
Days ($t - 1, t - 5$)	416.64	-53.96***	35.92	1.00
Days ($t - 6, t - 30$)	378.77	-91.83***	44.40	9.48***
Panel C: Non-Rights Issue Subsample				
Days ($t - 1, t - 5$)	383.15	-87.45**	41.02	6.10
Days ($t - 6, t - 30$)	449.01	-21.59	35.60	0.68