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ABSTRACT

The Media and the Diffusion of Information in Financial Markets: Evidence from Newspaper Strikes*

The media are increasingly recognized as key players in financial markets. I investigate their causal impact on trading and price formation by examining national newspaper strikes in several countries. Trading volume falls 12% on strike days. The dispersion of stock returns and their intraday volatility are reduced by 7%, while aggregate returns are unaffected. Moreover, an analysis of return predictability indicates that newspapers propagate news from the previous day. These findings demonstrate that the media contribute to the efficiency of the stock market by improving the dissemination of information among investors and its incorporation into stock prices.

JEL Classification: G14
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Introduction

How traders obtain information is of great importance to understanding financial markets. This paper investigates the contribution of the media, if any, to trading activity and price formation. In textbook financial markets, arbitrage renders this contribution insignificant: public news is reflected into asset prices quickly and fully, even before the media have time to report it. Yet a large body of evidence suggests that public information diffuses gradually through the investor population and that this gradual diffusion affects prices.[1] In this context, one may suspect the media matters in financial markets.

Establishing a causal link from the media to financial markets is difficult. A simple correlation may reflect an omitted variable (both the media and the market respond to fundamental news without being directly related) or reverse causality (the media may report newsworthy market developments). In this paper, I exploit newspaper strikes to assess the *causal* impact of the media, and to shed light on the *mechanism* underlying this impact. I identify strikes in the print media that prevent readers from receiving news. Specifically, I search for strikes that 1) affect the press on a national scale, 2) involve the media sector only (i.e. I exclude general strikes affecting multiple sectors), and 3) occur on days on which stock markets are open. Over the period 1989-2010, I find 52 eligible national newspaper strikes. They are concentrated in four countries: France, Greece, Italy and Norway. They are called by journalists, print or distribution workers in reaction to planned government policies. Most of the time, they have to do with their profession's economic conditions, such as employment, pay, pensions, tax breaks, state subsidies and other benefits. Sometimes, they are called to fight censorship and defend the freedom of the press. Therefore, these

[1] For example, Chan (2003) reports evidence of underreaction to newswires and press articles. Hou, Peng and Xiong (2006) interpret the pervasive return momentum phenomenon of Jegadeesh and Titman (1993) as evidence of investors' inattention because it appears to weaken when trading volume is larger. For further evidence on investors' inattention, see Cohen and Frazzini (2008)), DellaVigna and Pollet (2009), Hirshleifer et al. (2009) and Peress (2008). In addition, many instances of underreaction to corporate events have been documented.

nationwide newspaper strikes are neither driven by (i.e. are exogenous to) stock market movements on the day of the strike or the preceding days.

An event-study reveals that on the day newspapers go on strike, the share turnover on the country's stock market is on average 12% lower, while remaining unchanged on the days before and after. The significance level –below 0.5%– is remarkable given the relatively small number of events that serve to identify the impact of a strike. In addition, when stocks are sorted into quintiles according to their market capitalization, the strike effect is strong in the bottom three quintiles, where turnover declines by 15% to 18%, and vanishes in the top two. The findings demonstrate that newspaper blackouts deter some investors from trading. They are most plausibly retail investors given that i) unlike institutions, they do not have access to professional news services such as *Reuters* or *Bloomberg*, and ii) extrapolating from U.S. evidence, small (big) stocks are predominantly owned by individuals (institutions). Moreover, I present an out-of-sample study of a large U.S. discount broker which confirms that retail trades are highly responsive to newspaper strikes.

Does the influence of the media extend beyond trades to affect equilibrium prices? I find that the level and absolute value of market returns, i.e. the return on the market from the close on the strike eve to the close on the strike day, are no different on newspaper strike days from other days. In contrast, intra-day volatility and the dispersion of returns are reduced. Specifically, the average price range, i.e. the ratio of the intra-day high to low prices, and the cross-sectional standard deviation of excess returns both decline by 7% (at significance levels of respectively 4% and 0.5%). When stocks are sorted into size quintiles, the strike effect on the return dispersion is discernible in the bottom 3 to 4 quintiles, while that on the price range is pervasive across size groups. Together, these findings demonstrate that the media have a *causal* impact in financial markets: they stimulate stock trading, most likely by retail investors, and enhance the variability of stock prices within the day and cross-sectionally.

The results are robust to many checks such as running a falsification test which finds no reaction on strike days in countries neighboring the striking country, controlling for outliers, accounting for the availability of internet-based newspaper editions – as expected they dampen the impact of strikes called by print and distribution workers, estimating panel regressions, and changing the way the variables are measured. Moreover, they are confirmed by two out-of-sample tests based on other newspaper strikes and on U.S. retail trades. Finally, I take a closer look at the smallest stocks as their strong response to strikes may seem surprising if one expects these stocks not to be covered in the press in the first place. I show that even the smallest stocks are actually covered, especially in the local press, and furthermore, that these stocks are very sensitive to the coverage they receive.

The contrasting behaviors of the various aspects of volatility I examine –volatility of the return on the market, in the cross-section and intraday– are informative. The discrepancy between the first two –returns are less dispersed while the absolute value of their average is unaffected– indicates that firm-specific shocks, and only such shocks, are more slowly capitalized into stock prices on strike days. One interpretation is that investors are less prone to trade on firm-specific noise on these days, a propensity which, when averaged across stocks, does not change. The evidence is also consistent with theories of rational attention. They predict that investors faced with limited cognitive ability choose to learn first and foremost about the components of returns that are common to multiple stocks, e.g. market, industry or small-stock factors, at the expense of firm-specific shocks (e.g. Peng and Xiong (2006), Kacperczyk et al. (2012), Schmidt (2012)). Newspaper strikes can be viewed as events that raise the cost of receiving news. Hence, when they occur, constrained investors continue to learn about broad factors, here the market and shocks common to stocks within a size quintile, but choose to ignore firm-specific shocks. This leads stocks to move more in synch, i.e. to a decline in return dispersion, without any change in the volatility of average returns.[2]

Second, the discrepancy between the strike effect on the market volatility and the intraday volatility –trades settle at less extreme prices within days without newspapers but closing prices on these days are nonetheless no closer to the preceding-day closing prices– suggests that the media attract less price-sensitive traders who transact at less favorable prices. Unless these transactions happen systematically at the end of the day, closing prices, unlike extreme prices, are not affected. This again suggests that newspaper strikes deter *retail* investors from trading, and lead to a truncation of the tails of the distribution of transaction prices. Indeed, evidence from the U.S. shows that these investors tend not only to trade attention-grabbing stocks such as those in the news (Barber and Odean (2007)), but also to transact systematically at worse prices compared to closing prices (Barber and Odean (2000)). This interpretation is also consistent with the finding that the price range declines uniformly across size groups, in contrast to turnover and the return dispersion, to the extent that extreme prices are a function of the number of noise traders, not of their proportion in the investor base (i.e. big stocks have a large number of individual investors even though most of their shares are held by institutions).

As noted, while the reported decline in the return dispersion is consistent with a slowdown in the capitalization of firm-specific shocks into stock prices on newspaper strike days, it is not clear whether these shocks reflect news or noise (Roll (1986)). An examination of return autocorrelations sheds some light on this question. Suppose that newspapers help diffuse information rather than stimulate noise trading. Then, bearing in mind that newspapers cover events

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[2] The absolute value of average returns appears to decline marginally in the bottom size quintile (by 8% with *p*-values of 13% to 15%). This decline suggests that the cognitive constraint is sufficiently binding for the holders of these stocks, and of these stocks only, that they ignore not only firm-specific shocks but also a factor driving their returns.

from the preceding day (most are distributed in the morning), which are partially reflected in lagged returns, newspaper blackouts should reduce the return correlation between the strike eve and the strike day, and increase it between the strike eve and the day after the strike, as the market "misses a beat" and then catches up. This is precisely the pattern I find for small but not for big stocks.[3]

To summarize, this paper demonstrates a causal impact of the media on stocks' trading intensity and on the second moments of their returns –dispersion, intraday volatility and autocorrelations. The media most plausibly influence individual investors who abstain from trading on strike days. The price effect of the media is visible among the stocks these investors predominately own, namely small stocks, and extends up to size quintile 4 for return dispersion and quintile 5 for the price range. An analysis of return predictability indicates that newspapers help stock prices incorporate news from the previous day.

This paper contributes to several streams of research. First and foremost, it belongs to the growing literature on the role of the media in financial markets. Several recent studies document an association between media activity and stock market activity (e.g. Klibanoff (1998), Huberman and Regev (2001), Tetlock (2007), Fang and Peress (2009)). This paper relates in particular to Engelberg and Parsons (2011) and Dougal et al. (2012), who are the first to establish unambiguously a causal systematic effect of the media. Engelberg and Parsons (2011) show that trades by individual investors located in various U.S. cities respond to business news coverage by local newspapers distributed in these cities. Dougal et al. (2012) find that the identity of *Wall Street Journal* columnists is a good predictor of the next-day return on the *Dow Jones Industrial Average*.

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[3] Noise in contrast does not generate such a pattern. It is commonly assumed that noise leads to return reversals as random price movements are subsequently corrected (e.g. Campbell et al. (1993)). Under this assumption, if newspapers generate noise, then newspaper strikes should weaken these reversals, hence increase the return correlation between the strike day and the day after. In contrast, the strike should have no impact on the return correlation between the strike eve and the strike day, to the extent that newspaper-induced noise is uncorrelated with lagged returns.

I provide evidence consistent with these papers by using an entirely different identification strategy and international data, and add to them on several dimensions. As in Engelberg and Parsons (2011), I find an impact of the media on trading volume but I show further that it extends to returns. Specifically, I uncover a strong media effect on the dispersion of returns, on their autocorrelation and on intraday volatility. As in Dougal et al. (2012), I report a market-wide impact of the media, but in contrast to this paper, I neither find an effect on the level of returns nor on big stocks. These differences suggest that two distinct phenomena are being documented. In fact, Dougal et al. (2012) appeal to a sentiment story –the bullish or bearish sentiment conveyed by columnists influences investors, while I argue for an information dissemination explanation.

Second, the paper contributes to the debate on the determinants of trading volume in the stock market. Trading volume is extremely large across most developed stock markets. Several theories have been put forward to explain this high trading intensity.[4] The findings reported here are consistent with the gradual diffusion of information being a cause of the large observed turnover, and with the media contributing to this diffusion.

Third, the paper relates to the literature on return predictability. Evidence of predictability has long been reported (e.g. Lo and MacKinlay (1988) and Campbell et al. (1993)). Moreover, several studies show it to weaken when stocks' information environment improves (e.g. Llorente et al. (2002)). I document that predictability patterns change when a source of public information is switched off. This phenomenon is particularly pronounced for stocks held predominantly by investors dependent on this source for access to information, such as for small stocks held by individuals who rely on the press.

[4] Explanations include heterogeneous beliefs, the gradual diffusion of information and attention limitations among investors (see Hong and Stein (2007) for a review). In my sample, the ratio of the value of all shares traded in a stock market to its capitalization (the average value-weighted turnover) equals on average 0.32% per day or 75% per year. This means that the entire market value of a typical firm changes hands every 16 months.

Finally, the paper is also related to but distinct from the literature on the impact of public news on the stock market (e.g. French and Roll (1986)). Its purpose is to understand the role of a specific transmission channel for news, namely the press, rather than contribute to the wider debate on the determinants of stock price fluctuations.

The balance of the paper is organized as follows. Section 1 describes the methodology and the data. Section 2 presents the main results of the paper, namely how newspaper strikes affect stock market activity, in aggregate and across stocks. Section 3 investigates how media strikes alter patterns of return autocorrelations. Section 4 conducts a series of robustness checks, including two out-of-sample tests. Section 5 concludes. Additional tests are presented in the Appendix.

1. Methodology and Data

1.1. Empirical Design

Assessing the causal effect of the media on the stock market raises difficult identification issues. A simple association between media activity and stock market activity (e.g. trading volume, stock returns, volatility) may result from unobserved news shocks which create an omitted variable bias. Indeed, if such shocks generate an unusual market reaction and are simultaneously reported in the press, then the market reaction and the media reports are correlated but the media does not cause the unusual reaction. Even in the absence of news shocks, the press may report on the market activity itself, thereby inducing a correlation between the media and the market's response.

To resolve these issues, I exploit variations in media coverage that are exogenous to stock market activity. Specifically, I examine whether stock market activity is different when most newspapers in a country fail to appear because newspaper employees go on strike. I use an event-study approach which compares the behavior of the stock market on a strike day to the average behavior observed over a 100-day window centered on the strike day. Two kinds of tests are performed: the Patell (1978) parametric test, which assumes errors to be normally distributed, and the Corrado (1989) non-parametric test which relies only on the ranking of variables

1.2. National Newspaper Strikes

I collect data on newspaper strikes that prevent readers from receiving news, either because newspapers are not written (a journalists' strike), not printed (a printers' strike) or not distributed (a distributors' strike). I focus on *nationwide* strikes affecting a large number of newspapers. I search for such events across OECD countries over the period 1989-2010. I start in 1989 because trading volume data becomes available in many countries in the early 1990's. I exclude from the sample strikes that occur on non-business days because market activity cannot be measured (e.g. a journalists' strikes on Friday that prevents newspapers from coming out on the Saturday). I also eliminate strikes that are not specific to the media sector, i.e. strikes that are part of general action affecting all sectors, to ensure I do not attribute to a newspaper blackout the impact of a general strike.

Detailed data on industrial actions in media outlets are difficult to obtain. I search *Factiva*, an aggregator of information from a large number of sources around the world, for national newspaper strikes.[5] Over the sample period, the strikes I have found which fulfill my requirements are concentrated in four countries: France, Greece, Italy and Norway. Unions in these countries are powerful and capable of mobilizing the workforce throughout an entire sector.

These nationwide newspaper strikes are not driven by (i.e. are exogenous to) stock market movements on the day of the strike or the preceding days. They are a reaction to government and planned policy changes. Most of the time, they have to do with economic conditions, such as

[5] I search for the term "strike" and its translation in several languages in the full text of news stories, classified by *Factiva* as referring to the "media" industry and to the subject of "labor/personnel issues".

employment, pay, pensions, tax breaks, state subsidies and other benefits. For example in January 2002, Italian printworkers halted production of Italy's newspapers to protest planned labor and pensions reforms by the government of Silvio Berlusconi; later in June, Norwegian journalists silenced the press for 9 days (7 business days) over disputed vacation benefits; in July 2004, Greek journalists went on strike for 48 hours following the breakdown of talks for a collective wage agreement. Disputes over technology are also a frequent source of unrest. In France for example, workers at the NMPP, a company (now relabeled Presstalis) in charge of newspaper deliveries in most of the country called strikes on numerous occasions over plans to adopt new technologies that would change work practices. Journalists also go on strike to fight censorship and defend the freedom of the press. On June 10, 2003, Italian journalists went on strike to protest the concentration of media in the hands of Prime Minister Silvio Berlusconi, and on July 10, 2010, to challenge a proposed law that violates media freedom.

Organizing a strike on a national scale requires some coordination between newspapers so strikes are usually scheduled one to several days in advance. But print and distribution workers often use the element of surprise to prevent management from setting up substitute schemes. Strikes that are anticipated are less likely to affect the stock market to the extent that readers plan ahead their use of alternative sources of information (e.g. purchase foreign newspapers, listen to the radio or watch TV).

I find 52 eligible national newspaper strikes, lasting on average 1.7 business days and amounting to 88 strike-days in total. They are listed in Table 1. In the subsequent analysis, I eliminate strikes that affected the printing and distribution of papers after 1996 because some newspapers were available online from that date on. The year 1996 is chosen as a cutoff because these strikes occurred mostly in France and the French leading newspaper, *Le Monde*, started a free online version on December 19, 1995. Of course, other papers may have come online later.

Moreover, it is not clear to what extent the online edition substitutes for the print edition. My strategy is conservative, to only retain strikes that undoubtedly lead to a drop in media access. I check that increasing to a later year the cutoff for dropping print and distribution strikes, or retaining all of these strikes weakens the impact of strikes, as one would expect (see Section 4).

1.3. Stock Market Variables

I compute, for each firm and day, the share *Turnover*, which equals the ratio of the number of shares traded in the firm on that day to the number of shares outstanding. I then average turnover across all firms in the country and take logs. I also consider three measures of stock return variability. The first is the natural logarithm of one plus the absolute value of the daily average return on the stock market, denoted *Abs. Return*. The second is the price *Range*, i.e. the log of the ratio of the intra-day high price to the intra-day low price, averaged across all stocks in the country. The third is the *Dispersion* of stock returns, estimated as the log of the cross-sectional standard deviation of excess returns, where excess returns are defined as individual stock returns minus the market return in the country. These variables are computed using both equal weights and market-capitalization weights.[6]

I download individual stock data (price, return, number of shares outstanding and traded) on a daily frequency from *Compustat Global*. Stock return and price data are available from 1989 and trading volume data from approximately 1993 depending on countries. I winsorize turnover, market returns and the price range at the 1% level, and purge these variables, as well as the return dispersion, from day-of-the-week and month effects by regressing them on 5 day-of-the-week and 12 month dummy variables, and taking residuals. Table A1 in the Appendix presents descriptive statistics on these variables.

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[6] The value-weighted average turnover equals the ratio of the value of all shares traded in a market to its capitalization.

2. Impact of Newspaper Strikes on Trading Volume and Volatility

2.1. Impact of Newspaper Strikes on the Aggregate Stock Market

Event-study results for the aggregate stock market are displayed in Table 2, overall in Panel A, and event by event in Panel B. To start with, note that the market return is no different on strike days from other days. Indeed, the penultimate column of Panel A shows that the return difference is not distinguishable from zero, be it equally or value-weighted.[7] Equally-weighted turnover, on the other hand, falls significantly on strike days compared to surrounding days. This is true both parametrically (at the 0.5% significance level) and non-parametrically (at the 0.2% level). The economic magnitude of the media strike effect is sizable: equally-weighted turnover falls on average by 12.3% on strike days. This effect is more modest (-1.4%) and no longer significant when market-capitalization weights are used. The contrast between equally and value-weighted averages suggests that the media strike effect is concentrated among smaller firms.

Several studies document a positive association between trading volume and return volatility (e.g. Karpoff (1987), Gallant, Rossi, and Tauchen (1992)). I consider next whether volatility falls on media strike days in tandem with trading activity. Table 2 shows no evidence of a decline in the absolute value of (close-to-close) market returns. The price range in contrast falls by 7.0% on strike days with a statistical significance of 4% in parametric and non-parametric tests when equally weighted. Similarly, the return dispersion falls by 7.5% (with a *p*-value of 0.5%), revealing a tendency for individual stock returns to move more in synch on strike days.

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[7] In contrast to the literature on active media management (Solomon (2011), Ahern and Sosyura (2011)), managers do not seem to take advantage of the potentially muted market reaction on strike days to offload their bad news, while keeping their good news for other days. If this were the case, returns would be lower on strike days, which is not the case. The same conclusion obtains by stock size group (Table 3).

Summarizing the findings for the market as a whole, trading volume, intraday volatility and dispersion fall when newspapers go on strike while the level and absolute value of market returns are unaffected.

The contrasting behaviors of absolute return vs. other variables –turnover, dispersion and price range fall significantly but the absolute return does not– are striking, especially given their well-documented positive correlations. The comparison to turnover reveals that news continues to be incorporated into aggregate stock prices (the absolute value of the stock market return is *not* reduced) even though many investors do not participate in the stock market (turnover weakens), thanks to the trading of investors who remain informed in spite of the newspaper blackout. This suggests that the media may not be essential to the informational efficiency of stock prices *in the aggregate*, even though they may play an important role in propagating information among investors.

The discrepancy between the return dispersion (it drops) and the absolute value of market returns (it is unaffected) indicate that the media have an impact on individual stock prices even though they may not matter for the market. It is consistent both with a decline in firm-specific noise trading and with theories of rational attention. These theories predict that investors faced with limited cognitive ability choose to learn first and foremost about the components of returns that are common to multiple stocks, e.g. market, industry or small-stock factors, at the expense of firm-specific shocks (e.g. Peng and Xiong (2006), Kacperczyk et al. (2012), Schmidt (2012)). Newspaper strikes can be viewed as events that raise the cost of accessing information. Hence, when they occur, constrained investors continue to learn about broad factors, here the market, and shocks common to stocks within a size quintile, but choose to ignore firm-specific shocks. This leads individual stocks to move more in synch, i.e. to a decline in dispersion, without any change in the volatility of average returns.

Finally, the disparity between the absolute market return and the average price range says that trades settle at less extreme prices within days without newspapers, but that closing prices on these days are nonetheless no closer to the preceding-day closing prices. An interpretation is that the media attract less price-sensitive traders who transact at less favorable prices.[8] Unless these transactions happen systematically at the end of the day, closing prices are not affected. Individual investors are prime candidates. Barber and Odean (2000) show that they lose out systematically, not because of bad stock picking but because of transaction costs. They report that the average purchase (sale) price for an individual investor is 0.31% above (0.69% below) the closing price on that day. Barber and Odean (2001, 2002) relate these losses to overconfidence, which leads investors to overweight their own valuation of assets and overlook other agents' beliefs reflected in stock prices. Barber and Odean (2007) show further that individual investors are attracted to attention-grabbing stocks such as those in the news. Thus, it is plausible that newspaper blackouts deter these investors from trading, so that the tails of the distribution of transaction prices are truncated.

These findings not only shed light on the role of the media in financial markets, but also speak to the debate on the determinants of trading volume in the stock market. Trading volume is extremely large across most developed stock markets. In my sample, the ratio of the value of all shares traded in a stock market to its capitalization (the average value-weighted turnover) equals on

[8] Such traders are often referred to as "noise traders" because their trades tend to be unrelated to fundamental information. They can be motivated by liquidity shocks, the need to hedge or rebalance their portfolio, private investment opportunities, or irrationality (e.g. overconfidence). Suppose that daily low and high prices are determined on average by the transactions of these noise traders, who arrive to the market at random times, uniformly distributed over the trading day. If fewer noise traders arrive, then daily high and low prices will be less extreme but closing prices would not change much since there is only a small probability that the closing trades are theirs.

average 0.32% per day or 75% per year. This means that the entire market value of a typical firm changes hands every 16 months.[9] Several theories have been put forward to explain this high trading intensity. These include models in which agents are heterogeneous in their prior beliefs (e.g. Harris and Raviv (1993), Kandel and Pearson (1995)), and models in which news diffuses gradually or fails to attract investors' full attention (e.g. Hong and Stein (1999), Peng and Xiong (2006)). The findings reported here are consistent with the gradual diffusion of information contributing to the large observed turnover, and with the media being a means of this diffusion.

2.2. Impact of Newspaper Strikes across Stocks

The contrast between equally and value-weighted averages in the preceding analysis suggests that the media strike effect is not uniform across stocks. In this section, I examine how it varies with firm size. It is not obvious for which stocks it should be stronger. On one hand, newspapers tend to cover larger firms (e.g. Fang and Peress (2009)), suggesting that a strike is likely to penalize large firms more than small firms. On the other hand, large stocks are mostly owned by investors who do not rely on the domestic press for their access to economic news, namely institutions and foreigners. For example, Lee, Shleifer, and Thaler (1991) document that small stocks are disproportionately held by individual investors in the U.S., while Kang and Stulz (1997) and Dahlquist and Robertsson (2001) that they are underweighted by foreign investors in Japan and Sweden. Institutions subscribe to professional news services (e.g. Bloomberg, Reuters), and foreign investors continue to receive information on strike days from media outlets located in their home country. For retail and local investors in contrast, the domestic press is the primary source of marketwide news.

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[9] Turnover increases over time in the sample. It equals 0.21% per day (52% per year) in the 1990's vs. 0.39% (98% per year) in the 2000's. Hong and Stein (2007) report a similar figure for the U.S. (102% in 2005).

On each day and in each country, I sort stocks into 5 groups based on their market capitalization. I estimate the (equally-weighted) average turnover, price range, return, its absolute value and dispersion within each quintile, and perform an event-study as in Table 2 separately for each size group. The results are displayed in Table 3. The top table of Panel A reveals that turnover drops on strike days in all size quintiles, but the drop is only statistically significant in the bottom three, where its mean ranges from 15% to 18%. These results confirm that the impact of newspaper strikes tends to decline with firm size.

Panel A of Table 3 then shows the impact of newspaper strikes on volatility across size groups. The absolute value of average returns is unaffected except for a marginal decline in the bottom size quintile (7.8% on average with a *p*-value of 15%). The price range and the return dispersion on the other hand fall in all groups. While the decline for the latter is strongest for the smallest stocks (significant up to quintile 4), it seems uniform for the former (significant in quintiles 1, 3 and 5). The pervasive reduction in intraday volatility, including in the top quintile, suggests that the trades that disappear on strike days are those that settle at extreme prices, possibly as previously argued, because some retail investors refrain from trading. Indeed, extreme prices are a function of the number of noise traders, not of their proportion in the investor base. While big stocks are mostly held by institutions, they also have a large number of individual investors.[10] More data is needed to pin down the reason for the decline in the price range.

The finding that small stocks, in particular those in the bottom size quintile, are affected by newspaper strikes may seem puzzling given how rarely these stocks are likely to be featured in the

[10] Turnover falls by an insignificant 3.1% in the top size quintile, consistent with individual investors, who account for a small fraction of big stocks' investor base, sitting on the sidelines on strike days. Moreover, the evidence presented in the last section of the paper and based on data from a large U.S. discount broker shows retail trades to be highly responsive to newspaper strikes.

media in the first place (e.g. Fang and Peress (2009) for coverage in the U.S. national press). There are several reasons why this need not be so surprising. First, the holders of small stocks (mostly retail investors according to evidence from the U.S.) may rely on the press for their access to news about the economy in general, news which may be important to these stocks (e.g. credit conditions or GDP growth). Second, the strikes I consider affect *all* papers in a country, including local and business papers. The local press, in particular, is likely to cover small firms located in its vicinity. I confirm that the coverage of small stocks in the press is actually not negligible by manually searching *Factiva* for articles published in Italian newspapers in 2009 and 2010 about Italian firms in the bottom size quintiles.[11] Over the 2-year period, 96% (73 out of 76) of Italian firms belonging to the bottom size quintile were covered in at least one newspaper article. For these 73 firms, the mean (median) number of articles is 56 (24). A rough calculation suggests that on average 56 x 73 / 2 /250 = 8.2 articles are published about small Italian stocks on a business day. Assuming that each article features a different firm, about 11% (= 8.2 /76) of all firms in the bottom size quintile are covered each day.

Finally, it is plausible that small firms, though less covered than big ones, tend to be more sensitive to press coverage. A closer analysis of turnover presented in Panels B and C of Table 3 lends support to this interpretation. Panel B, which shows the mean and median firm turnover by size quintile on days with and without strikes, reveals that turnover displays many extreme realizations, particularly among small stocks: the gap between the median and the mean is large,

[11] I focus on Italian firms for several reasons. 1) *Factiva* has a reasonable coverage of Italian newspapers in 2009 and 2010 (more comprehensive than for Greece or Norway); 2) It is not possible in *Factiva* to limit the list of sources to Italian newspapers, but one can restrict searches to articles written in Italian and published in European newspapers; 3) Even though the strike effect is pervasive across countries (Table 6 panel A), Italy is the country with the highest number of strikes; 4) The number of firms to search is reasonable (76 vs. 214 for France). I search for articles that mention in their headline and lead paragraph the company name. For names that may be associated with other meanings, I add qualifiers related to the firm's business (e.g. its industry) or search *Factiva* using the *Factiva* code that indexes the company.

declines monotonically with firm size, and on strike days. An interpretation is that trading in small stocks on a typical day is infrequent except for a few outliers – firms that are heavily traded and perhaps mentioned in the media. Panel C shows in more detail how the distribution of turnover changes on strike days. Using data from the estimation window, I calculate turnover deciles for each strike. I then compute the fraction of stocks that display, on strike days, a turnover higher than the corresponding decile (i.e. using the turnover cutoffs from surrounding no-strike days). If strikes do not affect the distribution of turnover, then 10% of all observations should lie inside each decile. Panel C reports the fraction of stocks belonging on strike days to a decile estimated on non-strike days, minus 10%. For example, -2.30% in the "Top 10%" column for Quintile 1 indicates that only 7.70% (=10%-2.30%) of stocks have a turnover on strike-days above the 10% decile estimated on non-strike days. As expected, almost all figures in the Panel are negative, indicating that the entire distribution of turnover shifts to the left on strike days. Interestingly, the difference in the strike effect between the top 20% bucket and the 50%-30% bucket, displayed in the last column of the Panel, is strongly positive for the bottom 3 quintiles, and for these only. This means that the shift in the distribution is more pronounced in the tail for small stocks, while for large stocks it is stronger in the middle of the distribution. For example, in the bottom size quintile, the frequency of a turnover realization in the 50%-40% bucket is 0.07% higher than on days without strikes, compared to 2.30% lower in the top 10%. Thus, the distribution is "compressed" for small stocks, i.e. the frequency of extreme turnover realizations is reduced more than that of median realizations. For the largest stocks in contrast, extreme turnover realizations are less affected than median realizations. Thus, extreme turnover realizations, which account for an important part of changes in average turnover, are less frequent on strike days, especially among small stocks. An interpretation is that, though few small stocks are covered in the press each day, those that receive media attention are intensely traded, which in turn has a big impact on the average turnover within the group.

3. Newspaper Strikes and Return Predictability

The evidence so far (fewer trades, less dispersed returns on newspaper strike days) is consistent with a slower capitalization of firm-specific shocks into stock prices. But it is not clear whether these shocks reflect news or noise (Roll (1986)). That is, newspaper may publicize firm-specific news or themselves generate firm-specific noise. While some evidence suggests that more idiosyncratic price movements are associated with more efficient investment decisions and greater predictive power for future earnings, the question is not yet settled (Bushman et al. (2002), Durnev et al. (2003, 2004)). To check directly whether newspapers help prices incorporate news, one would like to compare the market's reaction to news released on a newspaper strike day to that of similar news released on a normal day. Finding comparable news events, however, is problematic given the small number of strikes in the sample. For example, out of all annual and quarterly earnings announcements recorded in *IBES International* made by firms from the four striking countries, only 13 fall on strike eves, of which 5 are made by firms in the top two quintiles, which, in any case, are mostly insensitive to strikes (Table 3).

I resort to a coarse but suggestive analysis, based on return autocorrelations. Their patterns differ depending on whether newspapers disseminate news or generate noise. A formal analysis, presented in the Appendix, makes the following predictions.[12] Suppose first that *newspapers disseminate news about firms*. Then, bearing in mind that newspapers cover events from the preceding day (most are distributed in the morning), which are partially reflected in lagged returns, newspaper blackouts should reduce the return correlation between the strike eve and the strike day,

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[12] This approach distinguishes news dissemination from noise generation by newspapers. But, assuming the former holds, it does not allow to tell whether the news disseminated reflects firm-specific fundamentals or firm-specific noise.

and increase it between the strike eve and the day after the strike, as the market "misses a beat" and then catches up. Moreover, since current returns are less impacted by lagged returns on strike days, they are better predictors of next-day returns, so the return correlation between the strike day and the day after should increase.

The autocorrelation pattern will be different if newspapers instead generate noise. It is commonly assumed that noise leads to return reversals as random price movements are subsequently corrected (e.g. Campbell et al. (1993)).[13] Under this assumption, if *newspapers generate noise*, newspaper strikes should weaken reversals, hence increase the return correlation between the strike day and the day after. But to the extent that newspaper-induced noise is uncorrelated with lagged returns, the strike should have no impact on the return correlation between the strike eve and the strike day, and between the strike eve and the day after the strike.

To summarize, the information diffusion hypothesis predicts that media strikes decrease the return correlation between day t-1 and day t but increase it between day t and day t+1, and between day t and day t+1. The noise generation hypothesis on the other hand predicts that media strikes have no bearing on the return correlation between day t-1 and day t, and between day t-1 and day t+1, but increase it between day t and day t+1.

I test these predictions in Table 4 for stocks in the bottom size quintile.[14] I define an indicator variable, $Strike_{t,k}$, which equals one if a national newspaper strike occurs on day t in

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[13] An extreme illustration of press-induced noise is given by *United Airlines* after an old article on its 2002-bankruptcy resurfaced in 2008 on a newspaper's website (the *Florida Sun Sentinel*) with the date changed. The article triggered a massive sell-off of the airline's shares which dropped by 76% within minutes and then rebounded once the story was recognized as false. The stock closed at 11% below the previous-day close. See Carvalho et al. (2011) for more details.

[14] The average return is the most responsive to strikes among these stocks. Table 3 reveals a marginally insignificant negative effect of strikes on absolute returns (p-value of 13% and 15%).

country *k* and zero otherwise. In regression 1, I regress the day-*t* return on the day-*t*-1-return and its interaction with the media strike dummy. Here, the dependent variables and the strike are measured contemporaneously. Regressions 2 to 4 examine returns one day after the strike: the dependent variable is the day-*t*+1 return and the independent variables include the strike indicator interacted with both the contemporaneous (day-*t*) and lagged (day-*t*-1) returns. Standard errors are adjusted for heteroskedasticity and clustered by date to account for world shocks to returns.[15]

On the whole, the results support the news diffusion hypothesis, and reject the noise generation hypothesis: In regression 1, the coefficient estimate on *Return_Small*(*t*-1) x *Strike*(*t*) is significantly negative; In regressions 3 and 4, the coefficient estimate on *Return_Small*(*t*-1) x *Strike*(*t*) is significantly positive; In regressions 2 and 4, the coefficient estimates on *Return_Small*(*t*) x *Strike*(*t*) are positive but not significant. Unreported regressions reveal that there is no symmetric effect for big stocks, consistent with the finding in Table 3 that big stocks are insensitive to newspaper strikes. Overall, these results suggest that news is capitalized more slowly into the returns of small stocks on strike days.

4. Robustness Checks

In this section, I check the robustness of the baseline results presented in Table 2. I start by investigating how the market behaves on the days surrounding a newspaper strike. Then, I try to alleviate the concern that the strike effect could be driven by a few outlier strikes or one particular country. Next, I carry out falsification tests. Finally, I examine out-of-sample evidence. Additional

[15] I include in the regressions lagged and/or contemporaneous returns interacted with day-of-the-week dummy variables. The overall impact of lagged returns on current returns is obtained by summing the coefficient estimates on these variables. I find that it is positive as in the U.S (e.g. Lo and MacKinlay (1988), Campbell, Grossman and Wang (1993)).

checks are presented in the Appendix, including panel regression estimations and alternative measures of turnover.

4.1. Days Surrounding Strikes

I examine how the stock market behaves on the days surrounding a newspaper strike. In principle, if trading activity or volatility weaken on day *t* because of the news blackout, then they should not weaken on day *t*-1 nor day *t*+1. This prediction is complicated by two features. First, about a third of newspaper strikes last more than one day. Second, several national newspaper strikes are surrounded by other media strikes such as national strikes in other media (news agencies such as ANSA in Italy or AFP in France, television or radio stations), or by strikes in one or several leading newspapers. To identify these confounding events, I search *Factiva* for any occurrence of a media strike on the day before or after a national newspaper strike used in my sample. I find that half (a third) of the strikes are preceded (followed) by a strike in any kind of media, i.e. by a strike affecting the working of a media outlet without paralyzing the entire newspaper sector. Accordingly, I split the event-study into two parts, depending on whether or not the days before and after the strike are subject to strikes.

The results of this analysis are presented in Table 5. Panel A focuses on the day before a national newspaper strike. It reveals that turnover, the absolute value of market returns, the price range and the return dispersion tend to be lower on the days before a strike, but these effects are entirely imputable to confounding media strikes occurring on these days. On the day after strikes, there is no significant change in any of these variables except for the price range (Panel B). Though it does not lose its significance entirely (*p*-values of 5% and 7%), the fall in the price range weakens considerably –it halves– when there is no concurrent media strike. Overall, the impact of a national newspaper strike is concentrated on the strike day except when a concurrent media strike occurs.

4.2. Country Analysis

To ensure that the results are not driven but a few outliers or one particular country, I perform the event study after removing each country in turn from the sample. The results presented in Panel A in Table 6 confirm that, though they weaken at times, the estimates of the strike effect remain negative and overwhelmingly significant. The results are statistically the weakest when Italy is excluded, reflecting the fact that Italy accounts for the largest number of strikes in the sample.

4.3. Retaining Print and Distribution Strikes Occurring After 1996

In the analysis, I excluded from the sample of events 11 strikes initiated by print and distribution workers after 1996 on the basis that newspapers were available online from that date onward.[16] To gauge their influence on my results, I add them back to the sample of events, proceeding in two steps. Panel B in Table 6 adds back 6 strikes occurring between 1996 and 2006, and panel C adds the remaining 5 –so all strikes are present in Panel C. The strike effect is qualitatively similar, but weakens as print and distribution strikes are added to the sample. In particular, the mean reduction in turnover is, respectively, 11% and 8% in Panels B and C, compared to 12% in the baseline analysis, consistent with the notion that online substitutes make print and distribution strikes less effective.

[16] There are 10 such strikes in France, and one in Italy. France's leading newspaper, *Le Monde*, started a free web version on December 19, 1995.

4.4. Using All Strike Days

The event-study so far is performed on the first day of each strike. When a strike lasts several days, readers will switch to alternative sources of information. For example, the 2002 and 2004 Norwegian strikes which lasted 7 business days lead to an increase in foreign press sales.[17] Panel D of Table 6 shows results when all strike days are used as event-days. They are qualitatively similar to the baseline event-study in Table 2, but overall quantitatively weaker as expected.

4.5. Falsification Test

I check that my results are robust to a placebo treatment based on stock market data from neighboring non-striking countries. I select European countries which share a border with one of the 4 strike-countries and feature comprehensive data in *Compustat Global*. Specifically, I examine stock market activity in Germany, Spain, Italy, Belgium and Switzerland when French newspapers are on strike; in France, Switzerland and Austria when Italian newspapers are on strike; in Sweden, Denmark and Finland when Norwegian newspapers are on strike; no country is matched to Greece as Albania, Macedonia and Bulgaria are not adequately covered in *Compustat*. The event-study results are displayed in Table 7, and event-by-event in Panel A3 in the Appendix. They show no significant effect of strikes on stock market activity.

4.6. Out-of-Sample Evidence

4.6.1. Evidence from the European Protest and Coercion Dataset

Political scientists interested in labor relations and social conflicts have created a dataset that lists protest and repressive events such as strikes and occupations in 28 European countries from

[17] In 2002 and 2004, the Norwegian kiosks chain Narvesen registered a strong rise in the foreign press sales ("Norwegian Journalists Strike Increases Foreign Newspaper Sales", *Norwegian News Digests*, 21 May 2004).

1980 to 1995.[18] An interesting feature of this data for my purpose is that it contains precise information on the type of action, target, location and date of the strikes, so I can identify national newspaper strikes and the day on which they occur. Moreover, the overlap between this dataset on my sample is limited. My sample covers the period 1989-2010. I have not been able to find in *Factiva* information about most of the strikes the dataset identifies between 1989 and 1995. Indeed, the list of European news sources offered by *Factiva* is limited in the early nineties, while the protest and coercion dataset was constructed using numerous local sources and the *Reuters Textline* library. The Protest and Coercion Dataset lists 54 strikes between 1989 and 1995, occurring in Denmark, France, Germany, Greece, Italy and Norway and Switzerland. Of these, 11 (20%; 5 out 24 with valid turnover data) are present in my sample. The strike days coincide for 7 of them, but the remaining 4 are recorded as occurring on the day after the strike date which I identified in my sample. The likely reason for this mismatch is that the actual day on which newspapers fail to come out depends on the function fulfilled by the protesters and the time of the day on which they strike. For example, a newspaper will not reach readers on the *same* day distributors strike, but will usually fail to go out on the day *after* printers or journalists strike since today's newspaper has already been delivered. In constructing my sample, I was careful to identify the actual date newspapers are not distributed.

With its little overlap with my sample, this dataset offers a useful out-of-sample test for the impact of newspaper strikes on the stock market. I conduct an event-study analogous to that of Table 2, *excluding* strikes common to both datasets, and find broadly similar results, displayed in Table 8. Turnover falls by 10.1% on strike days and the price range by 11.3%. In contrast, returns (average, absolute and cross-sectional standard deviation) do not seem to be affected. The weak

[18] The dataset is developed by Professor Ron Francisco at the University of Kansas and can be downloaded from http://web.ku.edu/~ronfran/data/index.html.

significance on turnover reflects not only the small number of events (19) and potential errors in the actual date newspapers are absent, but also the noisy nature of the data in the early nineties. Note that the strike effect is much stronger if strikes common to both datasets are retained –these strikes are likely to be more important since I have found them in *Factiva*. Overall, these findings confirm that newspaper strikes lead to a drop in trading activity and intraday volatility, without much affecting returns.

4.6.2. Evidence from Local Strikes in the U.S.

While national newspaper strikes have not occurred in the U.S., several cities have experienced local newspapers strikes. Given the size of the country and the breadth of stock ownership (integrated market), these local newspaper interruptions are unlikely to significantly affect stocks' turnover or returns. Nonetheless, they may influence the trading behavior of local investors, i.e. of investors who rely on the striking local newspapers for news (Engelberg and Parsons (2011)). I investigate this hypothesis using household trading data from a large discount brokerage. The data contain the trades of 78,000 households from January 1991 through December 1996.[19] Over this 5-year period, three cities experienced strikes that prevented readers from receiving their newspapers. 1) A strike by drivers forced Pittsburgh's two daily newspapers, the *Post-Gazette* and *The Pittsburgh Press*, to stop publishing on May 18, 1992 for several weeks; 2) San Francisco's two main daily newspapers, the *San Francisco Chronicle* and *San Francisco Examiner*, had to shutdown printing plants on November 3rd, 1994 for 11 days because of a strike by 2,600 journalists, editors, lorry drivers, press operators and paper handlers; 3) Detroit's two largest newspapers, the *Detroit Free Press* and *The Detroit News*, were hit by a strike on July 14, 1995 which lasted several months. Though these three strikes lasted several days or weeks, it is not

[19] See Barber and Odean (2000) for a compete description of these data. Trade values are winsorized at the 1% level.

clear, given the availability of substitutes (e.g. *The New York Times*), whether their impact would last beyond few days.[20]

I study the trading behavior of investors located in a 50- and 100-mile radius of the striking city, around the first day of the strike.[21] A drawback of an examination of local trades is that it tells us nothing about the impact of newspaper strikes on stock returns. An advantage is that these data allow to control for shocks to the stock market occurring on strike days. Suppose, for example, that May, 18 1992 (the first day of the Pittsburgh strikes) is a day on which investors pay little attention to the economy, either because there is little going on, or because they are distracted (e.g. on a Friday, or a day with major non-economic news or international events). Then trading volume by Pittsburgh investors will be low on that day, regardless of the newspaper strike, but excess trading volume relative to the rest of the country will not.

On each day *t*, I aggregate the dollar trading volume over all investors located in the striking city *k* and over all stocks in the country, denoted $Vol\$\_Strike_{k,t}$. Similarly, I aggregate the dollar trading volume over all investors located outside the striking city and over all stocks in the country, $Vol\$\_NoStrike_{k,t}$. I estimate the abnormal local trading volume in a striking city relative to the rest of the country as the log ratio of aggregate trading volume in the striking city to aggregate trading volume in the rest of the country:

[20] Many readers switched to other newspapers as well as to new media outlets developed by publishers (e.g. "Readers scramble for other news sources", *Associated Press*, 20 May 1992). The publishers of the two San Francisco newspapers responded to the strike by launching a combined free electronic version, one of the earliest examples of an online newspaper edition, which contributed to the development of online media ("Newspapers and Strikers Wage a Cyberspace Duel", *The Wall Street Journal*, 7 November 1994). The Pittsburgh strike prompted a competing newspaper, *The North Hills News Record*, to expand from a semi-weekly to a daily publication ("Gannett Paper Expands To Take Advantage Of Pittsburgh Strike", *Dow Jones News Service*, 20 May 1992).

[21] The brokerage dataset provides zipcode information for 54,297 households.

$$AVol_{k,t} = \ln\left(Vol\$\_Strike_{k,t} / Vol\$\_NoStrike_{k,t}\right).$$

I perform, for each newspaper strike, an event-study on abnormal trading volume in the spirit of Table 2, using data from a 100-day window centered on the strike day. The results presented in Table 9 show a strong impact of the strike on local trades: on average trading volume falls by 58% (= exp(-0.859)-1) in a striking city relative to the rest of the country using a 50-miles radius, and by 37% (= exp(-0.469)-1) using a 100-miles radius, with *p*-values ranging from 3% to 14% (Panel A). The event-by-event results displayed on Panel B show the Detroit strike to be responsible for the high sensitivity of the strike effect to the radius. Unreported tests show no significant strike effect on the days before and after the strikes. With only three observations, this evidence is only suggestive. But it does provide out-of-sample support for an effect of newspaper strikes on trading activity, as documented in the cross-country study. It also highlights the importance of the role played by individual investors who appear to be very responsive to newspaper blackouts.

5. Conclusion

In this paper, I provide evidence that the media have a causal impact in financial markets, and shed light on the mechanism underlying this impact. I employ a novel identification strategy based on newspaper strikes that are exogenous to stock market movements. I document that on average trading activity is considerably weaker on strike days. The media most plausibly influence individual investors who abstain from trading on strike days. I also find evidence of a matching reduction in intra-day volatility and in the dispersion of stock returns, while the level and absolute value of aggregate returns are unaffected. These effects vanish among the stocks institutions predominately own, namely big stocks. Moreover, newspaper strikes alter the patterns of return autocorrelations. Specifically, the power of lagged returns of small firms for predicting their current returns vanishes on newspaper strike days, but increases for predicting returns on the day following the strike. Overall, these findings support the notion that newspapers contribute to the diffusion of information and help stock prices incorporate news from the previous day.

Looking into the future, one may speculate that the development of the media (e.g. the internet, smart phones etc…), by increasing the number of news sources and the speed with which news spreads, will strengthen the effects documented in this paper. Trading volume and idiosyncratic volatility should continue to rise while the period over which returns are correlated should continue to shrink, i.e. returns should appear autocorrelated over shorter horizons, for example within the day instead of between days.[22] [23] On the other hand, several countervailing forces may temper the conjectured growing influence of the media. First, the effects I find for newspapers seem, by and large, to be confined to stocks held by retail investors. They should therefore dampen as stock ownership is further intermediated, to the extent that professional newswires used by money managers are not considered part of the mass media. Second, investors may suffer from information overload as the number and speed of news sources grow, and respond less strongly to media stimulations. Finally, speed may come at the expense of information reliability, leading investors to ignore some of the more timely sources.

[22] I show that newspapers, by reporting events with a lag, induce a correlation in stock returns between the actual event time and the report time. Indeed, newspaper strikes reduce the return correlation between the strike eve and the strike day, but increase it between the strike eve and the day after the strike.

[23] As a matter of fact, the expansion of the media in the past decades (due to increasing market competition and technological improvements), may have contributed to the observed increases in trading activity and in idiosyncratic volatility, and to the observed decrease in daily return autocorrelation (Campbell et al. (2001), Chordia et al. (2011)). To be clear, I am not claiming that the media are actually responsible for these patterns –several explanations, more plausible in my view, have been put forward and are still being debated, but it is conceivable that the media may have amplified some of these trends.

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Table 1: Sample of National Newspaper Strikes

This table lists national newspaper strikes that occur on a business day and are specific to the publishing and media sector. Duration is measured in trading days.

Country	Date	Duration	Who strikes?
France	08 March 1989	2	Print & distribution workers
	28 June 1989	1	Print & distribution workers
	15 December 1989	6	Print & distribution workers
	20 February 1992	1	Journalists
	29 April 1993	1	Print & distribution workers
	14 October 1993	1	Print & distribution workers
	08 November 1995	1	Print & distribution workers
	16 October 1996	1	Journalists
	15 November 1996	1	Journalists
	10 April 1997	1	Print & distribution workers
	08 July 1997	1	Print & distribution workers
	07 April 1999	1	Print & distribution workers
	13 June 2001	1	Print & distribution workers
	08 September 2005	1	Print & distribution workers
	12 June 2008	1	Print & distribution workers
	16 September 2008	1	Print & distribution workers
	30 October 2008	1	Print & distribution workers
	28 October 2009	1	Print & distribution workers
	21 April 2010	2	Print & distribution workers
Greece	10 April 2001	1	Journalists
	07 February 2002	2	Journalists
	07 March 2002	1	Journalists
	28 March 2002	2	Journalists
	14 July 2004	4	Journalists
	25 November 2005	1	Journalists
	09 May 2007	1	Journalists
	28 November 2007	1	Journalists
	02 October 2008	1	Journalists
	24 June 2009	1	Journalists
	04 June 2010	1	Journalists
Italy	30 January 1991	1	Journalists
	28 May 1991	3	Journalists
	29 July 1991	2	Journalists
	30 September 1993	1	Journalists
	16 March 1994	2	Journalists
	11 April 1995	1	Journalists
	28 April 1995	1	Journalists
	20 October 1995	3	Journalists
	10 December 1999	1	Journalists
	30 November 2000	2	Journalists
	12 December 2000	1	Journalists
	22 January 2002	1	Print & distribution workers
	11 June 2003	1	Journalists
	28 October 2003	1	Journalists
	09 November 2005	2	Journalists
	06 October 2006	2	Journalists
	16 November 2006	1	Journalists
	22 December 2006	3	Journalists
	09 July 2010	1	Journalists
Norway	11 June 1990	2	Journalists
	30 May 2002	7	Journalists
	13 May 2004	7	Journalists

Table 2: Average Impact of Newspaper Strikes

This table presents the impact of national newspaper strikes on the stock market. Strikes carried out by print and distribution workers after 1996 are excluded because of the availability of online editions. *Turnover* in a country is obtained by estimating for each firm and day the ratio of the number of shares traded in the firm on that day to the number of shares outstanding, computing the average across all firms in the country, and finally taking logs. Volatility in a country is measured 1) as the log of one plus the absolute value of the residual from a regression of daily stock market returns on 11 month dummy variables and 5 day-of-the-week dummy variables, denoted *Absolute Return*, and 2) as the price *Range*, defined asTable 2 the log of the ratio for each stock of the intra-day high to low prices, averaged across all stocks in a country. *Return* is the average return on the market in a country. Return *Dispersion* is the log of the standard deviation of excess returns in the cross section of stocks in a country where excess returns are measured as individual stock returns minus the return on the market. When estimating this standard deviation, days with fewer than 20 stock returns are dropped. Averages (turnover, absolute return, range and return) are computed using equal weights and market-capitalization weights. Averages and the return dispersion are purged from month and day-of-the-week effects by regressing them on 11 month dummy variables and 5 day-of-the-week dummy variables, and taking residuals. The event-study is performed using a 100-day estimation window centered on the strike day. Statistics for the whole sample of events for both equally-weighted and value-weighted averages are displayed in Panel A. The tables show for the 4 variables their mean and median difference on newspaper strike days relative to the other days in the estimation window, the statistics and *p*-values for the Patell (1976) test and for Corrado (1989) rank test. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Panel B lists event-study statistics by event. It displays for turnover, absolute return and range their difference on the newspaper strike day relative to their average over the estimation window (“raw difference”), and this difference divided by the standard deviation of the variables over the estimation window (“standardized difference”).

Panel A: Overall

	Equally Weighted									
	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.123		0.041		-0.070		0.021		-0.075	
Median	-0.129		-0.009		-0.074		-0.010		-0.080	
Patell Stat	-2.783	***	0.752		-2.104	**	-0.586		-2.835	***
p-value	0.005		0.452		0.035		0.558		0.005	
Rank Stat	-3.095	***	0.658		-2.104	**	-0.387		-2.816	***
p-value	0.002		0.511		0.035		0.699		0.005	
Events	32		41		30		41		41	

	Value Weighted									
	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.014		0.049		-0.092		-0.076		-0.041	
Median	-0.033		0.058		-0.080		0.022		-0.031	
Patell Stat	-0.412		0.585		-1.326		-0.695		-1.107	
p-value	0.681		0.558		0.185		0.487		0.268	
Rank Stat	-0.304		0.695		-1.576		-0.202		-1.255	
p-value	0.761		0.487		0.115		0.840		0.209	
Events	32		41		30		41		41	

Panel B: By Event

Country	Date	Turnover		Abs. Return		Range		Cross. Ret. Std. Dev.	
		Raw difference	Stand. difference	Raw difference	Stand. difference	Raw difference	Stand. difference	Raw difference	Stand. difference
France	08/03/1989	n.a.	n.a.	-0.086	-0.337	n.a.	n.a.	0.066	0.484
	28/06/1989	n.a.	n.a.	-0.060	-0.340	n.a.	n.a.	-0.018	-0.102
	15/12/1989	n.a.	n.a.	0.029	0.118	n.a.	n.a.	-0.279	-1.887
	20/02/1992	n.a.	n.a.	0.319	1.408	n.a.	n.a.	-0.042	-0.180
	29/04/1993	-0.283	-1.735	0.282	1.726	n.a.	n.a.	0.025	0.210
	14/10/1993	n.a.	n.a.	0.109	0.632	n.a.	n.a.	-0.155	-1.205
	08/11/1995	0.131	0.822	-0.224	-1.289	0.023	0.203	0.022	0.137
	16/10/1996	0.044	0.247	-0.158	-1.201	-0.021	-0.278	-0.106	-0.884
	15/11/1996	-0.029	-0.137	0.108	0.775	0.111	1.345	0.111	0.794
Greece	10/04/2001	-0.287	-0.987	-0.056	-0.122	-0.233	-1.313	-0.234	-1.150
	07/02/2002	-0.272	-1.234	-0.053	-0.140	-0.093	-0.615	-0.080	-0.575
	07/03/2002	0.197	0.760	0.178	0.502	-0.092	-0.642	0.199	1.335
	28/03/2002	0.175	0.740	-0.171	-0.451	0.103	0.814	0.046	0.306
	14/07/2004	-0.509	-1.931	0.162	0.525	-0.223	-1.864	-0.127	-0.790
	25/11/2005	-0.286	-0.950	-0.387	-1.321	-0.007	-0.072	0.108	0.908
	09/05/2007	-0.219	-0.943	-0.215	-0.773	-0.106	-1.027	-0.040	-0.339
	28/11/2007	-0.032	-0.104	0.712	1.845	-0.005	-0.032	0.074	0.580
	02/10/2008	-0.501	-1.849	-0.402	-0.755	-0.355	-2.445	-0.247	-1.902
	24/06/2009	-0.611	-1.565	0.138	0.371	-0.224	-2.234	-0.091	-0.964
	04/06/2010	-0.037	-0.110	0.541	1.461	0.192	1.231	0.016	0.118
Italy	30/01/1991	n.a.	n.a.	0.344	1.065	n.a.	n.a.	-0.040	-0.321
	28/05/1991	n.a.	n.a.	-0.209	-0.915	n.a.	n.a.	-0.059	-0.406
	29/07/1991	n.a.	n.a.	-0.170	-0.693	n.a.	n.a.	-0.138	-0.768
	30/09/1993	-0.395	-1.924	-0.260	-1.142	-1.139	-1.438	-0.270	-0.754
	16/03/1994	0.264	1.066	-0.277	-0.869	-0.257	-0.524	0.191	0.618
	11/04/1995	-0.125	-0.615	0.407	1.596	0.011	0.067	-0.121	-0.896
	28/04/1995	0.481	2.226	0.103	0.402	0.032	0.178	-0.008	-0.061
	20/10/1995	-0.287	-1.012	0.578	2.502	-0.078	-0.404	-0.205	-1.085
	10/12/1999	-0.416	-1.671	0.305	1.263	-0.127	-0.893	-0.320	-1.722
	30/11/2000	-0.102	-0.418	0.225	0.733	0.074	0.455	0.161	0.867
	12/12/2000	-0.084	-0.337	-0.320	-1.051	-0.181	-1.132	-0.179	-0.936
	11/06/2003	0.000	-0.001	-0.071	-0.328	0.779	2.521	-0.029	-0.121
	28/10/2003	0.000	-0.001	-0.116	-0.499	n.a.	n.a.	-0.175	-0.586
	09/11/2005	-0.273	-1.246	-0.245	-1.190	-0.048	-0.496	-0.281	-2.441
	06/10/2006	0.052	0.272	-0.070	-0.438	-0.078	-0.991	-0.199	-1.302
	16/11/2006	-0.163	-0.869	-0.234	-1.358	-0.103	-1.286	-0.248	-1.514
	22/12/2006	-0.382	-2.096	0.262	1.138	-0.065	-0.475	-0.192	-1.129
	09/07/2010	-0.133	-0.703	0.067	0.182	-0.071	-0.605	0.245	1.178
Norway	11/06/1990	n.a.	n.a.	-0.009	-0.035	n.a.	n.a.	-0.598	-2.441
	30/05/2002	-0.198	-0.890	0.202	0.531	-0.077	-0.393	0.276	1.277
	13/05/2004	0.341	1.451	0.413	1.286	0.142	0.820	-0.119	-0.498

Table 3: Impact of Newspaper Strikes across Stock Size Groups

This table presents the impact of national newspaper strikes on trading activity, volatility and returns across stock size groups. Stocks are sorted into quintiles in each country based on their market capitalization at the end of the previous year. In Panel A, the variables are averages across stocks within each size quintile using equal weights, except for the return dispersion which equals the log of the standard deviation of excess returns across stocks in a quintile. Panels B and C present the strike effect on the distribution of turnover for stocks belonging to different size quintiles. Panel B compares the mean and median stock turnover on days with and without strikes. Panel C shows how the distribution of turnover changes on strike days. Turnover deciles (50%-40%, 40%-30%, 30%-20%, 20%-10% and top 10%) are calculated using data from non-strike days in the estimation window. The table reports the fraction of stocks belonging on strike days to each of these deciles, minus 10%. For example, -2.30% in the "Top 10%" column for Quintile 1 indicates that only 7.70% (=10%-2.30%) of stocks have a turnover on strike-days above the 10% decile estimated on non-strike days. The variables, methodology and test statistics are described in Table 3. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Average Impact across Stock Size Groups

	Turnover									
	Quintile 1 (Small)		2		3		4		Quintile 5 (Big)	
Mean	-0.153		-0.182		-0.157		-0.027		-0.031	
Median	-0.202		-0.178		-0.224		-0.056		-0.057	
Patell Stat	-2.444	**	-2.790	***	-2.455	**	-0.376		-0.708	
p-value	0.015		0.005		0.014		0.707		0.479	
Rank Stat	-2.250	**	-2.288	**	-3.315	***	-0.533		-0.688	
p-value	0.024		0.022		0.001		0.594		0.491	
Events	32		32		32		32		32	

	Abs. Return									
	Quintile 1 (Small)		2		3		4		Quintile 5 (Big)	
Mean	-0.078		0.009		0.023		0.057		0.067	
Median	-0.084		-0.038		-0.058		-0.011		0.048	
Patell Stat	-1.433		0.051		0.312		1.084		1.042	
p-value	0.152		0.959		0.755		0.278		0.297	
Rank Stat	-1.524		0.058		0.453		0.889		1.193	
p-value	0.127		0.954		0.650		0.374		0.233	
Events	41		41		41		41		41	

	Range									
	Quintile 1 (Small)		2		3		4		Quintile 5 (Big)	
Mean	-0.082		-0.017		-0.099		-0.085		-0.114	
Median	-0.104		-0.046		-0.071		-0.042		-0.071	
Patell Stat	-2.829	***	-1.282		-2.660	***	-1.587		-2.256	**
p-value	0.005		0.200		0.008		0.112		0.024	
Rank Stat	-2.559	**	-1.084		-2.502	**	-1.146		-1.881	*
p-value	0.011		0.278		0.012		0.252		0.060	
Events	31		30		31		29		31	

	Return									
	Quintile 1 (Small)		2		3		4		Quintile 5 (Big)	
Mean	0.021		0.091		0.115		-0.016		-0.056	
Median	-0.005		0.028		0.095		0.047		-0.051	
Patell Stat	-0.367		-0.305		-0.039		-0.752		-0.360	
p-value	0.713		0.760		0.969		0.452		0.719	
Rank Stat	-0.341		-0.036		0.135		-0.486		-0.002	
p-value	0.733		0.972		0.893		0.627		0.998	
Events	41		41		41		41		41	

	Dispersion									
	Quintile 1 (Small)		2		3		4		Quintile 5 (Big)	
Mean	-0.108		-0.061		-0.072		-0.067		-0.025	
Median	-0.078		-0.064		-0.086		-0.111		0.017	
Patell Stat	-2.726	***	-1.960	**	-1.444		-1.922	*	-0.905	
p-value	0.006		0.050		0.149		0.055		0.366	
Rank Stat	-2.392	**	-1.851	*	-2.184	**	-1.577		-0.183	
p-value	0.017		0.064		0.029		0.115		0.855	
Events	41		41		41		41		41	

Panel B: Mean vs. Median Turnover

	Number of firm-days	Mean Turnover	Median Turnover	(Mean-Median)/ Median		Number of firm-days	Mean Turnover	Median Turnover	(Mean-Median)/ Median
	No strike					Strike			
Quintile 1 (Small)	855,965	0.25%	0.05%	3.94		2,656	0.20%	0.04%	3.78
2	882,594	0.19%	0.04%	3.43		2,775	0.14%	0.04%	2.47
3	899,766	0.17%	0.05%	2.75		2,794	0.13%	0.04%	2.09
4	911,372	0.19%	0.06%	2.22		2,820	0.18%	0.06%	2.13
Quintile 5 (Big)	914,531	0.30%	0.16%	0.82		2,837	0.28%	0.16%	0.76

Panel C: Change in the Distribution of Turnover on Strike Days

	Turnover Decile					
	50%-40%	40%-30%	30%-20%	20%-10%	Top 10%	(0-20%) - (50%-30%)
Quintile 1 (Small)	0.07%	-0.18%	-0.03%	-1.53%	-2.30%	-3.73%
2	-0.30%	0.62%	-0.29%	-0.48%	-3.03%	-3.82%
3	-0.53%	-0.30%	-0.51%	-0.51%	-2.52%	-2.19%
4	-1.82%	0.10%	1.01%	-0.57%	-1.16%	-0.01%
Quintile 5 (Big)	-1.29%	-0.81%	0.88%	-1.49%	-0.28%	0.34%

Table 4: Impact of Newspaper Strikes on Return Autocorrelations

This table reports the results of panel regression models of returns on small stocks (stocks in the bottom quintile based on their market capitalization at the end of the previous year). Regression 1 displays the impact of newspaper strikes on contemporaneous returns and Regressions 2 to 4 on the impact on next-day returns. In regression 1 (respectively 2 to 4), the dependent variable is the average return on day *t* (respectively *t*+1) of small stocks. The independent variables include an indicator variable, $Strike_{t,k}$, which equals one on the first day a newspaper strike occurs in country *k* and zero otherwise, and interactions of this variable with lagged returns of small stocks. Country, year, month and day-of-the-week dummy variables are included in the regressions, as well as returns interacted with day-of-the-week dummy variables when indicated. Standard-errors and *p*-values adjusted for heteroskedasticity and clustered by date are displayed in parentheses in this order below the regression coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Return_Small(t)	Return_Small(t+1)		
	(1)	(2)	(3)	(4)
Return_Small(t-1) x Strike(t)	-0.428***		0.317**	0.372**
	(0.146)		(0.160)	(0.178)
	(0.003)		(0.048)	(0.036)
Return_Small(t) x Strike(t)		0.034		0.186
		(0.194)		(0.209)
		(0.859)		(0.375)
Strike(t)	-0.138	-0.141	-0.114	-0.107
	(0.109)	(0.131)	(0.123)	(0.125)
	(0.204)	(0.282)	(0.355)	(0.390)
Return_Small(t-1) x Day-of-week	yes		yes	yes
Return_Small(t) x Day-of-week		yes	yes	yes
Observations	21769	21769	21659	21659
R-squared	0.046	0.045	0.045	0.045

Table 5: Market Reaction on the Days Surrounding Newspaper Strikes

This table presents the impact of national newspaper strikes on the stock market on the days surrounding the strikes. The variables, methodology and test statistics are described in Table 2. Panel A displays results for the day preceding the strike and Panel B for the day following the strike. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Day Preceding Strikes

	Day Before - All									
	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.051		-0.083		-0.043		-0.034		-0.053	
Median	-0.063		-0.107		-0.025		-0.056		-0.062	
Patell Stat	-0.816		-1.537		-0.722		-0.264		-1.987	**
p-value	0.415		0.124		0.470		0.792		0.047	
Rank Stat	-1.467		-0.878		-0.760		-0.066		-1.806	*
p-value	0.142		0.380		0.447		0.948		0.071	
Events	33		41		32		41		38	
	Day Before - No Other Strike									
	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	0.025		-0.035		-0.028		-0.021		-0.024	
Median	0.060		-0.056		-0.019		0.113		-0.014	
Patell Stat	0.655		-0.465		0.930		0.071		-0.235	
p-value	0.512		0.642		0.352		0.944		0.814	
Rank Stat	0.872		0.034		0.713		0.435		-0.092	
p-value	0.383		0.973		0.476		0.664		0.926	
Events	15		22		14		22		21	
	Day Before - Other Strike									
	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.114		-0.139		-0.055		-0.050		-0.088	
Median	-0.139		-0.139		-0.031		-0.099		-0.099	
Patell Stat	-1.703	*	-1.758	*	-1.783	*	-0.464		-2.709	***
p-value	0.089		0.079		0.075		0.643		0.007	
Rank Stat	-2.341	**	-1.279		-1.615		-0.586		-2.390	**
p-value	0.019		0.201		0.106		0.558		0.017	
Events	18		19		18		19		17	

Panel B: Day Following Strikes

	Turnover	Abs. Return	Range	Return	Dispersion
	Day After - All				
Mean	-0.059	-0.058	-0.101	-0.126	-0.019
Median	-0.080	-0.097	-0.062	0.002	-0.044
Patell Stat	-0.679	-0.558	-2.689 ***	-0.917	-1.331
p-value	0.497	0.577	0.007	0.359	0.183
Rank Stat	-1.410	-0.671	-2.571 ***	-0.614	-1.609
p-value	0.158	0.502	0.010	0.539	0.108
Events	30	38	29	38	32
	Day After - No Other Strike				
	Turnover	Abs. Return	Range	Return	Dispersion
Mean	-0.084	-0.021	-0.087	-0.150	-0.033
Median	-0.105	-0.021	-0.052	-0.051	-0.039
Patell Stat	-0.955	0.356	-1.971 **	-0.908	-1.323
p-value	0.340	0.722	0.049	0.364	0.186
Rank Stat	-1.451	0.192	-1.830 *	-0.497	-1.260
p-value	0.147	0.848	0.067	0.619	0.208
Events	23	26	22	26	24
	Day After - Other Strike				
	Turnover	Abs. Return	Range	Return	Dispersion
Mean	0.022	-0.138	-0.148	-0.073	0.022
Median	0.007	-0.188	-0.105	0.014	-0.108
Patell Stat	0.325	-1.517	-1.980 **	-0.295	-0.371
p-value	0.745	0.129	0.048	0.768	0.711
Rank Stat	-0.185	-1.652 *	-2.172 **	-0.421	-1.030
p-value	0.853	0.099	0.030	0.673	0.303
Events	7	12	7	12	8

Table 6: Robustness Checks

This table presents robustness checks of the impact of national newspaper strikes on the stock market. The (equally weighted) variables, methodology and test statistics are described in Table 2. In Panel A, each country is removed in turn to perform the event study. In Panel B, printer strikes occurring after 1996 are not removed from the sample in spite of the availability of online editions. In Panel C, all strike days, not only the first day of any strike, are used for the event study. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Excluding One Country at a Time

	Turnover							
	Excluding France		Excluding Greece		Excluding Italy		Excluding Norway	
Mean	-0.155		-0.114		-0.132		-0.155	
Median	-0.150		-0.101		-0.086		-0.150	
Patell Stat	-2.553	**	-1.888	*	-1.487		-2.645	***
p-value	0.011		0.059		0.137		0.008	
Rank Stat	-2.866	***	-2.282	**	-1.622		-2.884	***
p-value	0.004		0.023		0.105		0.004	
Events	28		21		17		30	

	Abs. Return							
	Excluding France		Excluding Greece		Excluding Italy		Excluding Norway	
Mean	0.001		0.034		-0.008		-0.014	
Median	-0.039		0.019		-0.027		-0.052	
Patell Stat	-0.029		0.488		0.041		-0.243	
p-value	0.977		0.625		0.967		0.808	
Rank Stat	0.037		0.488		0.178		-0.274	
p-value	0.970		0.626		0.859		0.784	
Events	32		30		23		38	

	Range							
	Excluding France		Excluding Greece		Excluding Italy		Excluding Norway	
Mean	-0.093		-0.088		-0.060		-0.094	
Median	-0.083		-0.061		-0.107		-0.080	
Patell Stat	-1.981	**	-1.207		-1.275		-2.018	**
p-value	0.048		0.228		0.202		0.044	
Rank Stat	-2.737	***	-1.939	*	-1.324		-2.551	**
p-value	0.006		0.052		0.185		0.011	
Events	27		19		16		28	

	Dispersion							
	Excluding France		Excluding Greece		Excluding Italy		Excluding Norway	
Mean	-0.084		-0.089		-0.052		-0.069	
Median	-0.105		-0.112		-0.040		-0.070	
Patell Stat	-2.743	***	-2.862	***	-1.412		-2.675	***
p-value	0.006		0.004		0.158		0.007	
Rank Stat	-2.504	**	-2.962	***	-1.223		-2.732	***
p-value	0.012		0.003		0.221		0.006	
Events	32		30		23		38	

Panel B: Dropping Printer Strikes After 2006

	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.112		0.031		-0.064		0.028		-0.080	
Median	-0.109		-0.029		-0.068		-0.010		-0.091	
Patell Stat	-2.882	***	0.459		-2.162	**	-0.513		-3.333	***
p-value	0.004		0.646		0.031		0.608		0.001	
Rank Stat	-3.253	***	0.411		-2.271	**	-0.399		-3.232	***
p-value	0.001		0.681		0.023		0.690		0.001	
Events	38		47		36		47		47	

Panel C: Retaining All Printer Strikes

	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.083		0.048		-0.041		0.019		-0.078	
Median	-0.078		-0.041		-0.048		-0.024		-0.089	
Patell Stat	-2.141	**	1.080		-1.251		-0.847		-3.405	***
p-value	0.032		0.280		0.211		0.397		0.001	
Rank Stat	-2.399	**	0.652		-1.445		-0.496		-3.223	***
p-value	0.016		0.514		0.149		0.620		0.001	
Events	43		52		41		52		52	

Panel D: All Strike Days

	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.091		0.008		-0.090		-0.034		-0.055	
Median	-0.077		-0.056		-0.078		-0.010		-0.080	
Patell Stat	-2.460	**	0.095		-3.267	***	-0.756		-2.849	***
p-value	0.014		0.924		0.001		0.449		0.004	
Rank Stat	-2.344	**	0.109		-2.634	***	-0.722		-2.858	***
p-value	0.019		0.913		0.008		0.471		0.004	
Events	48		67		46		67		67	

Table 7: Falsification Test: Impact of Strikes on Neighboring Countries

This table reports the results of a falsification test to check the robustness of the impact of national newspaper strikes on the stock market. The (equally weighted) variables, methodology and test statistics are described in Table 2. Newspaper strikes in each of the 4 sample countries are assigned to countries with which it shares a border in Europe. Some countries are excluded because of data limitations in Compustat Global. Stock market activity is examined in Germany, Spain, Italy, Belgium and Switzerland when French newspapers are on strike; in France, Switzerland and Austria when Italian newspapers are on strike; in Sweden, Denmark and Finland when Norwegian newspapers are on strike. No country is matched to Greece because of insufficient stock market data for Albania, Macedonia and Bulgaria in Compustat Global. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel B: Impact of Strikes on Neighboring Countries

	Turnover	Abs. Return	Range	Return	Dispersion
Mean	-0.026	0.027	-0.029	-0.030	-0.001
Median	-0.045	0.002	-0.048	-0.050	-0.024
Patell Stat	-0.979	0.745	-1.582	-0.486	0.276
p-value	0.328	0.456	0.114	0.627	0.783
Rank Stat	-0.453	0.939	-1.200	-0.885	0.370
p-value	0.651	0.348	0.230	0.376	0.711
Events	58	108	64	108	108

Table 8: Evidence based on the European Protest and Coercion Data

This table presents the impact of national newspaper strikes on the stock market, using the European Protest and Coercion Data between 1989 and 1995, *excluding* strikes present in my sample (described in Table 1). The variables, methodology and test statistics are described in Table 2. Statistics for the whole sample of events for equally-weighted averages are displayed in Panel A. The tables show for the turnover, absolute return, range, return and cross-sectional return standard deviation, their mean and median difference on newspaper strike days relative to the other days in the estimation window, the statistics and *p*-values for the Patell (1976) test and for Corrado (1989) rank test. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Panel B lists event-study statistics by event. It displays for turnover, absolute return, range and return dispersion their difference on the newspaper strike day relative to their average over the estimation window ("raw difference"), and this difference divided by the standard deviation of the variables over the estimation window ("standardized difference").

Panel A: Overall

	Turnover		Abs. Return		Range		Return		Dispersion	
Mean	-0.101		0.012		-0.113		0.035		-0.009	
Median	-0.076		-0.063		-0.091		0.018		0.003	
Patell Stat	-1.475		0.290		-2.438	**	0.271		0.093	
p-value	0.140		0.772		0.015		0.786		0.926	
Rank Stat	-1.879	*	-0.267		-2.097	**	0.032		0.145	
p-value	0.060		0.790		0.036		0.975		0.884	
Events	19		43		20		43		43	

Panel B: By Event

Country	Date	Turnover		Abs. Return		Range		Dispersion	
		Raw difference	Stand. difference	Raw difference	Stand. difference	Raw difference	Stand. difference	Raw difference	Stand. difference
Denmark	23/06/1989	n.a.	n.a.	-0.303	-1.201	n.a.	n.a.	0.026	0.087
France	07/10/1993	-0.027	-0.132	0.117	0.650	-0.067	-0.604	0.001	0.012
Germany	03/03/1989	n.a.	n.a.	0.494	1.892	n.a.	n.a.	0.264	1.656
Germany	07/05/1990	n.a.	n.a.	0.204	0.799	n.a.	n.a.	-0.026	-0.180
Germany	03/05/1991	n.a.	n.a.	-0.326	-1.303	n.a.	n.a.	-0.103	-0.630
Germany	06/05/1992	n.a.	n.a.	0.145	0.907	n.a.	n.a.	0.350	1.494
Germany	14/05/1992	n.a.	n.a.	0.044	0.247	n.a.	n.a.	-0.301	-1.259
Germany	21/05/1992	n.a.	n.a.	-0.215	-1.188	n.a.	n.a.	0.227	0.946
Germany	01/02/1993	n.a.	n.a.	-0.212	-1.049	n.a.	n.a.	0.148	0.924
Germany	14/03/1994	-0.110	-0.387	-0.043	-0.150	-0.026	-0.069	0.003	0.006
Germany	24/03/1994	0.004	0.014	-0.251	-1.326	-0.187	-1.437	-0.076	-0.196
Germany	07/04/1994	-0.054	-0.131	-0.144	-0.800	0.007	0.056	-0.125	-0.322
Germany	20/05/1994	-0.230	-0.452	-0.198	-1.119	-0.058	-0.455	-0.150	-0.825
Greece	18/12/1995	-0.646	-1.679	0.371	1.188	-0.172	-0.948	0.084	0.527
Italy	30/11/1989	n.a.	n.a.	0.322	1.250	n.a.	n.a.	-0.188	-0.769
Italy	07/12/1989	n.a.	n.a.	-0.063	-0.245	n.a.	n.a.	0.028	0.105
Italy	14/12/1989	n.a.	n.a.	0.433	1.629	n.a.	n.a.	0.159	0.584
Italy	21/12/1989	n.a.	n.a.	-0.217	-0.791	n.a.	n.a.	0.142	0.532
Italy	23/01/1990	n.a.	n.a.	-0.237	-0.933	n.a.	n.a.	-0.061	-0.255
Italy	30/01/1990	n.a.	n.a.	0.183	0.727	n.a.	n.a.	0.102	0.437
Italy	08/02/1991	n.a.	n.a.	-0.238	-0.728	n.a.	n.a.	-0.139	-1.048
Italy	18/02/1991	n.a.	n.a.	0.716	2.428	n.a.	n.a.	0.111	0.809
Italy	18/03/1991	n.a.	n.a.	-0.228	-0.783	n.a.	n.a.	0.192	1.449
Italy	21/06/1991	n.a.	n.a.	0.606	2.477	n.a.	n.a.	0.031	0.152
Italy	10/03/1992	n.a.	n.a.	0.082	0.362	n.a.	n.a.	0.096	0.646
Italy	07/08/1992	n.a.	n.a.	0.200	0.596	n.a.	n.a.	0.037	0.222
Italy	12/10/1992	n.a.	n.a.	-0.377	-1.064	n.a.	n.a.	0.160	0.848
Italy	20/10/1992	n.a.	n.a.	-0.596	-1.720	n.a.	n.a.	-0.184	-0.978
Italy	27/09/1993	-0.052	-0.243	0.288	1.258	-1.112	-1.422	-0.074	-0.209
Italy	27/10/1993	0.029	0.131	0.281	1.232	n.a.	n.a.	0.063	0.172
Italy	25/11/1993	0.041	0.182	0.231	0.934	-0.044	-0.063	-0.580	-1.578
Italy	01/12/1993	-0.222	-1.016	-0.304	-1.207	0.846	1.229	-0.193	-0.521
Italy	14/03/1994	-0.166	-0.581	-0.344	-1.204	-0.216	-0.568	0.133	0.258
Italy	21/09/1994	-0.076	-0.425	-0.112	-0.394	-0.162	-0.837	-0.127	-0.707
Italy	28/09/1994	0.432	2.499	0.429	1.587	-0.001	-0.004	-0.059	-0.344
Italy	14/10/1994	-0.132	-0.737	-0.108	-0.379	-0.088	-0.502	-0.203	-1.229
Italy	18/10/1994	-0.187	-1.036	0.086	0.303	-0.076	-0.438	0.036	0.221
Italy	06/03/1995	-0.067	-0.299	-0.127	-0.456	-0.226	-1.279	-0.136	-0.950
Italy	03/04/1995	-0.030	-0.146	0.418	1.660	-0.094	-0.580	0.209	1.562
Italy	06/04/1995	-0.344	-1.712	-0.160	-0.617	-0.187	-1.208	-0.067	-0.503
Norway	21/05/1993	n.a.	n.a.	0.170	0.474	-0.440	-1.559	-0.037	-0.088
Norway	04/10/1994	-0.090	-1.712	-0.332	-1.243	0.192	0.582	0.122	0.417
Switzerlanc	04/11/1994	n.a.	n.a.	-0.159	-0.805	-0.156	-0.795	-0.293	-0.864

Table 9: Evidence from Local Strikes in the U.S.

This table shows the impact on trading activity of three local newspaper strikes occurring in the U.S.. The events are the November 3rd, 1994-San Francisco strike, the July 14, 1995-Detroit strike, and the May 18, 1992-Pittsburgh strike. The variable of interest is *abnormal local trading volume* in a striking city, measured relative to the rest of the country as $AVol_{k,t} = \ln\left(Vol\$\_Strike_{k,t} / Vol\$\_NoStrike_{k,t}\right)$, where $Vol\$\_Strike_{k,t}$ denotes the dollar trading volume aggregated over all investors located within a 50-mile and 100-mile radius from the striking city, and $Vol\$\_NoStrike_{k,t}$ denotes the dollar trading volume aggregated over all investors located outside the striking city. The event-study is performed using a 100-day estimation window centered on the strike day. Statistics for the whole sample of events for equally-weighted averages are displayed in Panel A. The table shows, for abnormal local volume, the mean and median difference on newspaper strike days relative to the other days in the estimation window, the statistics and *p*-values for the Patell (1976) test and for Corrado (1989) rank test. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Panel B lists event-study statistics by event. It displays the difference in abnormal local trading volume on the newspaper strike day relative to their average over the estimation window ("raw difference"), and this difference divided by the standard deviation of the variables over the estimation window ("standardized difference").

Panel A: Overall

	Abnormal Local Volume			
	50 miles		100 miles	
Mean	-0.859		-0.469	
Median	-0.687		-0.566	
Patell Stat	-2.195	**	-1.579	
p-value	0.028		0.114	
Rank Stat	-1.631		-1.483	
p-value	0.103		0.138	
Events	3		3	

Panel B: By Event

		Abnormal Local Volume			
		50 miles		100 miles	
City	Date	Raw difference	Standard. difference	Raw difference	Standard. difference
Detroit	14/07/1995	-1.657	-2.068	-0.566	-0.857
Pittsburgh	18/05/1992	-0.687	-0.860	-0.616	-0.971
San Francisco	03/11/1994	-0.235	-0.874	-0.226	-0.906

APPENDIX

1. Implications of Newspaper Strikes for Return Predictability

In this Section, I derive implications for return autocorrelations from the news-diffusion hypothesis and the noise-generation hypothesis. Suppose that *on a normal day* (i.e. a day without a strike), a firm's returns have the following structure:

$$r_t = aX_t + (1-a)X_{t-1} + Y_t - bY_{t-1} + Z_t$$

where X_t represents firm-specific news, Y_t firm-specific noise generated by the press and Z_t other firm-specific shocks. I assume that only a fraction a (a coefficient between 0 and 1) of firm-specific shocks is capitalized contemporaneously, the remainder is capitalized on the next day *thanks to the press*. Thus, the first term in the return equation reflects the fraction of shocks incorporated contemporaneously into stock prices, and the second term the fraction of day-(*t*-1) shocks incorporated with a lag. I assume further that newspapers introduce noise into returns, which is partially reversed the next day. The coefficient (*b* between 0 and 1) governs the degree of reversal. Accordingly, the third and fourth terms in the return equation reflect noise generated by the press on day *t*, and the reversion on day *t* on the day-(*t*-1) press-generated noise.

If *a newspaper strike occurs on day t*, the fraction of day-(*t*-1) shock not contemporaneously capitalized, $(1-a)X_{t-1}$, is only incorporated into returns when newspapers are out again so on day *t*+1. Moreover, the press-generated noise is also absent on day *t* ($Y_t = 0$). As a result, returns have the following structure on days *t* and *t*+1:

$$r_t = aX_t - bY_{t-1} + Z_t$$
$$r_{t+1} = aX_{t+1} + (1-a)X_t + (1-a)X_{t-1} + Y_{t+1} + Z_{t+1}$$

I assume the shocks are i.i.d. and independent from one another, and denote σ_X^2, σ_Y^2 and σ_Z^2 the variances of X_t, Y_t and Z_t. This framework nests the information diffusion and noise generation hypotheses. Under the information diffusion hypothesis, the press does not generate any noise so $\sigma_Y^2 = 0$. While under the noise generation hypothesis, news is fully capitalized even without newspapers so a=1.

The table below presents variances and covariances for returns, with $u \equiv (a^2 + (1-a)^2)\,\sigma_X^2 + (1+b^2)\,\sigma_Y^2 + \sigma_Z^2$ and $v \equiv a^2\,\sigma_X^2 + b^2\,\sigma_Y^2 + \sigma_Z^2$ denoting respectively the variance of returns on a normal day and a strike day: [24]

[24] The return variance falls on strike days under both hypotheses ($v - u = (1-a)^2\,\sigma_X^2 + \sigma_Y^2 > 0$).

	No strike on day *t*	Strike on day *t*	Strike - No strike
$\boldsymbol{cov(r_{t-1}, r_t)}$	$a(1-a)\,\sigma_X^2 - b\,\sigma_Y^2$	$-b\,\sigma_Y^2$	
$\boldsymbol{cov(r_{t-1}, r_{t+1})}$	0	$a(1-a)\,\sigma_X^2$	
$\boldsymbol{cov(r_t, r_{t+1})}$	$a(1-a)\,\sigma_X^2 - b\,\sigma_Y^2$	$a(1-a)\,\sigma_X^2$	
$\boldsymbol{var(r_{t-1})}$	u	u	
$\boldsymbol{var(r_t)}$	u	v	$(1-a)^2\,\sigma_X^2 + \sigma_Y^2$
$\boldsymbol{\frac{cov(r_{t-1}, r_t)}{var(r_{t-1})}}$	$\frac{a(1-a)\,\sigma_X^2 - b\,\sigma_Y^2}{u}$	$\frac{-b\,\sigma_Y^2}{u}$	$\boldsymbol{\frac{-a(1-a)\,\sigma_X^2}{u}}$
$\boldsymbol{\frac{cov(r_{t-1}, r_{t+1})}{var(r_{t-1})}}$	0	$\frac{a(1-a)\,\sigma_X^2}{u}$	$\boldsymbol{\frac{a(1-a)\,\sigma_X^2}{u}}$
$\boldsymbol{\frac{cov(r_t, r_{t+1})}{var(r_t)}}$	$\frac{a(1-a)\,\sigma_X^2 - b\,\sigma_Y^2}{u}$	$\frac{a(1-a)\,\sigma_X^2}{v}$	$\boldsymbol{\frac{a(1-a)\,\sigma_X^2((1-a)\,\sigma_X^2 + \sigma_Y^2)}{uv} + \frac{b\,\sigma_Y^2}{u}}$

The last three rows of the table display the coefficients from regressing returns on their lags. The last column presents the change in these coefficients on strike days, which corresponds to the estimate on lagged returns interacted with the strike dummy in Table 4.

The information diffusion hypothesis ($\sigma_Y^2 = 0$) implies that media strikes decrease the coefficient from regressing day *t*-returns on day *t*-1-returns (investors miss news) but increase the coefficient from regressing day *t*+1-returns on day *t*-1-returns (investors catch up) and from regressing day *t*+1-returns on day *t*-returns (current returns are better predictors of next-day returns because they are less disturbed by lagged returns on strike days). The noise generation hypothesis (*a*=1) on the other hand implies that the coefficients from regressing day-*t* and day-*t*+1 returns on day *t*-1-returns do not change on strike days but the coefficient from regressing day *t*+1-returns on day *t*-returns increases (less noise on day *t* so fewer reversals the next day). These are the predictions that I test in Table 4.

2. Robustness Checks using Panel Regressions

In this Appendix, I check whether the event-study results obtain when I use a different statistical approach. I estimate panel regression models with various lags and country and time fixed-effects. An advantage of this approach is that it allows to control for worldwide shocks to equity markets. The main regressor is the indicator variable used in Section 4, $Strike_{t,k}$, which equals one if a national newspaper strike occurs on day *t* in country *k* and zero otherwise. I adjust standard errors for heteroskedasticity and cluster them by date to account for world shocks. I include in regressions day-of-the-week and month dummies to control for calendar effects, and year dummies to control for time trends. I use the same stock market variables as in the event-study, except that I remove low-frequency variations in turnover by dividing it by a 100-day backward moving average and taking logs.[25] Thus, abnormal turnover, *ATurnover*, is defined as:

$$ATurnover_t = \ln\left(\exp(Turnover_t) \Big/ \frac{1}{100} \sum_{s=1}^{100} \exp(Turnover_{t-s}) \right).$$

Table A2 shows the results of these panel regressions. Panel A presents the baseline results corresponding to Table 2. As with the event-study, abnormal turnover, the price range and the return dispersion decline on the strike day but only when the first two variables are equally weighted across firms. The statistical significance level is somewhat stronger than in Table 2 but the economic magnitude of the effect is similar. For example, the slope coefficient in regression 2 measures the average percentage difference in abnormal turnover between strike and non-strike days: on average, equally-weighted abnormal turnover falls by 15.5% on media strike days (statistically significant at the 0.2% level) –recall that turnover falls by 12.3% in the event-study (0.5% significance level). The magnitude of the coefficient is reduced (the coefficient is less negative) when lagged abnormal turnover, $ATurnover_{t-1}$, is included as a regressor. This reflects the well-documented persistence of turnover and the fact that newspaper strikes are associated with low turnover on the day of the strike but also on the day before, because of strikes in other media as discussed in Section 41 The volatility effect is also similar to that obtained with the event-study. There is no discernible change in the absolute value of close-to-close returns, while the price range falls by 14.6% with a 1% significance level and the return dispersion by 13% (*p*-value of 0.3%). Thus, the panel regressions confirm the event-study results.

Panel B focuses on turnover and considers more flexible ways of estimating abnormal turnover. In regression 1, I allow the coefficient on lagged turnover to vary with calendar dummies, i.e. include as regressors $ATurnover_{t-1}$ interacted with year, month and day-of-the-week dummies. In regression 2, I add an additional lag of turnover, $ATurnover_{t-2}$. In both cases, the estimated coefficient on the strike dummy remains negative and statistically significant at the 2% level.

The regressions in Panel A force all slope coefficients to be identical across countries. In regressions 3 and 4 of Panel B, I implement a more flexible two-step procedure that allows countries to load differently on lagged abnormal turnover and calendar dummies. In the first step, I regress, for each country, abnormal turnover on a set of control variables:

$$ATurnover_{t,k} = a_k + b_k ATurnover_{t-1,k} + \sum_l c_{k,l} calendar\_dummy_{t,l} + \varepsilon_{t,k} ,$$

where *k* denotes a country, $calendar\_dummy_{t,l}$ is a set of dummy variables indexed by *l* and indicating the day of the week, the month and the year, and $\varepsilon_{t,k}$ is a residual.[26] In regression 3 of Panel B, no lag of abnormal turnover is included in this first-step regression, while one lag is included in regression 4. The residuals from

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[25] An alternative measure of abnormal turnover is obtained by first taking the log of the ratio of the number of shares traded to the number of shares outstanding, and then subtracting a 100-day backward moving average of log of the ratio. This measure is highly correlated to the one used here (the correlation coefficient is 0.85) but its distribution looks more non-normal (higher skewness and kurtosis).

[26] Strike days are excluded from these regressions.

these regressions are then estimated according to $\hat{\varepsilon}_{t,k} = ATurnover_{t,k} - \hat{a}_k - \hat{b}_k ATurnover_{t-1,k} - \sum_l \hat{c}_{k,l} calendar\_dummy_{t,l}$ where a ^ denotes an estimate. The second step consists of a panel regression of residual turnover $\hat{\varepsilon}_{t,k}$ on the newspaper strike dummy, $Strike_{t,k}$:

$$\hat{\varepsilon}_{t,k} = \gamma Strike_{t,k} + \nu_{t,k}.$$

The results, displayed in regressions 3 and 4 of Panel B confirm again the media strike effect on turnover. The coefficient estimates on the media strike dummy are negative, of similar magnitude as those of regressions 1 and 2 of Panel A, and statistically significant at the 1% to 2% levels.

I consider a final specification, similar to the previous two except that the variance of residuals is allowed to vary over time in the spirit of Gallant, Rossi, and Tauchen (1992). In the first step, I run the same regression as before adding a second lag of abnormal turnover, a time trend and its square:

$$ATurnover_{t,k} = a_k + b_k ATurnover_{t-1,k} + b_{2,k} ATurnover_{t-2,k} + \sum_l c_{k,l} calendar\_dummy_{t,l} + d_k t + d_{2,k} t^2 + \varepsilon_{t,k}$$

Next, I estimate the residual as:

$$\hat{\varepsilon}_{t,k} = ATurnover_{t,k} - \hat{a}_k - \hat{b}_k ATurnover_{t-1,k} - \hat{b}_{2,k} ATurnover_{t-2,k} - \sum_l \hat{c}_{k,l} calendar\_dummy_{t,l} - \hat{d}_k t - \hat{d}_{2,k} t^2 ,$$

and its variance according to the regression model:

$$\ln(\hat{\varepsilon}_{t,k}{}^2) = a'_k + \sum_l c'_{k,l}\ calendar\_dummy_{t,l} + d'_k\ t + d'_{2,k}\ t^2 + \xi_{t,k} ,$$

where $\xi_{t,k}$ denotes the residual from this variance regression. Finally, I define the residual turnover as:

$$\hat{w}_{t,k} = \exp(\hat{\xi}_{t,k}/2) = \frac{\hat{\varepsilon}_{t,k}}{\exp\left[(\hat{a}'_k + \sum_l \hat{c}'_{k,l}\ calendar\_dummy_{t,l} + \hat{d}'_k\ t + \hat{d}'_{2,k}\ t^2)/2 \right]}.$$

Step two consists of regressing residual turnover $\hat{w}_{t,k}$ on the newspaper strike dummy, $Strike_{t,k}$. Regression 5 in Panel B shows again that the coefficient estimate on the strike dummy is negative and statistically significant at the 5% level, consistent with a reduction in trading volume on media strike days.[27]

[27] Gallant, Rossi, and Tauchen (1992) use the natural logarithm of the dollar trading volume as dependent variable rather than turnover. They focus on the U.S. stock market while my sample contains several countries. Turnover is better suited for a cross-country analysis given the important differences in stock market sizes and currencies across countries.

Table A1: Descriptive Statistics

This table displays summary statistics for the daily data used in the event-study analysis of the impact of national newspaper strikes on the stock market. *Turnover* in a country is obtained by estimating for each firm and day the ratio of the number of shares traded in the firm on that day to the number of shares outstanding, averaging across all firms in the country, and taking logs. Volatility in a country is measured as the log of one plus the absolute value of the residual from a regression of daily stock market returns on 11 month dummy variables and 5 day-of-the-week dummy variables, and is denoted *Absolute Return.* The price *Range* is defined as the log of the ratio for each stock of the intra-day high to low prices, averaged across all stocks in a country. *Return* is the average return on the market in a country. Return *Dispersion* is the log of the standard deviation of excess returns in the cross section of stocks in a country where excess returns are measured as individual stock returns minus the return on the market. Averages (turnover, absolute return, range and return) are computed using equal weights. Averages and the return dispersion are purged from month and day-of-the-week effects by regressing them on 11 month dummy variables and 5 day-of-the-week dummy variables, and taking residuals. The statistics are computed over a 100-day window centered on the strike day. Δ represents the change in the variable over one trading day.

Country	Statistic	ΔLnTurn.	LnTurn.	ΔAbs. Return	Abs. Return	ΔRange	Range	Return	ΔDispersion	Dispersion
France	Obs.	1,301	1,347	1,798	1,856	1,232	1,275	1,856	1,814	1,843
	Mean	0.000	0.001	-0.003	0.312	-0.001	0.000	-0.001	0.000	-0.001
	Median	0.002	0.000	0.005	0.255	-0.004	-0.013	0.012	-0.002	-0.011
	Std. Dev.	0.192	0.234	0.302	0.250	0.117	0.169	0.582	0.230	0.166
	Min	-0.831	-1.173	-1.070	0.000	-0.556	-0.642	-2.096	-1.598	-1.078
	Max	0.808	0.975	1.090	1.177	0.590	0.720	2.246	2.013	1.641
Greece	Obs.	1,011	1,059	1,008	1,053	1,011	1,059	1,053	1,068	1,093
	Mean	-0.002	-0.002	-0.011	0.602	-0.005	-0.001	0.002	0.000	0.000
	Median	-0.003	-0.020	0.008	0.526	-0.008	-0.017	-0.022	-0.004	-0.012
	Std. Dev.	0.318	0.361	0.507	0.411	0.129	0.196	1.405	0.163	0.141
	Min	-1.819	-0.910	-1.538	0.001	-0.426	-0.574	-5.229	-0.666	-0.436
	Max	2.070	1.726	1.502	1.920	0.434	0.836	5.822	0.900	0.872
Italy	Obs.	1,482	1,542	1,770	1,830	1,344	1,414	1,830	1,803	1,837
	Mean	0.001	-0.002	-0.003	0.379	0.005	-0.001	-0.001	-0.001	-0.001
	Median	-0.002	-0.003	-0.007	0.314	0.000	-0.019	0.009	0.004	-0.015
	Std. Dev.	0.222	0.289	0.355	0.275	0.349	0.301	0.708	0.245	0.201
	Min	-1.251	-1.237	-1.134	0.000	-2.720	-1.125	-2.685	-2.377	-2.089
	Max	1.097	1.411	1.323	1.339	2.570	1.701	2.816	2.675	1.860
Norway	Obs.	179	189	263	279	179	189	279	292	299
	Mean	-0.011	0.001	0.003	0.540	-0.008	0.000	-0.002	-0.001	-0.001
	Median	0.000	0.032	-0.027	0.473	-0.012	-0.023	0.049	0.007	-0.009
	Std. Dev.	0.256	0.331	0.398	0.339	0.200	0.243	1.092	0.328	0.235
	Min	-0.723	-0.906	-1.071	0.001	-0.509	-0.576	-3.427	-1.010	-0.606
	Max	0.609	0.910	1.117	1.540	0.488	0.705	3.663	1.064	0.722
Total	Obs.	3,973	4,137	4,839	5,018	3,766	3,937	5,018	4,977	5,072
	Mean	-0.001	-0.001	-0.004	0.410	0.000	-0.001	0.000	-0.001	-0.001
	Median	-0.001	-0.003	0.001	0.331	-0.004	-0.017	0.008	0.000	-0.012
	Std. Dev.	0.243	0.295	0.377	0.324	0.233	0.234	0.888	0.230	0.180
	Min	-1.819	-1.237	-1.538	0.000	-2.720	-1.125	-5.229	-2.377	-2.089
	Max	2.070	1.726	1.502	1.920	2.570	1.701	5.822	2.675	1.860

Table A2: Robustness Checks using Panel Regressions

This table shows the impact of national newspaper strikes on the stock market, estimated using panel regression models. Strikes carried out by print and distribution workers after 1996 are excluded because of the availability of online editions. The main independent variable is an indicator variable, $Strike_{t,k}$, which equals one on the first day of a newspaper strike in country *k* and zero otherwise. Panel A reproduces the results of Table 2 for the stock market as a whole. In regressions 1 and 2, the dependent variable is the abnormal turnover in the country, defined as $ATurnover_t = \ln\left(\exp(Turnover_t) \Big/ \frac{1}{100}\sum_{s=1}^{100}\exp(Turnover_{t-s})\right)$ where *Turnover* is defined in Table 2 as the equally-weighted average across all firms in a country of the log of the ratio of the number of shares traded in the firm on that day to the number of shares outstanding. In regressions 3 to 6, the dependent variables are the measures of volatility defined in Table 2, *Absolute Return, Range* and *Cross-Sectional Return Standard Deviation*. Country, year, month and day-of-the-week dummy variables are included in the regressions. Panel B shows different specifications of the panel regressions for turnover. In regression 1, lagged abnormal turnover interacted with year, month and day-of-the-week dummies are included as regressors. In regression 2, an additional lag of abnormal turnover is included as a regressor. In regressions 3 to 5, the dependent variable is the *residual* abnormal turnover in the country, estimated from first-step country-specific regressions of abnormal turnover on year, month and day-of-the-week dummy variables. In regression 4, lagged abnormal turnover is included as a regressor in the first-step regression. In regression 5, a second lag of abnormal turnover, a time trend and its square are also included, and the variance of residuals in the first-step regression varies over time in the spirit of Gallant, Rossi, and Tauchen (1992). Year, month and day-of-the-week dummy variables are included in all the regressions. Standard-errors and *p*-values adjusted for heteroskedasticity and clustered by date are displayed in parentheses in this order below the coefficient estimates. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Baseline Regressions

	Equally Weighted							
	X(t) = ATurnover(t)		X(t) = Abs. Return(t)		X(t) = Range(t)		X(t) = Cross. Ret. Std. Dev.(t)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strike(t)	-0.083***	-0.155***	0.008	-0.037	-0.069**	-0.146***	-0.081***	-0.130***
	(0.030)	(0.049)	(0.041)	(0.042)	(0.030)	(0.056)	(0.031)	(0.044)
	(0.006)	(0.002)	(0.843)	(0.375)	(0.021)	(0.009)	(0.010)	(0.003)
X(t-1)	0.632***		0.211***		0.734***		0.477***	
	(0.008)		(0.009)		(0.011)		(0.057)	
	(0.000)		(0.000)		(0.000)		(0.000)	
Observations	16748	17234	21119	21668	16652	17215	21176	21583
R-squared	0.464	0.100	0.233	0.198	0.789	0.533	0.505	0.357
	Value Weighted							
	X(t) = ATurnover(t)		X(t) = Abs. Return(t)		X(t) = Range(t)		X(t) = Cross. Ret. Std. Dev.(t)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Strike(t)	-0.042	-0.031	-0.050	-0.072	-0.159	-0.190	-0.057	-0.074
	(0.031)	(0.052)	(0.058)	(0.059)	(0.098)	(0.176)	(0.039)	(0.048)
	(0.182)	(0.544)	(0.389)	(0.223)	(0.104)	(0.281)	(0.147)	(0.126)
X(t-1)	0.517***		0.145***		0.892***		0.401***	
	(0.009)		(0.009)		(0.013)		(0.051)	
	(0.000)		(0.000)		(0.000)		(0.000)	
Observations	16748	17234	21119	21668	16652	17215	21180	21585
R-squared	0.359	0.124	0.120	0.101	0.852	0.332	0.376	0.251

Panel B: Other Specification of Turnover Regressions

	ATurnover(t)		Residual Turnover(t)		
	Lag turnover interacted with calendar dummies	2 lags of turnover	No lag of ATurnover in step-1 regression	One lag of ATurnover in step-1 regression	Gallant, Rossi, and Tauchen (1992) on Aturnover
	(1)	(2)	(3)	(4)	(5)
Strike(t)	-0.073**	-0.073**	-0.145***	-0.074**	-0.613**
	(0.029)	(0.031)	(0.047)	(0.031)	(0.307)
	(0.010)	(0.018)	(0.002)	(0.016)	(0.046)
ATurnover(t-1)	0.473***	0.478***			
	(0.050)	(0.011)			
	(0.000)	(0.000)			
ATurnover(t-2)		0.251***			
		(0.011)			
		(0.000)			
Observations	16748	16266	17234	16748	16688
R-squared	0.474	0.501	0.0004	0.0002	0.0001

Table A3: Falsification Test – Event-by-Event Impact of Strikes on Neighboring Countries

This table shows event-by-event impact of strikes on neighboring countries, based on the falsification test in Panel B in Table 7. The methodology is described in Table 7.

		Turnover		Abs. Return		Range		Cross. Std. Dev.	
Country	Date	Raw difference	Standardized difference	Raw difference	Standardized difference	Raw difference	Standardized difference	Raw difference	Standardized difference
Austria	30/01/1991	n.a.	n.a.	0.413	1.304	n.a.	n.a.	-0.225	-1.326
	28/05/1991	n.a.	n.a.	-0.184	-0.810	n.a.	n.a.	0.016	0.091
	29/07/1991	n.a.	n.a.	-0.178	-0.698	n.a.	n.a.	-0.126	-0.527
	30/09/1993	n.a.	n.a.	0.081	0.367	-0.182	-0.814	0.170	0.774
	16/03/1994	n.a.	n.a.	0.198	0.854	0.001	0.005	0.191	0.514
	11/04/1995	n.a.	n.a.	-0.095	-0.520	-0.034	-0.145	-0.381	-1.261
	28/04/1995	n.a.	n.a.	0.092	0.514	0.084	0.350	0.162	0.537
	20/10/1995	n.a.	n.a.	-0.183	-1.043	0.471	2.415	-0.030	-0.095
	10/12/1999	-0.449	-2.124	0.043	0.193	n.a.	n.a.	0.314	1.438
	30/11/2000	0.243	1.365	0.087	0.330	0.025	0.180	0.046	0.201
	12/12/2000	-0.113	-0.655	-0.140	-0.541	-0.225	-1.597	-0.633	-2.711
	11/06/2003	-0.100	-0.508	0.295	1.180	-0.077	-0.507	0.200	0.530
	28/10/2003	-0.632	-2.821	-0.197	-0.835	-0.054	-0.466	0.121	0.505
	09/11/2005	-0.133	-0.709	-0.161	-0.823	-0.092	-0.777	-0.539	-1.882
	06/10/2006	0.318	1.966	0.060	0.314	-0.213	-1.882	-0.697	-2.274
	16/11/2006	-0.053	-0.306	0.154	0.815	-0.084	-0.798	0.264	0.908
	22/12/2006	-0.205	-1.119	-0.205	-0.991	-0.200	-1.285	0.120	0.445
	09/07/2010	0.179	0.993	-0.266	-1.015	-0.009	-0.057	-0.065	-0.211
Belgium	08/03/1989	n.a.	n.a.	0.175	0.688	n.a.	n.a.	0.617	2.615
	28/06/1989	n.a.	n.a.	-0.291	-1.390	n.a.	n.a.	0.157	0.710
	15/12/1989	n.a.	n.a.	0.003	0.011	n.a.	n.a.	-0.301	-1.132
	20/02/1992	n.a.	n.a.	0.044	0.182	n.a.	n.a.	0.431	2.264
	29/04/1993	n.a.	n.a.	0.281	1.065	n.a.	n.a.	0.573	2.900
	14/10/1993	n.a.	n.a.	0.470	2.086	n.a.	n.a.	2.167	6.532
	08/11/1995	-0.065	-0.275	-0.131	-0.617	n.a.	n.a.	-0.209	-0.712
	16/10/1996	0.251	0.887	-0.215	-1.169	0.096	0.667	0.007	0.024
	15/11/1996	0.432	1.460	0.140	0.647	0.284	1.902	-0.015	-0.047
Denmark	11/06/1990	n.a.	n.a.	-0.075	-0.276	n.a.	n.a.	0.325	1.139
	30/05/2002	-0.247	-0.863	-0.291	-0.865	-0.071	-0.342	0.436	1.719
	13/05/2004	-0.380	-1.400	0.019	0.075	-0.093	-0.606	-0.045	-0.196
Finland	11/06/1990	n.a.	n.a.	-0.011	-0.041	n.a.	n.a.	-0.485	-1.700
	30/05/2002	0.613	2.144	0.084	0.249	-0.197	-0.945	-0.316	-1.249
	13/05/2004	-0.130	-0.480	0.036	0.141	-0.208	-1.356	-0.117	-0.510
France	30/01/1991	n.a.	n.a.	0.366	1.156	n.a.	n.a.	0.271	1.598
	28/05/1991	n.a.	n.a.	-0.267	-1.175	n.a.	n.a.	0.242	1.394
	29/07/1991	n.a.	n.a.	0.054	0.213	n.a.	n.a.	-0.049	-0.203
	30/09/1993	-0.088	-0.392	-0.138	-0.625	0.040	0.181	0.013	0.059
	16/03/1994	-0.143	-0.858	-0.351	-1.512	-0.167	-0.825	-0.090	-0.240
	11/04/1995	-0.228	-0.952	-0.212	-1.160	-0.082	-0.347	-0.066	-0.217
	28/04/1995	0.077	0.367	-0.146	-0.818	-0.022	-0.091	-0.210	-0.694
	20/10/1995	-0.176	-0.949	0.165	0.939	-0.060	-0.306	-0.053	-0.168
	10/12/1999	0.250	1.183	0.115	0.521	0.044	0.415	-0.109	-0.497
	30/11/2000	0.069	0.388	0.376	1.436	0.181	1.321	0.115	0.503
	12/12/2000	0.071	0.414	-0.313	-1.214	-0.127	-0.903	-0.102	-0.438
	11/06/2003	-0.001	-0.003	-0.228	-0.914	0.017	0.113	0.103	0.274
	28/10/2003	0.034	0.152	-0.049	-0.210	-0.037	-0.318	-0.019	-0.080
	09/11/2005	0.007	0.035	-0.124	-0.635	0.057	0.482	0.129	0.449
	06/10/2006	0.012	0.074	0.091	0.472	0.032	0.284	-0.066	-0.214
	16/11/2006	0.163	0.931	-0.112	-0.593	0.049	0.467	-0.147	-0.505
	22/12/2006	0.096	0.522	-0.086	-0.417	0.127	0.818	-0.083	-0.307
	09/07/2010	-0.228	-1.263	-0.194	-0.741	-0.123	-0.804	0.172	0.558

Table A3: Falsification Test – Event-by-Event Impact of Strikes on Neighboring Countries (Continuing)

		Turnover		Abs. Return		Range		Cross. Std. Dev.	
Country	Date	Raw difference	Standardized difference	Raw difference	Standardized difference	Raw difference	Standardized difference	Raw difference	Standardized difference
Germany	08/03/1989	n.a.	n.a.	0.523	2.055	n.a.	n.a.	0.313	1.328
	28/06/1989	n.a.	n.a.	0.265	1.265	n.a.	n.a.	0.220	0.996
	15/12/1989	n.a.	n.a.	0.001	0.005	n.a.	n.a.	-0.227	-0.856
	20/02/1992	n.a.	n.a.	-0.151	-0.624	n.a.	n.a.	0.120	0.631
	29/04/1993	n.a.	n.a.	-0.003	-0.012	n.a.	n.a.	-0.104	-0.526
	14/10/1993	n.a.	n.a.	0.222	0.985	n.a.	n.a.	-0.163	-0.491
	08/11/1995	0.055	0.233	0.014	0.066	0.101	0.619	-0.056	-0.190
	16/10/1996	0.163	0.576	0.101	0.548	0.086	0.593	0.068	0.228
	15/11/1996	0.248	0.838	-0.216	-0.999	0.021	0.140	0.089	0.277
Italy	08/03/1989	n.a.	n.a.	0.366	1.435	n.a.	n.a.	-0.157	-0.666
	28/06/1989	n.a.	n.a.	-0.305	-1.456	n.a.	n.a.	-0.190	-0.860
	15/12/1989	n.a.	n.a.	0.252	0.833	n.a.	n.a.	0.078	0.293
	20/02/1992	n.a.	n.a.	-0.270	-1.114	n.a.	n.a.	0.283	1.485
	29/04/1993	n.a.	n.a.	0.575	2.178	n.a.	n.a.	0.146	0.737
	14/10/1993	n.a.	n.a.	0.197	0.873	n.a.	n.a.	0.282	0.849
	08/11/1995	0.028	0.121	0.004	0.019	-0.312	-1.914	0.137	0.465
	16/10/1996	-0.086	-0.304	0.291	1.585	-0.009	-0.059	0.150	0.502
	15/11/1996	-0.031	-0.106	-0.028	-0.131	0.049	0.330	-0.273	-0.848
Spain	08/03/1989	n.a.	n.a.	0.477	1.872	n.a.	n.a.	0.377	1.599
	28/06/1989	n.a.	n.a.	0.593	2.830	n.a.	n.a.	0.154	0.696
	15/12/1989	n.a.	n.a.	-0.227	-0.749	n.a.	n.a.	-0.054	-0.203
	20/02/1992	n.a.	n.a.	0.159	0.655	n.a.	n.a.	-0.027	-0.141
	29/04/1993	-0.135	-0.379	0.405	1.536	n.a.	n.a.	0.086	0.433
	14/10/1993	n.a.	n.a.	-0.302	-1.340	n.a.	n.a.	-0.209	-0.631
	08/11/1995	-0.465	-1.981	-0.124	-0.583	-0.104	-0.636	-0.263	-0.895
	16/10/1996	0.041	0.143	-0.188	-1.027	-0.080	-0.551	0.023	0.078
	15/11/1996	0.123	0.415	-0.213	-0.986	-0.041	-0.273	-0.163	-0.506
Sweden	11/06/1990	n.a.	n.a.	-0.100	-0.367	n.a.	n.a.	-0.555	-1.942
	30/05/2002	-0.205	-0.718	0.517	1.538	-0.098	-0.473	-0.285	-1.123
	13/05/2004	-0.106	-0.389	0.608	2.421	0.058	0.377	0.171	0.749
Switzerland	08/03/1989	n.a.	n.a.	-0.040	-0.156	n.a.	n.a.	0.149	0.631
	28/06/1989	n.a.	n.a.	0.100	0.478	n.a.	n.a.	0.131	0.592
	15/12/1989	n.a.	n.a.	-0.012	-0.040	n.a.	n.a.	0.056	0.210
	30/01/1991	n.a.	n.a.	0.587	1.852	n.a.	n.a.	-0.110	-0.649
	28/05/1991	n.a.	n.a.	0.045	0.198	n.a.	n.a.	0.249	1.434
	29/07/1991	n.a.	n.a.	0.023	0.090	n.a.	n.a.	-0.176	-0.736
	20/02/1992	n.a.	n.a.	0.052	0.216	n.a.	n.a.	0.021	0.109
	29/04/1993	n.a.	n.a.	0.382	1.447	n.a.	n.a.	-0.067	-0.341
	30/09/1993	n.a.	n.a.	-0.181	-0.821	-0.243	-1.088	-0.155	-0.706
	14/10/1993	n.a.	n.a.	-0.156	-0.690	n.a.	n.a.	-0.134	-0.403
	16/03/1994	n.a.	n.a.	0.099	0.429	-0.122	-0.604	-0.021	-0.056
	11/04/1995	n.a.	n.a.	-0.092	-0.505	-0.165	-0.696	-0.480	-1.587
	28/04/1995	n.a.	n.a.	0.279	1.560	0.065	0.271	-0.071	-0.236
	20/10/1995	-0.121	-0.654	-0.077	-0.439	0.539	2.767	0.143	0.447
	08/11/1995	-0.299	-1.275	-0.262	-1.233	-0.229	-1.404	-0.293	-0.997
	16/10/1996	-0.203	-0.716	-0.116	-0.634	-0.087	-0.604	-0.111	-0.371
	15/11/1996	0.431	1.454	0.088	0.405	0.090	0.605	-0.395	-1.228
	10/12/1999	-0.160	-0.756	0.034	0.156	-0.141	-1.340	-0.165	-0.755
	30/11/2000	0.201	1.131	0.403	1.540	0.328	2.388	0.051	0.225
	12/12/2000	0.069	0.401	0.065	0.253	-0.168	-1.191	-0.263	-1.125
	11/06/2003	0.304	1.541	0.118	0.473	-0.019	-0.125	-0.116	-0.309
	28/10/2003	-0.025	-0.111	-0.173	-0.733	-0.115	-0.984	-0.211	-0.882
	09/11/2005	-0.254	-1.355	-0.166	-0.851	-0.206	-1.738	-0.282	-0.986
	06/10/2006	-0.036	-0.224	-0.239	-1.240	0.072	0.634	0.070	0.228
	16/11/2006	-0.081	-0.461	-0.101	-0.535	-0.093	-0.882	-0.008	-0.028
	22/12/2006	-0.200	-1.087	-0.108	-0.520	0.106	0.684	-0.014	-0.050
	09/07/2010	-0.180	-1.000	-0.098	-0.373	-0.294	-1.931	-0.098	-0.320