Do Risk Disclosures Matter When It Counts? Evidence from the Swiss Franc Shock*

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Abstract

We examine the long-term transparency effects of past risk disclosures following an exogenous shock to macroeconomic risk. In 2015 the Swiss National Bank (SNB) abruptly announced it would discontinue the longstanding minimum euro-Swiss franc exchange rate. We show that firms with more transparent disclosures regarding their foreign exchange risk exposure *ex ante* exhibit significantly lower information asymmetry *ex post*. The gap in bid-ask spreads appears within 30 minutes of the SNB announcement and persists for two weeks. We confirm the informational role of past risk disclosures with a field survey of three groups of market participants: (1) Sell-side analysts emphasize existing disclosures to evaluate the translational and transactional effects of the currency shock. (2) Lending banks' credit officers rely on past disclosures as the primary resource available for smaller unlisted firms in the immediate aftermath of the shock. (3) Investor-relations managers use existing financial filings as a key internal information source when communicating with external stakeholders. In sum, the results imply that risk disclosures continue to attenuate information asymmetry and the costs of adverse selection well beyond their initial publication date.

JEL classification: F31, G12, G14, G15, G30, M41

Key Words: *Risk disclosures, historical information, liquidity, information asymmetry, exchange rates, archival studies, surveys*

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"The Swiss franc rocketed beyond parity with the euro on Thursday after Switzerland's central bank stunned markets by scrapping its long-standing cap on the strength of the currency. The euro dropped around 30% against the franc, ending more than three years of calm in Swiss foreign-exchange markets." Wall Street Journal, January 15, 2015.

1. Introduction

How do market participants cope with unexpected events that affect a firm's prospects, and what role does existing financial statement information play in this process? In standard economic theory, when new information arrives, it is immediately processed by economic agents and affects their behavior. Thereafter the news content of the information becomes stale and no longer influences agents' decisions. In accounting terms, when a firm releases its financial reports, previously private information about future expected cash flows enters the public domain, and it quickly is reflected in stock prices and investors' trading patterns (e.g., Beaver 1968; Asthana et al. 2004; Li and Ramesh 2009; De Franco et al. 2011; Rogers et al. 2017). After the initial publication, financial statement disclosures lose their news element, and only affect investors' priors if they help contextualize and condition the advent of new information (e.g., Blacconiere and Patten 1994; Drake et al. 2016). In this study, we analyze an exogenous shock to macroeconomic risk that allows us to evaluate the long-term transparency effects of risk disclosures released in a firm's annual report. We show that the market reacts to the exogenous shock in a way consistent with past risk disclosures allowing investors to process and interpret new information. We confirm this role of past disclosures by surveying financial analysts, credit officers in lending banks, and investor-relations managers at affected firms.

On January 15, 2015, at 10:30 in the morning, the Swiss National Bank (SNB) announced it would discontinue the minimum exchange rate between the euro (EUR) and the Swiss franc (CHF) without further notice. The SNB introduced the exchange-rate peg in 2011 to counter the

ongoing pressure on the Swiss franc to act as a "safe haven" amid the turmoil in global financial markets. By increasing the supply of francs relative to the euro, the SNB managed to maintain the target exchange rate of 1.20 EUR-CHF. The announcement to abandon the exchange rate peg caught the market by surprise. It had an immediate and large impact: the EUR-CHF exchange rate dropped close to parity and Swiss stock markets lost more than 10 percent.

The SNB announcement provides an ideal setting to analyze the long-term transparency effects of past risk disclosures. First, the unpegging of the Swiss franc represents an exogenous shock, whose timing is random and not influenced by either firms or investors. Second, the drop in exchange rates is economically significant and has the potential to affect the expected cash flows of many Swiss firms because exports of goods and services make up about 70 percent of Swiss GDP at the time. Yet, the effect is not uniform but reflects a firm's business model and exposure to the euro. This private information is inherently difficult to observe and requires disclosures by the firm. Third, the initial market reaction occurs within minutes of the event, which is too short a time span for the firm to prepare and release new disclosures, so external stakeholders must rely on existing financial information. Thus, we believe that in our setting variation in a firm's past disclosures about the currency exposure of its business is a plausible path to explain variation in the market reaction to the SNB announcement. At the same time, the informational role of past risk disclosures is not obvious, because the already published information is stale, has little relevance for the new situation, or requires special expertise to be processed. Moreover, competing information sources could be more accurate and timely.

To test our research question, we first conduct an archival event study of changes in information asymmetry following the Swiss franc shock conditional on the precision of past risk disclosures in firms' annual reports. For each of our 151 sample firms listed on the *SIX Swiss*

Exchange (equal to 98 percent of market capitalization), we construct a risk disclosure score. The score ranges from 0 to 7 and captures the *quality* of a firm's disclosure policy regarding its foreign exchange risk exposure (not the actual risk). It reflects items like revenues generated abroad, the currency distribution of liquid assets and liabilities, or the sensitivity of net income to exchange rate fluctuations. A higher score indicates more common knowledge for investors to interpret the subsequent shock, which should manifest in lower information asymmetry.

We show that in the initial three days after the SNB announcement information asymmetry among investors dramatically increases. Bid-ask spreads, on average, jump by 21 basis points or 44 percent relative to the 30-day period leading up to the event. However, systematic heterogeneity exists. Firms with risk disclosure scores higher by one standard deviation exhibit significantly lower increases in bid-ask spreads by about 7 basis points. The gap in spreads appears within 30 minutes after the announcement by the SNB and persists for two weeks. The results are robust to the inclusion of firm and industry-by-day fixed effects or, in an intraday analysis, the inclusion of fixed effects for each 30-minute trading interval. They also hold when we control for firms' general information environment and their actual currency risk exposure. The results imply that past risk disclosures help investors contextualize the new information from the unexpected change in risk, and that it takes firms about two weeks to close this information gap. Because we do not observe a differential stock price reaction across firms with high and low risk disclosure scores, the results point to the quality of past risk disclosures (not actual risk) as the likely mechanism of the change in information asymmetry.

In the second part of the study, we confirm the informational role of past risk disclosures by incorporating field data from users of financial statement information into the analysis. Such circumstantial evidence helps validate the plausibility of the inferences we draw from the

archival tests, and increases our confidence in the causality of the established relations (Soltes 2014; Bernstein et al. 2016). We conduct surveys and structured interviews with three groups of market participants affected by the SNB announcement: (1) sell-side analysts covering the firms listed on SIX, (2) credit officers of lending banks to listed and unlisted Swiss firms, and (3) investor-relations managers employed at the affected firms.

Based on 77 survey responses (9.4 percent response rate), we show that only 3 percent of financial analysts anticipated such a surprising move by the SNB within the next three months. Analysts expected the change in the currency regime to negatively impact the average firm, and they reassessed the prospects of almost their entire portfolio within the first two days. In most cases, such a reassessment led to material adjustments of the quantitative inputs in the valuation models that analysts use to derive their earnings forecasts and stock recommendations. More to the point, existing annual reports and financial filings served as a key information resource in the immediate aftermath of the event, on par with private communication with management, and ranked only behind analysts' personal experience and industry knowledge. This role declined in the days that followed, as ad hoc announcements gained importance. The main use of existing financial statement information was to better contextualize and interpret the translational and transactional currency risk exposure of the firm and to assess the effectiveness of the hedging strategy in place. Differences in reporting quality were perceived as one of the main reasons for difficulties to compare the impact of the Swiss franc shock across firms.

We next conducted a series of structured interviews with credit officers from four large Swiss banks. Lending institutions enjoy privileged access and closer ties to their clients (e.g., Rajan 1992; Agarwal and Hauswald 2010), and given their longer horizon, they face less time pressure to respond to unexpected changes in risk. Immediately after the SNB announcement

(within one week for listed firms, two to four weeks for the rest), all banks reviewed their loan portfolios and classified firms into different risk categories depending on the materiality and perceived impact of the shock. The main, and for non-listed firms only, information source for this triage were existing financial disclosures including annual reports submitted during the periodic loan review. High risk cases underwent a more detailed review over the following months and loan officers often engaged in direct discourse with their clients to gather additional information on the impact of the currency shock, particularly for large corporate borrowers. Two banks indicated that they had tightened their clients' reporting requirements and frequency as a response to the event, but none mentioned adjustments to the credit risk rating system.

Finally, based on 39 replies to a survey of investor-relations managers (26 percent response rate), we show that firms were surprised by the currency shock, and anticipated negative effects on future sales and earnings. Close to 50 percent of the firms started communicating with external stakeholders on the day of the event, primarily through private channels with financial analysts and institutional investors. The interactions were both proactive and a reaction to outside demand, and the main goals were to reassure existing investors, reduce uncertainty, and build trust in the firm's reporting strategy. Consultation with key management, existing contingency plans, and past annual reports and financial filings served as primary information sources in the preparation of the external communication. As time went by, the communication shifted towards regular financial filings and pre-scheduled investor events.

Our study contributes to the literature in several ways. We focus on the informational value of already published financial disclosures in the advent of new information about the fundamentals of the firm. We show that past risk disclosures explain systematic variation in information asymmetry well beyond their initial publication date. Put differently, disclosures not

only have the ability to reduce information asymmetry upon release (e.g., Brown et al. 2009; Shroff et al. 2013), but can also mitigate adverse selection in the future. This channel is different from having credibly committed in the past to transparent reporting in the future (Leuz and Verrecchia 2000; Verrecchia 2001; Francis et al. 2008; Daske et al. 2013), or to provide future disclosures that serve as *ex post* truth unraveling mechanism for today's disclosures (e.g., Ball et al. 2012). In both cases, we would predict a persistent effect on current information asymmetry. In our setting, the effect is transitory and relies on the quality of past disclosures interacting with the new information. In that sense, our study is related to Blacconiere and Patten (1994) who look at the differential market reaction conditional on a firm's environmental risk exposure (not the disclosure quality) following a leak in a chemical plant in Bhopal, India, and Bonetti et al. (2015) who examine the long-term cost of capital effects of environmental disclosures following the Fukushima nuclear disaster in Japan. This perspective is different from studies investigating the change in (voluntary) disclosures upon the arrival of fundamental news (e.g., Leuz and Schrand 2009; Balakrishnan et al. 2014).

We also contribute to the literature on how investors use financial reports. By combining archival and survey methods, we provide a richer picture of the extent to which investors, analysts, lenders, and employees rely on financial statement information. Our evidence from the field corroborates the notion of a causal link between unexpected changes in firm fundamentals and information asymmetry among investors through the means of past risk disclosures. This finding complements evidence by Drake et al. (2015; 2016) who show that investors make more use of the SEC EDGAR database when financial statements are complex, firms report negative or largely discretionary earnings, and there is a negative shock to firm value. In contrast, we zoom in on one particular type of disclosures and one specific (exogenous) event, both dealing

with a firm's business risk. This focus allows us to open the black box of how past disclosures provide a channel through which they might affect information asymmetry and, ultimately, firm value. The finding also speaks to the ongoing debate about potential disclosure overload (e.g., Beatty et al. 2015; Dyer et al. 2016). Information that appears immaterial or irrelevant at the time of public release, might again become useful to decision-makers in the future.

Finally, our study contributes to the literature on corporate risk disclosures (e.g., Jorion 2002; Kravet and Muslu 2013; Campbell et al. 2014; Hope et al. 2016; Harris and Rajgopal 2017). Prior studies examine the market reaction to risk disclosures or assess their ability to predict future risk. We test whether (past) risk disclosures help investors gauge the impact of a sudden realization of risk. In broader terms, our findings speak to the role of extant disclosures to interpret new information beyond just risk, for instance, if a competitor announces a new product, new regulation is proposed, or a large corporate merger in the industry takes place.

Section 2 contains the hypothesis development and describes the institutional setting. In Section 3, we discuss the research design, sample, and the results of the archival tests. Section 4 presents the findings from the field analysis. Section 5 concludes. In the appendix, we provide details on the risk disclosure score and the surveys of analysts and investor-relations managers.

2. Hypothesis Development and Institutional Setting

2.1. Conceptual Underpinnings for the Informational Value of Past Risk Disclosures

In this study, we analyze the informational role of past risk disclosures. Prior archival research mostly focuses on the information content of *newly* released disclosures; that is, whether the information contained in these new disclosures changes investors' beliefs about future returns or prices (e.g., Beaver 1968). The new information signal transfers previously unknown or

private information into the public domain and is expected to immediately affect investors' trading behavior. Thus, the release of the information and the market reaction occur at the same time. After the release, the information content of the new disclosures is typically assumed to become stale and have no more effect on investors' future decisions.

However, the view that financial disclosures are only useful at the time of their release might be too short-sighted (e.g., Ball and Shivakumar 2008). They might interact with future (public or private) information signals plus reflect on the usefulness of prior (public or private) information. In our setting, we examine whether *past* public announcements complement *current* public information signals. Specifically, we argue that past risk disclosures become useful again once the underlying risk suddenly changes. The arrival of unexpected news about the state of the firm (i.e., the currency shock) increases uncertainty among investors. As market participants scramble to assess the economic consequences of the news, past disclosures about how the firm handles currency risk help investors contextualize and interpret the new situation and reduce some of the uncertainty. Our setting is related to Kim and Verrecchia (1994; 1997). In their models past *private* information interacts with a new public signal, thereby exacerbating the informational disadvantage of the uninformed investors. In contrast, we study variation in the precision of past information, which is *public* knowledge, while holding the distribution of private information among investors constant. Thus, we expect firms with more precise past disclosures about risk to suffer less of an increase in information asymmetry upon the arrival of the sudden news (i.e., leaving investors without private knowledge at less of an informational disadvantage).[1] The area of risk disclosures seems particularly receptive to the argument of an interaction between past and current public information because risk disclosures, by definition,

[1] We would obtain the same prediction if sophisticated investors saw more value in acquiring additional private information for low-quality disclosure firms upon the arrival of the sudden news (i.e., high-quality risk disclosures crowd out private information acquisition by sophisticated investors).

contain information on future adverse scenarios. If those risks materialize, investors can rely on past scenarios to assess the firm-specific outcomes.

Our information structure is distinct from other mechanisms examined in the literature. For instance, by credibly committing to disclose information regardless of the future outcome, a firm can reduce information asymmetry in a persistent manner (e.g., Diamond and Verrecchia 1991; Baiman and Verrecchia 1996; Leuz and Verrecchia 2000). The commitment occurs in the past, and because it imposes a cost (e.g., review of the financial statements by better quality auditors), it renders current public announcements more precise. In our setting, the initial disclosure is in the past, but from thereon forward the information is available to all market participants and remains available to them regardless of future outcomes (see e.g., Li et al. 2017). Even if the disclosure originally was a voluntary decision, its availability is no longer a firm choice *ex post*. Yet, we require two separate information signals at different points in time, while a credible commitment works for all future public announcements individually. Moreover, the effect of past risk disclosures is likely transitory as firms can make up for them with new public announcements, and investors have incentives to gather more information. Another channel to reduce information asymmetry *ex ante* is the knowledge that there exists an independent verification (e.g., Ball et al. 2012; Li and Yang 2016). The public announcement occurs today (e.g., voluntary disclosure), but it will be reinforced with a credible disclosure in the future (e.g., through the release of audited financial statements). We focus on the ongoing relevance of past risk disclosures, and because we consider a random shock instead of an anticipated event, we do not observe the disciplining effects of future (mandatory) disclosures.

The informational role of past risk disclosures is not obvious. First, by definition, already published disclosures contain information that is stale and potentially outdated. The disclosures

might have little practical relevance for investors when a firm faces a new situation. Second, while past risk disclosures are available to the public, they might require special knowledge and expertise to be processed. For instance, only sophisticated users such as financial analysts or institutional investors might have the ability to interpret and contextualize the new event against the backdrop of past information. In this case, the availability of past disclosures would intensify the comparative disadvantage for the uninformed investor (Indjejikian 1991; Kim and Verrecchia 1994). Third, a firm cannot foresee or it is too costly for the firm to provide information for every contingency *ex ante*. Thus, past risk disclosures contain, at best, indirect information about the impact of a change in the firm environment. Other information sources are more accurate and timely, and firms can quickly react and bridge an information gap with new ad hoc disclosures.

2.2. Institutional Setting of the Swiss Franc Shock

The Swiss franc has a long tradition of acting as a safe-haven currency for investors when global financial markets are in turmoil. In 2011, fueled by the looming sovereign debt crisis in Europe and the near-failure of the debt-ceiling negotiations in the U.S., the Swiss franc strongly appreciated against the euro (by up to 17 percent) and the U.S. dollar (by up to 22 percent). This currency appreciation put a strain on the many export-reliant industries in Switzerland and increased the deflationary pressure. At this point, the SNB had already intervened multiple times in the capital markets by broadening the monetary base and acquiring foreign currencies. In August, the SNB declared that it would take additional steps against the strong Swiss franc (SNB 2011a). These efforts culminated in a stunning announcement on September 6, 2011, when the SNB set a currency floor of CHF 1.20 per EUR and insisted that it would "*enforce this minimum rate with the utmost determination*" as it was committed "*to buy foreign currency in unlimited*

quantities" (SNB 2011b). As Figure 1 illustrates, the new currency regime successfully enforced this minimum EUR-CHF exchange rate in the years that followed. The Swiss franc was effectively pegged against the euro, and fluctuations of the Swiss franc against other currencies were mostly driven by developments in the Eurozone.

Things changed abruptly in early 2015. On January 15, at exactly 10.30 am, the SNB released an official statement declaring that it would abandon the minimum EUR-CHF exchange rate without further notice (SNB 2015).[2] The sudden policy change came as a surprise to market participants. For instance, Bloomberg News (2015) had surveyed 22 economists in the first two weeks of 2015 and none of them expected that the cap would be abandoned in 2015. A Deloitte (2015) survey conducted in December 2014 found that only 3 out of 129 chief financial officers of Swiss firms expected a change in the currency regime in 2015.[3] Mirkov et al. (2017) conclude that the market did not foresee the SNB decision based on an analysis of high-frequency liquidity data in option markets and foreign exchange markets.[4]

The market reaction to the SNB announcement was swift. As Figure 1 shows, the Swiss franc immediately soared against the euro and other major currencies, as the SNB decision effectively untied the Swiss franc from the Eurozone. At closing, the Swiss franc had risen against the euro (U.S. dollar) by 14 percent (12 percent). The Swiss All Share index (SSIP) dropped by almost 9 percent, marking the single largest daily decrease since its inception in

[2] In the same statement, the SNB also announced to lower deposit interest rates "*to ensure that the discontinuation of the minimum exchange rate does not lead to an inappropriate tightening of monetary conditions.*" Unlike the minimum exchange rate decision, analysts had expected to see lower deposit rates in the near future.

[3] Our own survey evidence confirms these observations. Only 3 (20) percent of the sell-side financial analysts and 5 (36) percent of the investor-relations managers anticipated such a surprising move by the SNB within the next three months (one year). See Section 4.

[4] The announcement on January 15, 2015, was also not part of the ongoing monetary policy assessments that the SNB conducts at pre-set dates every three months. The last such assessment took place on December 11, 2014, with the next meeting scheduled for March 2015. The December assessment was accompanied by the headline "*Swiss National Bank reaffirms minimum exchange rate,*" and the press release stated that "*the SNB will continue to enforce the minimum exchange rate with the utmost determination*" (SNB 2014).

1998. The economic consequences did not stop there. Efing et al. (2016) find that the negative wealth effects of the Swiss franc shock were stronger for export oriented firms with a heavy reliance on domestic production. They show that these firms experienced larger reductions in profitability and sales over the next year than their domestically oriented peers. Bonadio et al. (2016) analyze daily transaction-level data from the Swiss Customs Administration and find that cross-border import prices adjusted either instantaneously (if invoiced in EUR) or within a few working days (if invoiced in CHF), indicating a quick exchange-rate pass-through.

The Swiss franc shock has several desirable features from a researcher's perspective. First, the unpegging of the Swiss franc represents an exogenous shock, whose timing is random and not influenced by either firms or investors. Second, the gain in value of the Swiss franc affects the fundamentals of many Swiss firms, but the impact likely varies by a firm's business model and its exposure to the euro. This information is inherently difficult to observe, and requires firm disclosures to let investors assess the future cash flow implications. Third, the initial market reaction occurs within minutes of the event, which is too short a time span for firms to prepare and release new disclosures, leaving stakeholders with only past financial disclosures to provide context and interpret the news. We exploit these institutional features in our empirical tests.

3. Archival Analysis of Past Risk Disclosures and Information Asymmetry

3.1. Research Design

To test the informational role of past risk disclosures around the Swiss franc shock, we examine changes in daily bid-ask spreads around the event conditional on the quality of a firm's risk disclosures. Figure 2 illustrates the timeline of events. Notably, the measurement of the

cross-sectional partitioning variable occurs *before* the event. Based on this timeline, we estimate the following ordinary least squares (OLS) regression model:

$$Log(Bid\text{-}Ask\ Spread_{i,t}) = \beta_0 + \beta_1\ Post\_SNB_t + \beta_2\ Post\_SNB_t \times FXRisk\_Disc_i + \sum \beta_j\ Control\ Variables_{i,t-1} + \sum \beta_k\ Fixed\ Effects_{i,t} + \varepsilon_{i,t}. \quad (1)$$

The dependent variable, *Bid-Ask Spread,* is the mean value of intraday minute-by-minute differences between bid and ask quotes (divided by the mid-point) for firm *i* on trading day *t*. *Post_SNB* is a binary indicator that takes on the value of '1' beginning on day $t = 0$ of the SNB announcement (January 15, 2015), and '0' beforehand. The sample period comprises the 33 trading days surrounding the SNB announcement, with $t \in [0; +2]$ serving as the event window and $t \in [-30; -1]$ as benchmark period. *Post_SNB* captures the mean incremental change in bid-ask spreads following the event. We predict this coefficient to be positive, indicating a sudden increase in information asymmetry regarding future EUR-CHF exchange rate fluctuations.

The primary test variable, *FXRisk_Disc*, is a proxy for the quality of foreign exchange risk disclosures of firm *i* as reported in the most recent annual report before the event (i.e., for fiscal year 2013).[5] We rely on annual reports because they represent by far the most comprehensive source for currency risk information.[6] We construct *FXRisk_Disc* by scoring seven items: (i) revenues, (ii) assets, and (iii) costs/profits generated and held outside of Switzerland; (iv) the currency distribution of short-term monetary assets and liabilities; (v) the exposure and (vi) the hedging strategy regarding foreign currency risk; and (vii) the sensitivity of net income/equity to changes in foreign exchange rates. Each disclosure item receives a score of 1 (quantitative and

[5] Over 90 percent of the sample firms end their fiscal year on December 31, and publish the annual report within two to four months. Most of the remaining firms have fiscal-year ends of March 31. Thus, none of the sample firms had released its 2014 annual report at the time of the SNB announcement.

[6] We checked a random sample of quarterly and half-year reports as well as other financial filings occurring over the course of the fiscal year, but could not identify additional relevant risk information in those interim disclosures.

qualitative information), 0.5 (qualitative information), or 0 points (no or boilerplate disclosures), and the variable *FXRisk_Disc* equals the sum of points, ranging from 0 (worst) to 7 (best). For ease of interpretation, we standardize the raw scores to a mean of zero and a standard deviation of one for use in the regression analysis. In Appendix A, we provide details on the construction of this variable together with illustrative examples.

The idea underlying the *FXRisk_Disc* score is to gauge the quality of the information, not the actual risk exposure of the firm. More precise past risk disclosures should allow investors to better assess the future cash flow implications of the currency shock, ceteris paribus, and translate into lower information asymmetry. We expect the interaction term between *Post_SNB* and *FXRisk_Disc* to exhibit a negative sign. Because we include firm fixed effects in the model, the main effect of *FXRisk_Disc* does not appear in Eq. (1). Similarly, when we control for daily trends in the data, the day fixed effects subsume the main effect of *Post_SNB*. In this case, the interaction term is defined of the within-day, between-firm variation in spreads.

In terms of firm-level *Control Variables*, we follow prior literature (Chordia et al. 2000; Leuz and Verrecchia 2000; Christensen et al. 2013), and include in our main specification firm size using the *Market Value* of equity at the end of each trading day, daily *Share Turnover*, and *Return Variability* equal to the standard deviation of half-hourly stock returns over the trading hours of the day. Depending on the specification, we include firm, day, or one-digit SIC industry-by-day *Fixed Effects* in the model to account for the average bid-ask spread along these dimensions. We estimate Eq. (1) in a log-linear form using the natural logarithm of bid-ask spreads and the control variables, and lag the control variables by one day. We draw statistical inferences based on two-way clustered standard errors by firm and trading day.

3.2. Sample Selection and Description

The initial sample comprises 235 publicly traded firms with a primary listing in Switzerland that are constituents of the SSIP at the end of 2014. We collect minute-by-minute intraday spread data from Bloomberg for these firms. For each firm-minute, Bloomberg reports bid and ask quotes, trade prices, CHF volumes, and the number of ticks. To ensure sufficient liquidity and avoid potential market microstructure biases such as the stale quotation problem (McInish and Wood 1992), we apply a series of data filters to obtain the final sample as outlined in Table 1, Panel A. We require firms to have, on average, at least ten trades per day and to have updated daily bid-ask spreads on at least 141 out of the 144 trading days ($\geq$ 97.5 percent) over the period from October 2014 to April 2015. These two criteria eliminate thinly traded firms and firms with narrow market depth. We delete firms with missing data for the variables used in the regression analysis. The selection procedure yields a final sample of 151 firms that make up more than 98 percent of the capitalization of the Swiss market.

We further clean the data by restricting the spreads to trading hours, and delete bid and ask quotes with zero value or volume (Ng et al. 2008). SIX trading hours are from 9.00 am to 5.30 pm, consisting of 17 half-hourly trading intervals.[7] We replace missing quotes (i.e., no new bid or ask quotes during a specific minute) by carrying the previous quotes forward within a day, but not across days (McInish and Wood 1992). We obtain daily data by taking the mean of minute-by-minute spreads, but do not consider negative spreads in this computation (McInish and Wood 1992; Chan et al. 1995). We use the most recent transaction prices when computing half-hourly log returns for the return variability measure.

[7] Specifically, we only consider quotes between 9.02 am and 5.20 pm. SIX randomly opens trading between 9.00 and 9.02 am (opening auction), and no trades are settled between 5.20 and 5.30 pm (closing auction). Thus, the first and last half-hourly interval are slightly shorter than 30 minutes.

Panel B of Table 1 provides descriptive statistics for the variables used in the daily bid-ask spread regressions. The mean *Bid-Ask Spread* is 48 basis points, which is smaller than the values reported for broader samples (e.g., Christensen et al. 2013), and consistent with our firms being highly traded and liquid. The mean and median values of the *FXRisk_Disc* score are 4 points out of 7 possible. The interquartile range of 2 points indicates that the variable offers ample variation. Aside from the main control variables, the panel also reports descriptive statistics for additional variables that we use in the sensitivity tests. *Int_Sales* is the percentage of sales generated abroad as shown in the most recent annual report.[8] When exact data are missing (32 cases), we infer international sales from textual and other disclosures in the annual report. *Total_Disc* is a score, ranging from 1 (worst) to 6 (best), ranking the overall disclosure quality of a firm's annual report. This score is published annually by the *Institute for Banking and Finance* of the University of Zurich. We take the ratings that correspond with the fiscal year 2013. *Num_Analysts* is the number of analysts in *I/B/E/S* that cover a firm in the week before the SNB announcement. If missing, we set the variable to zero. *Free Float* is the percentage of shares available to ordinary investors at the end of the most recent fiscal year (source: *Datastream*). We compute daily *Stock Return* as the natural logarithm of price at the end of trading over price at the end of the previous day. We do not winsorize or truncate any of the data.[9]

The median sample firm is covered by four analysts, has a free float of 69 percent, and a market capitalization of CHF 1.26 bn. Thus, these firms are large and visible. On average, firms generate two thirds of their sales outside of Switzerland, suggesting a heavy reliance on exports

[8] Using Worldscope data (item no. *08731*) instead of hand-collected data, and coding missing values as zero (Daske et al. 2008) leaves our results virtually unchanged.

[9] When we winsorize or truncate all the continuous variables in Eq. (1) at the first and 99th percentile (not tabulated), the results are unaffected and none of the inferences change.

and a potentially substantive exposure to risks from foreign currency fluctuations. However, there exists large variation in this measure.

3.3. Changes in Information Asymmetry Following the Swiss Franc Shock

We begin with plotting the mean daily bid-ask spreads over the 40 trading days surrounding the event and report results in Figure 3, Panel A. The solid line represents firms with high-quality past risk disclosures (i.e., *FXRisk_Disc* greater than the sample median). The dashed line stands for a synthetic control group (Abadie and Gardeazabal 2003; Abadie et al. 2010). Following Cavallo et al. (2013) and Acemoglu et al. (2016), we match each high-quality disclosure firm to a combination of all firms with an *FXRisk_Disc* score at or below the median (benchmark pool) using a convex weighting matrix that minimizes the Euclidean differences in the outcome variable on each trading day over the [-20;-1] pre-event period. By construction, the differences in bid-ask spreads between the two groups are not significant before the event. Spreads rise dramatically on the day of the SNB announcement, remain at high levels for the initial days, and then steadily decrease to pre-announcement levels. The pattern indicates that the currency shock gives rise to high uncertainty in the market. However, the reaction is much stronger for the control firms than the firms with high-quality risk disclosures. Visually, the gap in spreads persists until about 15 trading days after the event. This graphical evidence is consistent with more precise information about the potential impact of the currency shock mitigating information asymmetry among investors for otherwise identical firms.

In Table 2, we report coefficients and *t*-statistics from estimating Eq. (1) using daily bid-ask spreads as the dependent variable. The model in Column (1) contains the basic liquidity controls plus firm fixed effects. The significantly positive coefficient on *Post_SNB* indicates that relative to the pre-event level bid-ask spreads for the average firm increased by about 21 basis points or

44 percent ($e^{0.367} - 1$) after the Swiss franc shock. This impact is economically important. However, the effect is mitigated for firms with more informative past risk disclosures. The negative and significant coefficient on the interaction term between *Post_SNB* and *FXRisk_Disc* suggests that a one standard deviation increase in the risk disclosure score is associated with a jump in bid-ask spreads of 30 percent ($e^{[0.367-0.103]} - 1$), which is about 7 basis points or almost a third lower than the average reaction. The control variables are all significant and have the predicted signs.[10] We add fixed effects for each trading day in Column (2) and for each industry-trading day combination in Column (3). These additions subsume the *Post_SNB* main effect and allow for the possibility that the Swiss franc shock impacted some industries more than others. The interaction *Post_SNB* × *FXRisk_Disc* remains virtually unchanged in terms of coefficient magnitude and statistical significance.

In Column (4), we control for additional firm attributes that might be related to a reduced market reaction at the SNB announcement. Specifically, we control for a firm's actual exposure to currency risk using the proportion of international sales as a proxy (*IntSales*). Firms with more currency risk likely exhibit higher uncertainty immediately after the event. We also control for the overall quality of a firm's annual report (*Total_Disc*) and its information environment as proxied by the number of analysts following the firm (*Num_Analysts*). Firms with transparent annual reports likely have more informative risk disclosures. Analysts are sophisticated users of firm information and often possess private communication channels with management (Frederickson and Miller 2004; Call et al. 2013; Brown et al. 2015). Thus, they might put their superior information capabilities to use at the advent of unexpected news. Finally, we control for ownership structure (*Free Float*). The lower the proportion of corporate insiders, the less afraid

[10] When we include additional interaction terms between the time-variant liquidity controls and the *Post_SNB* indicator variable, the results are not materially affected (not tabulated).

corporate outsiders should be of trading with a better-informed party. Because none of these additional controls vary at the firm level, only the interactions with *Post_SNB* are identified. The inclusion of the additional controls in the model leaves the *Post_SNB* × *FXRisk_Disc* interaction largely unaffected (and only the *Num_Analysts* term is significant and negative).

In Column (5), we include concurrent daily stock returns and its interaction with *Post_SNB* as another way of controlling for a firm's actual risk exposure. Firms with large negative price reactions (and, hence, a higher exposure to the currency shock) likely face more uncertainties about the future. As expected, we find that contemporaneous stock returns are negatively related to bid-ask spreads. The relation is more pronounced after the event (but not statistically significant). Yet, the *Post_SNB* × *FXRisk_Disc* term is largely unaffected by the inclusion of the market reaction, suggesting that a firm's exposure to currency (or other) risks does not act as confounding factor. This conclusion is further supported by Figure 3, Panel B. The graph plots mean daily stock returns for firms with high-quality risk disclosures (i.e., *FXRisk_Disc* greater than the sample median) and a synthetic control group in the 40 days surrounding the event. By construction, the two groups behave the same in the pre-event period. However, the stock price reaction also shows no differences after the currency shock. This finding is inconsistent with high *FXRisk_Disc* scores capturing a firm's actual currency risk or degree of risk management, which should result in stronger and weaker stock price reactions to the SNB announcement, respectively. In Column (6) of Table 2, we use *Return Variability* as the dependent variable. The results for this alternative proxy of information asymmetry are very similar and the interaction between *Post_SNB* and *FXRisk_Disc* is negative and significant.

To further mitigate concerns that the quality of past risk disclosures is endogenous, we conduct the following additional sensitivity tests (not tabulated): We proxy for a firm's exposure

to the Swiss franc shock using the foreign currency translation adjustments as disclosed in the annual report (source: Worldscope) divided by total assets or the historical correlation between weekly stock returns and CHF-EUR exchange rates measured over the three years prior to the establishment of the currency peg by the SNB (i.e., September 2008 to September 2011). We also include an indicator set equal to '1' for firms following international accounting standards (IFRS or U.S. GAAP) and '0' for firms with local standards. International standards prescribe more extensive risk disclosures, and might proxy for a more transparent information environment. In all three cases, the interaction of the variables with *Post_SNB* is insignificant and leaves the main coefficient of interest, $Post\_SNB_t \times FXRisk\_Disc$, negative and significant. Moreover, when we separately estimate the base model in Column (2) of Table 2 for firms following local GAAP (33 firms) or international standards (118 firms), the significantly negative results for the interaction term $Post\_SNB_t \times FXRisk\_Disc$ pertain to both groups, but they are more pronounced for local GAAP firms.[11]

Next, we examine the persistence of the differential bid-ask spread reaction observed in Table 2. We estimate a variant of the model in Column 2 over a [-30;+20] window, in which we include a set of indicator variables, $Post\_SNB_t$, for each day $t \in [0; 20]$. Figure 4 plots the individual $Post\_SNB_t \times FXRisk\_Disc$ interaction terms (together with the 95 percent confidence intervals). The graph shows that the mitigating effect of past risk disclosures on information asymmetry is largest on the day of the SNB announcement (-0.127). It drops to -0.030 on day t =

[11] To assess the potentially confounding effects of new public disclosures released immediately after the event, we collect firms' short-term responses, form an indicator (set to '1' for ad-hoc announcements, press releases, or the participation at pre-scheduled investor conferences within the first three days of the event), and interact it with *Post_SNB*. The results are not affected by the inclusion of this additional control variable.

+4, and hovers around -0.05 until trading day $t = +10$, before it dissipates. Thus, it takes about two weeks for the differences in bid-ask spreads to disappear.[12]

In our second set of archival tests, we conduct an intraday analysis. We estimate a version of Eq. (1), in which we replace the *Post_SNB* indicator with 17 separate time indicator variables for each 30-minute interval during trading hours of the event day (i.e., from 9 am to 5:30 pm). For instance, the *11:30-12:00 Dummy* represents the 30 minutes from 11:30 am to noon. We then interact these time indicators with *FXRisk_Disc* to estimate the differential bid-ask spread reaction conditional on the quality of past risk disclosures over the course of the event day. The SNB announcement took place at 10:30 am. Thus, we expect markets to react from this point on but not beforehand. All variables are computed similarly as before, but with respect to 30-minute instead of daily trading intervals. The regression contains firm and/or time-of-day fixed effects, and we assess the statistical significance based on robust standard errors with two-way clustering by firm and trading interval. Table 3 reports the results.

In Column (1), we combine the day of the SNB announcement with the benchmark period (i.e., $t \in [-30; 0]$), and include both firm and time-of-day fixed effects. The series of interaction terms is defined by the within-trading interval, between-firm variation in spreads. The main effects of the time dummies are small and only marginally significant before 10:30 am, suggesting no abnormal activity relative to the benchmark period. Beginning with the 10:30 to 11:00 am interval, the main effects become positive and significant. The coefficient magnitudes suggest substantive increases in bid-ask spreads ranging from 148 percent (12.00 to 12.30 pm) to 36 percent (5.00 to 5.30 pm), consistent with dramatic increases in uncertainty in the hours after the SNB announcement. The interaction terms with *FXRisk_Disc* are not significant before

[12] The two-week time frame is consistent with the survey answers of sell-side analysts (see Section 4.1 and Table 4).

10:30 am, but then quickly turn negative and become significant from 11:00 am onwards. They remain significant throughout the day. Within 30 minutes of the announcement, firms with better quality risk disclosures experience a reduced effect on information asymmetry on the order of -19 percent (12.30 to 1.00 pm) to -6 percent (3.00 to 3.30 pm).

We repeat the analysis with event-day observations ($t = 0$) and report results in Column (2). The time-of-day fixed effects subsume the main effects of the time dummies.[13] The results are very similar to Column (1). While firms with higher quality risk disclosures have no information advantage in the trading hours before the event, a significant gap in bid-ask spreads appears within minutes of the unexpected announcement and persists for the remainder of the day. The intraday results provide strong support for the stipulated link between the advent of fundamental news and information asymmetry through the channel of a firm's past disclosures. The reaction was simply too quick for firms and analysts to release new information at such short notice.[14]

4. Field Analysis of the Use of Past Risk Disclosures by Various Stakeholders

In this section, we discuss various stakeholders' use of financial statement information. Specifically, we surveyed (1) sell-side financial analysts, (2) credit officers at lending banks, and (3) investor-relations managers working at firms affected by the Swiss franc shock. The purpose of collecting this data in the field is to provide context for the informational role of past risk disclosures, validate the inferences drawn from the archival tests, and ultimately increase our confidence in the causality of the stipulated relations (Soltes 2014; Bernstein et al. 2016).

[13] We do not include firm fixed effects in this specification as they would subsume one of the interaction terms with *FXRisk_Disc* and render the interpretation of the remaining interactions relative to this base period.

[14] When we use trade-size to infer whether trades were executed by retail or institutional investors (e.g., Lee 1992), we find that the fraction of small trades (< CHF 7,500) sharply and significantly decreases directly after the SNB announcement (not tabulated). This drop occurs within the first 30 minutes of the announcement and applies to all firms, consistent with the notion that mostly sophisticated investors gain an informational advantage after the shock (both sell-side analysts and investor-relations managers confirm in the answers to our survey that they communicated mainly with institutional investors immediately after the event).

4.1. Reaction of Sell-Side Financial Analysts to Swiss Franc Shock

Sell-side analysts are an important information intermediary between firms and investors, and they should be among the first to assess the impact of the currency shock on firms' future expected cash flows. Our survey attempts to better understand their information processing and to examine their use of past financial statement information in the wake of this exogenous event. We develop the survey after an extensive review of the related literature (Graham et al. 2005; Dichev et al. 2013; Nelson and Skinner 2013; Brown et al. 2015; 2016), and pre-test it with several academics and practitioners. The survey comprises 15 questions, divided into the four sections (1) general information about the Swiss franc shock, (2) timeliness and motivation of reaction to the event, (3) information sources employed, and (4) methodological approach to incorporate the information in earnings forecasts and stock recommendations. A series of demographic questions concludes. When we administered the survey, we briefly explained the general purpose, but did not mention that we were studying the usefulness of financial statement disclosures for the assessment of the Swiss franc shock. Appendix B provides more details on the survey together with all the results not explicitly tabulated in the main body of the study. We cross-reference the respective survey question (Q) when discussing the results in the text.

Our pool of suitable survey subjects comprises all the sell-side analysts covering at least one of the 151 sample firms during the SNB announcement. We receive 77 completed surveys, resulting in a response rate of 9.4 percent.[15] The median analyst in our sample covers 10 to 15 firms from up to three different industries. Firms domiciled in Switzerland make up about 25 percent of the average analyst portfolio. However, a quarter of the respondents exclusively cover Swiss firms in their research. Analysts, on average, are between 30 and 50 years old, hold a

[15] The response rate is comparable to other surveys of executives (8.4 percent in Graham et al. 2005), chief financial officers (5.4 percent in Dichev et al. 2013), and financial analysts (10.9 or 7.1 percent in Brown et al. 2015, 2016).

master's degree, and have close to 10 years of experience. They work at large brokerage houses with more than 25 sell-side analysts. About 40 percent each work for employers headquartered in Switzerland or the rest of Europe. See Table B1 in the Appendix for details.

The Swiss franc shock caught financial analysts by surprise. Only 3 percent of the respondents anticipated such a move by the SNB within the next three months and only 20 percent within a year (Q2). This evidence corresponds with the archival findings in Figure 1, and points to the randomness of the event. The currency shock had a big impact on firm fundamentals. 85 percent of the respondents thought that almost all of the Swiss firms in their portfolios were impacted by the event (Q3), and in all cases the effect was expected to be negative (Q4). The Swiss franc shock recalibrated analysts' stance towards currency risk. Before the event, only 36 percent considered a typical firm's currency risk exposure important information when forming earnings forecasts or stock recommendations (Q1). This number soared to 52 percent after the event (Q15), which is significantly higher than before.

The Swiss franc shock triggered a swift reaction from sell-side analysts. They reassessed the prospects of almost their entire portfolio within the first two days of the SNB announcement (Q5.1). For about 80 percent of the firms, the reassessment led to a material adjustment of the qualitative inputs (40 percent) and/or quantitative inputs (70 percent) in the valuation models that analysts use to derive their earnings forecasts and stock recommendations (Q5.2). The main drivers behind the rapid response were the increased information needs and, hence, demand from clients as well as the presumed exposure of the firm to the currency shock (Q6). This answer already points to the potential importance of risk disclosures for analysts' decision-making in the immediate aftermath of the event. Analysts continued to evaluate the impact of the Swiss franc shock after the initial response. More than 60 percent of the analysts reviewed the prospects of

their entire portfolio in more detail in the two to three weeks that followed (Q7). This time pattern nicely corresponds with the drift we observe in the archival tests. As Figure 4 illustrates, it took markets about two weeks to fully bridge the gap in bid-ask spreads.

We next explore the role of financial statement information in the decision process. Table 4 lists the survey answers to the questions about the importance of various information sources for the assessment of the Swiss franc shock of a typical firm immediately after the announcement by the SNB (Q8) and within the following two to three weeks (Q9). We list the answers in decreasing order of importance.[16] As Panel A shows, personal experience/industry knowledge and private communication with firm management were considered extremely important during the advent of the fundamental news. Existing annual reports or other financial filings rank third, not statistically distinguishable from private communication or ad hoc announcements by the firm, but more important than market sources, media coverage, or peer information. Thus, not only did analysts consult annual reports to gather additional insights on the economic consequences of the currency shock, but this resource also ranked highest in terms of publicly available information. Our finding contrasts with the information sources that analysts use under "normal" circumstances. As Brown et al. (2015) show, industry knowledge and private communication with management are always considered important (see their Table 1). Yet, annual reports or other financial filings are relatively less important and rank substantially lower. Panel B of Table 4 provides insights into the dynamics of the information processing by financial analysts. In the two to three weeks that follow the SNB announcement, existing annual reports and other filings lose ground (albeit not statistically significant), while private communication and ad hoc announcements by the firms gain importance. These answers are consistent with

[16] When we administered the survey, we presented the options in random order to the subjects to avoid any order bias (Nelson and Skinner 2013).

newer, updated information substituting for past disclosures, which in the short-run were used to complement the advent of news.

Asked directly what they use financial statement information for (Q10), analysts provided the responses listed in Table 5, Panel A. The main use of past disclosures was to better contextualize and interpret the translational and transactional currency risk exposure of the firm and, to a lesser degree, assess the effectiveness of the hedging strategy in place. These stated purposes map into the construction of our *FXRisk_Disc* score that we use in the archival analyses. Thus, when searching the annual report for relevant disclosures, analysts likely considered items included in our empirical proxy. Panel B of Table 5 indicates that a firm's business complexity together with variation in the quality of past disclosures pose the main obstacles in assessing the consequences of the currency shock (Q12). About half of the respondents considered assessing the impact of the event substantively more difficult for some firms than others (Q11). In terms of how analysts incorporated the new information into their valuation models, 75 percent responded that they have made quantitative input adjustments, while about 40 percent reconsidered the entire situation of the firm (including strategic responses by management) or adjusted the valuation parameters (Q14).

Overall, the results from our survey of sell-side analysts underscore the importance of past disclosures during the advent of new information and corroborate the findings from the archival analyses in Section 3. Past financial reports seem to matter if put into context, even though the information they contain viewed independently might be obsolete. This complementary role is stronger in the immediate aftermath of the event and attenuates as other information becomes available. The quality of past disclosures is also important when it comes to contextualize and condition the new information.

4.2. Reaction of Lending Banks to Swiss Franc Shock

Lending banks represent another group of stakeholders affected by the Swiss franc shock, especially if their borrowers conduct business abroad. Banks enjoy privileged access and closer ties to their clients (e.g., Rajan 1992; Agarwal and Hauswald 2010), and given their longer horizon than equity investors, they face less time pressure to respond to unexpected changes in risk. We conducted a series of in-depth structured interviews with senior credit officers and risk managers of the four largest commercial banks in Switzerland.[17] The interviews lasted about an hour. In the first part, the bank representatives explained how they handled the events of January 15. In the second part, we guided them through a questionnaire similar in structure and length to the analyst/investor-relations manager survey. As the sample size of the interviews does not lend itself to statistical analysis, we provide a qualitative summary of these conversations.

After the SNB announcement (within one week for listed firms, two to four weeks for the rest), all four banks reviewed their relevant loan portfolio, and classified it into different risk categories depending on the materiality and perceived impact of the currency shock. As time was of the essence for this initial assessment, banks incorporated any information available to them. The main, and for non-listed firms only, information source for this triage were existing financial disclosures including annual reports submitted during the periodic loan review (e.g., 2013 annual reports, 2014 quarterly reports, budgets for 2015). Only in rare instances and for large (listed) clients, loan officers established a direct communication with the borrower during the initial period of uncertainty. Managers at one bank mentioned that they were prepared for such an event in that they had constructed a so-called heat map (i.e., risk profile) of their customer base after the initial pegging of the Swiss franc to the euro in September 2011.

[17] We conducted five interviews in total, as one of the banks divides its credit office into publicly listed and privately held clients, and we interviewed senior management at both divisions.

The triage typically resulted in three categories of clients: (1) borrowers heavily affected by the Swiss franc shock, (2) borrowers without material consequences, and (3) the firms considered somewhere in between. The first group was small (sometimes only a handful of all corporate clients), and the consensus among our interview partners was that the Swiss franc shock might have been the tipping point, but rarely the root cause of the financial problems for these firms. Sometimes, these clients were handed over to the recovery division within the bank. The second group, without material impact, was surprisingly large (up to 80 percent in some cases) and consisted primarily of smaller, private clients with a strong focus on domestic markets. No immediate action was taken for these firms. The third group of firms, potentially risky cases, underwent a more detailed review over the following months, and loan officers often engaged in direct discourse with their clients to gather additional information on the impact of the currency shock. In some cases, this information gathering was standardized using a questionnaire. Lending banks found that larger companies, particularly when listed on an exchange, were easier to evaluate because more (and better) information is available and the information is more recent. At the same time, lenders considered larger firms to be less affected by the Swiss franc shock due to natural currency hedges by means of their business model and their superior ability of dealing with exchange rate fluctuations (e.g., by derivative hedging).[18]

With respect to the usefulness of existing financial filings, our interviews yielded the following insights. First, while lending banks typically have closer ties with their borrowers and less time pressure to react than investors, they still relied on this information source to evaluate the impact of the Swiss franc shock. In fact, their timing pattern is comparable to the sell-side

[18] In that sense, relative to the universe of public *and* private firms, the results of our archival tests and the analyst survey might understate the impact of the Swiss franc shock on firm fundamentals and overstate the usefulness of risk disclosures. Prior literature shows that publicly listed firms (e.g., Burgstahler et al. 2006) and firms with analyst coverage (e.g., Lang and Lundholm 1996) have a more transparent information environment to begin with.

analysts. In the days immediately after the SNB announcement, past disclosures were a valuable source of information. As time went by, banks replaced "hard" information from existing financial filings with "soft" information from personal exchanges with the client. Second, two of the four banks indicated that they had tightened their clients' reporting requirements and frequency as a response to the event. This tightening could take the form of requiring half-yearly or quarterly reporting, and suggests that existing financial disclosure practices were not considered informative enough in the advent of sudden news. No interview partner mentioned that the bank adjusted its credit risk rating system following the Swiss franc shock.

4.3. Reaction of Investor-Relations Managers to Swiss Franc Shock

In our third field analysis, we shift the focus away from market participants, and survey investor-relations (IR) managers working at the affected firms. The goal is to understand the external communication needs after the Swiss franc shock, and the role that existing financial statements might have played in this interaction. We develop a survey comprising 15 questions and pre-test it with several academics and practitioners. The survey is divided into four parts: (1) general information about the event, (2) timeliness of and motivation for communication with external stakeholders, (3) means of communication, and (4) stakeholders' information needs. A simple demographic question concludes. When we administered the survey, we did not mention that we were studying the usefulness of financial statement disclosures for the assessment of the Swiss franc shock. Appendix C provides more details on the survey together with all the results not explicitly tabulated in the main body of the study. We cross-reference the respective survey question (Q) when discussing the results in the text.

We sent the survey to IR representatives at 149 of the 151 sample firms.[19] The response rate is 26.2 percent or 39 completed surveys. 68 percent of the respondents carry either the title of head of IR, (senior) IR manager, or head of communications; 18 percent hold the position of chief financial officer. The respondent firms are a good representation of the sample. On average, they do not differ significantly from non-respondent firms in terms of the firm characteristics used in the archival tests as well as with regard to the *FXRisk_Disc* score. IR managers working at Swiss firms in January 2015 were surprised by the SNB proclamation. Only 5 percent expected such a move within the next three months, 35 percent within a year (Q2). 60 percent of the respondents expected a negative impact on the firm's future expected cash flows, only 8 percent foresaw a positive effect (Q3). At many firms, information about the firm's foreign currency exposure always belonged to the communication with external stakeholders (Q1). While its role did not shift for firms that considered it an integral part of their communication strategy, currency risks received more prominent coverage after the event by firms that used to largely ignore this issue in the past (Q15).

Firms quickly reached out to external stakeholders following the event. 46 percent of IR departments communicated with investors, analysts, etc. on the day of the SNB announcement, 64 percent within the first week (Q4). The interactions were typically both proactive and a reaction to outside demand (Q7). The main goals were to reassure existing investors, reduce uncertainty in the market place, build reputation, and promote trust in the firm's reporting strategy (Q11). Table 6, Panel A, lists the answers to the question about the internal and external recipients of the communication (Q5). Financial analysts were the primary target group for information about the currency shock, followed by institutional investors, and management or

[19] We could not identify valid email addresses of investor-relations managers at two of the sample firms.

other internal departments. Communication with lending banks, retail investors, and the external audit firm rank significantly lower. This ordering is consistent with the answers in the analyst and bank surveys, and maps into the bid-ask spread pattern that we observe in the archival tests (see Panel A of Figure 3 and Figure 4). The uncertainty in the markets was highest shortly after the event, but sophisticated investors and knowledgeable information intermediaries could presumably distinguish between firms with more and less precise disclosures.

Panel B of Table 6 shows the information sources used by the IR departments in preparation of the external communication (Q6). Consultation with key management is ranked highest, trailed by existing internal reports, and past annual financial statements or other financial filings. Only 3 percent of the respondents did not deem the latter information source important. Next, we examine the use of different communication channels. Table 7, Panel A, reports the answers. Private communication with analysts and investors were the preferred means of communication in the days immediately after the SNB announcement (Q8). Ad hoc disclosures and press releases were only rarely used. This finding is consistent with the answers from the sell-side analysts (see Table 4, Panel A), and suggests that sophisticated market participants were seeking *and* IR departments fulfilling the need for non-formalized ways of conveying information that goes beyond past disclosures. In the two to three weeks that followed, communication at already pre-scheduled events gained importance (e.g., investor days or conference calls), but private communication retained its role as key information source (Q9).

Table 7, Panel B, shows reasons why firms did not pursue a more proactive communication strategy (Q10). No clear rank order emerges. 44 percent of respondents indicated that upcoming regular financial filings (e.g., the imminent release of the 2014 annual report) or pre-scheduled events were important. Fears of disclosing proprietary data or setting a disclosure precedent did

not receive much weight, even though Graham et al. (2005) list them as the two primary reasons limiting firms' voluntary disclosure behavior (see their Table 12).

Finally, we investigate how IR managers perceived the external information needs. Corporate outsiders were eager to obtain more information about the currency shock. Web traffic, emails, and phone calls were above normal levels registered during the release of the firm's most recent quarterly or annual earnings (Q12). Information about the firm's transactional and translational exposure, followed by the nature and extent of the hedging strategy, were in particularly high demand (Q13). These perceptions nicely map into what sell-side analysts considered important information drawn from existing financial statements (see Table 5, Panel A). Asked more directly, 26 (67) percent of IR professionals believed that information in past disclosures was extremely (at least somewhat) important to outside stakeholders when assessing the immediate consequences of the Swiss franc shock (Q14). This favorable impression broadly confirms the findings presented throughout our study.

5. Conclusion

The question of how market participants cope with the advent of unexpected news that affect a firm's prospects, and what role existing financial statement information plays in this process is at the heart of financial accounting. To shed light on this issue, we use the Swiss franc shock as an ideal setting to analyze the long-term transparency effects of risk disclosures. In archival analyses, we find that firms with relatively better past risk disclosures experience a substantially mitigated increase in information asymmetry following the currency shock. This gap in bid-ask spreads appears within 30 minutes of the SNB announcement and persists for about two weeks. We confirm the informational role of risk disclosures with data from the field. Surveying sell-side analysts, lending banks, and IR managers at affected firms shows that

existing disclosures are key to evaluate the translational and transactional effects of the currency shock, and sometimes (e.g., for smaller, unlisted firms) are the only resource available at short notice. These results imply that risk disclosures continue to attenuate information asymmetry and the costs of adverse selection well beyond their initial publication date.

One implication of our study is that being transparent has benefits beyond simply providing useful information at the initial release date. The same set of disclosures might be relevant in the future as it provides contextual information in case the firm's information environment changes. The potential benefits of reduced uncertainty in posterior trading are highest for firms with a high level of current disclosures. This insight is important as it points to reduced costs of adverse selection that could arise from selling shares in the future. Our finding of the complementary role of past risk disclosures adds to prior literature that shows how the commitment to future high-quality disclosures or the promise to provide credible *ex post* verification can sustainably reduce information asymmetry (e.g., Leuz and Verrecchia 2000; Ball et al. 2012).

On a more fundamental level, our results highlight that managers should care about the long-term consequences of their disclosure decisions. Even if information appears irrelevant now, it might become useful later. Thus, preparers, regulators and practitioners should not only consider the current decision usefulness of a certain disclosure, but also whether this information *could become* relevant at some point. This insight contributes to the ongoing debate about information overload due to the disclosure of immaterial information. Our evidence suggests that materiality should be assessed with an eye on the future in case a firm's circumstances change.

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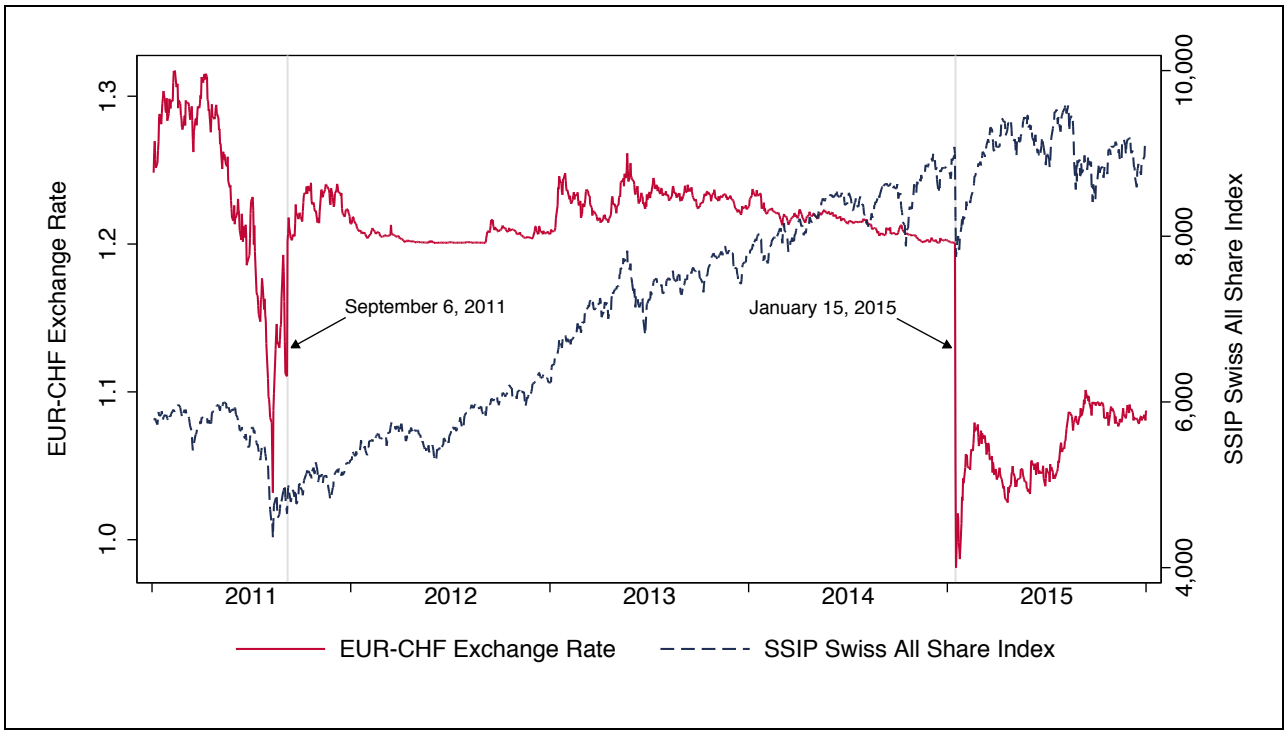
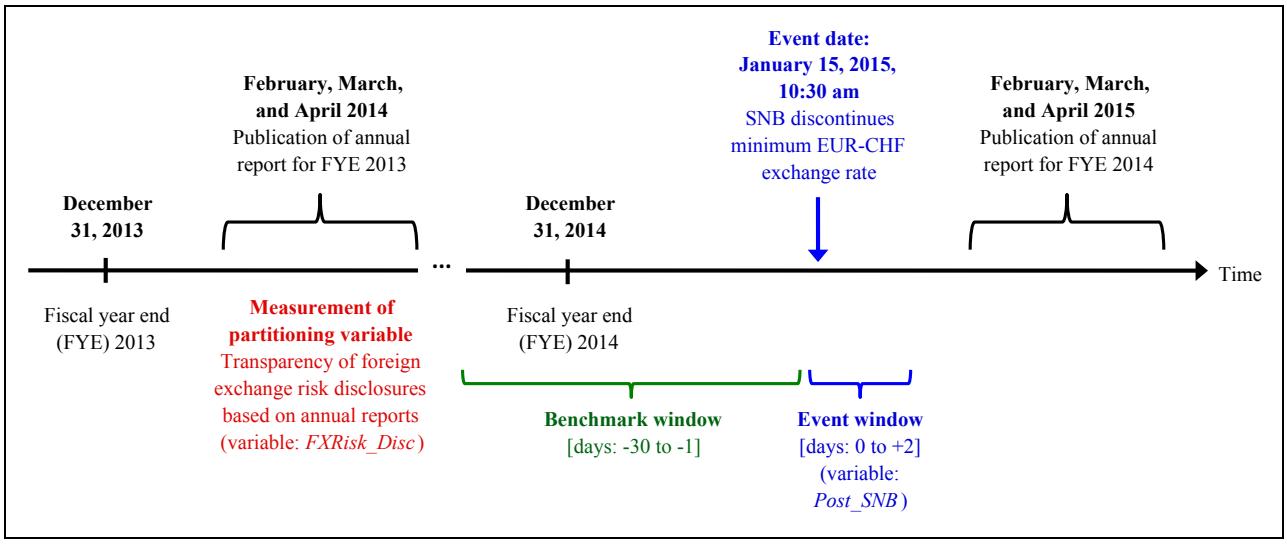
Figure 1: Euro-Swiss Franc Exchange Rates and Swiss All Share Index Over 2011 to 2015 Period



The figure plots the euro to Swiss franc (EUR-CHF) exchange rates (left-hand scale) and the Swiss All Share Index (symbol: SSIP; right-hand scale) over the years 2011 to 2015. The SSIP includes all shares of companies listed on the Swiss exchange SIX. Exchange rates and index values are from Datastream. The graph also indicates the dates when the Swiss National Bank (SNB) established the minimum exchange rate of CHF 1.20 per euro on September 6, 2011, and subsequently abandoned this lower threshold on January 15, 2015.

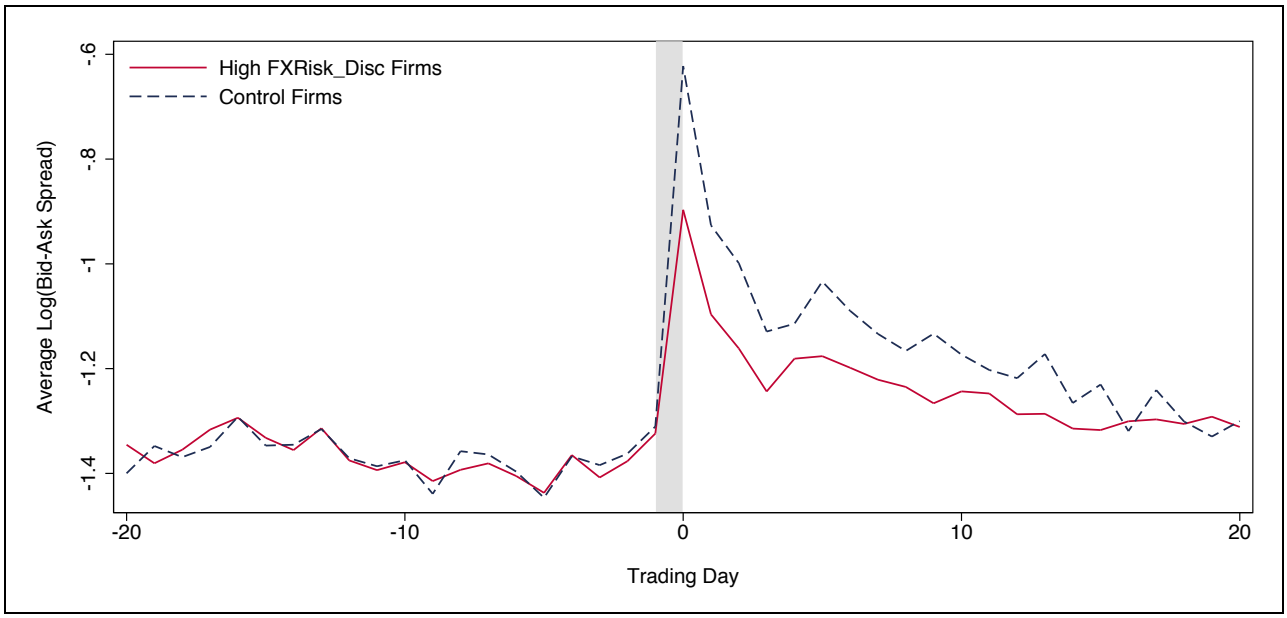
Figure 2: Timeline of Events and Overview of Research Design for Archival Analysis



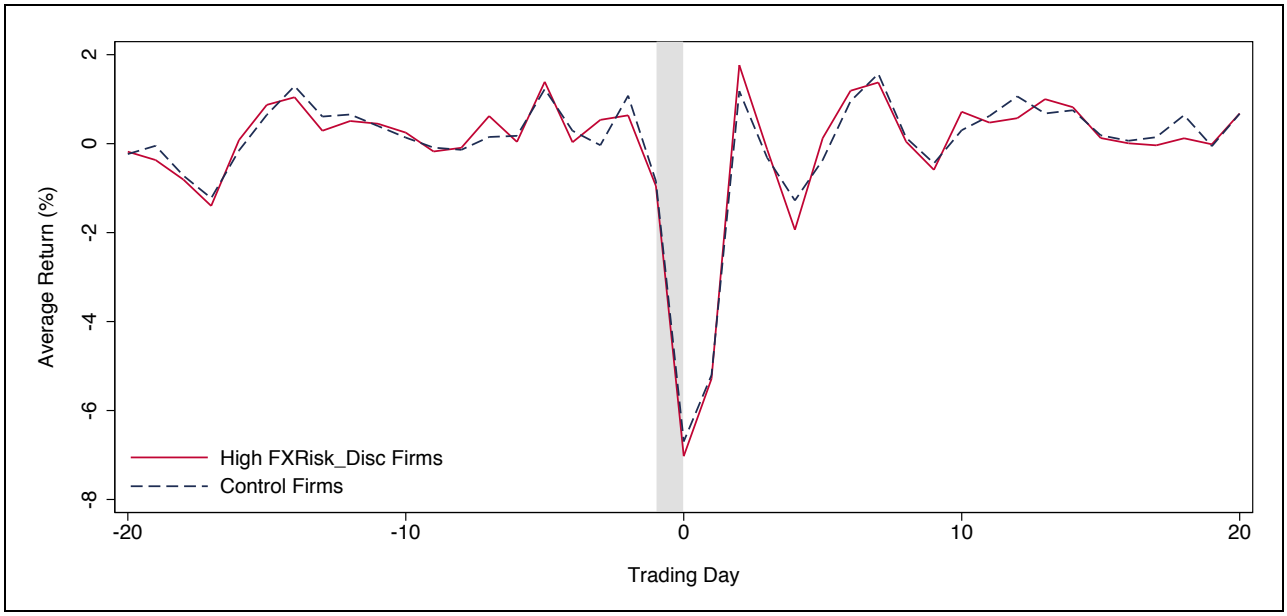
The figure illustrates our research design for the archival part of the analysis. In the regression analyses, we compare bid-ask spreads during the event window to the benchmark period using the *Post_SNB* indicator variable. We then test for cross-sectional differences in bid-ask spreads between firms with high and low foreign exchange risk disclosure scores (*FXRisk_Disc*). We construct *FXRisk_Disc* by scoring seven disclosure items that capture a firm's exposure to foreign exchange risk as reported in the most recent annual report before the event (see Appendix A for details).

Figure 3: Market Reactions to Swiss Franc Shock Conditional on Quality of Exchange Risk Disclosures

Panel A: Mean Daily Bid-Ask Spreads

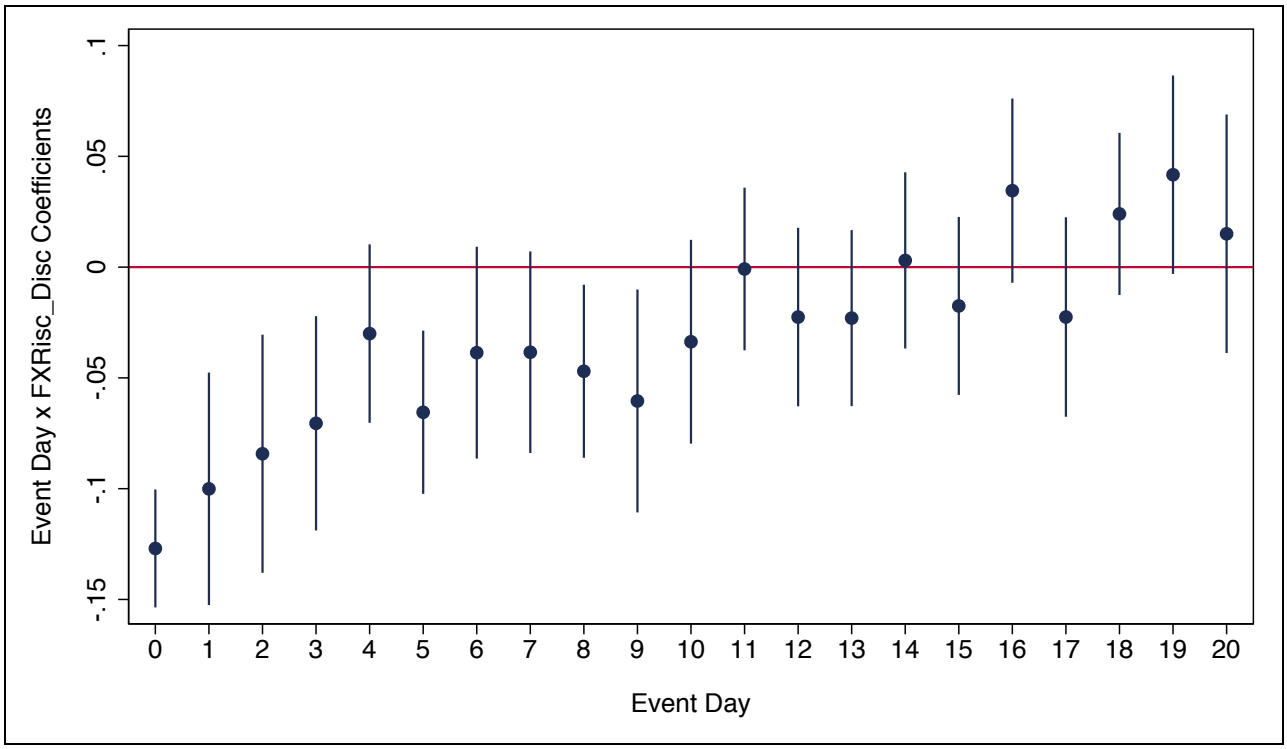


Panel B: Mean Daily Stock Returns



The figure maps out changes in information asymmetry as measured by bid-ask spreads (Panel A) and in market performance as measured by stock returns (Panel B) in the 40 trading days (i.e., days -20 to +20) surrounding the SNB announcement to discontinue the minimum EUR-CHF exchange rate on January 15, 2015 (day 0). The sample comprises 151 firms listed on SIX. In both panels, we plot the daily mean values conditional on the quality of foreign exchange risk disclosures. That is, we compare the sample firms with an above median value of the foreign exchange risk disclosure score (*FXRisk_Disc*) to a (synthetic) control group. We construct the control groups by matching each firm with an above median value of *FXRisk_Disc* to a combination of all firms with a score at or below the median (benchmark pool) using a weighting matrix that minimizes the differences in the outcome variables during the pre-event period. Thus, by construction, the differences in bid-ask spreads and stock returns between the two groups are not significant before the event. For details on the sample composition and variable measurement see Table 1.

Figure 4: Persistence of Information Asymmetry Effects for High Quality Exchange Risk Disclosure Firms



The figure maps out the persistence of the information asymmetry advantages for the firms with high quality foreign exchange risk disclosure scores (*FXRisk_Disc*) following the SNB announcement to discontinue the minimum EUR-CHF exchange rate. We estimate a bid-ask spread model similar to the base specification (see column 2 in Table 2) over a [-30;+20] window, and plot the coefficient estimates of the interaction terms between $Post\_SNB_t$ and *FXRisk_Disc* in the figure. $Post\_SNB_t$ is a set of indicator variables separately marking each day of the post period [0;+20]. The graph also shows 95% confidence intervals comparing the coefficients to zero (based on robust standard errors clustered by firm and day). For details on the sample composition and variable measurement see Table 1.

Table 1: Sample Selection and Descriptive Statistics for Archival Analysis

Panel A: Sample Selection Procedure

Data Requirements	*Number of Firms*
Members of the Swiss All Share Index as published by the Swiss exchange SIX on 31.12.2014 (symbol: SSIP)	235
– thinly traded firms (i.e., firms with, on average, less than ten trades per day over the period October 2014 to April 2015)	-62
– firms with narrow market depth (i.e., firms whose bid-ask spreads were not updated on more than 97.5% of trading days over the period October 2014 to April 2015)	-14
– firms with missing data for variables used in the regression analysis	-8
Final sample	151

Panel B: Descriptive Statistics for Variables Used in Daily Information Asymmetry Regressions [Days: -30 to +3]

(N = 4,949)	*Mean*	*Std. Dev.*	*P1*	*P25*	*Median*	*P75*	*P99*
Dependent Variable:							
Bid-Ask Spread$_t$	0.482	1.107	0.050	0.144	0.264	0.471	3.774
Independent Variables:							
Post_SNB$_t$	0.091	0.288	0	0	0	0	1
FXRisk_Disc$_{AR}$	4.027	1.425	1	3	4	5	7
Market Value$_{t-1}$	8,870	32,488	26	444	1,263	4,569	232,508
Share Turnover$_{t-1}$	0.230	0.772	0.002	0.042	0.114	0.242	1.967
Return Variability$_{t-1}$	0.520	0.677	0.069	0.233	0.343	0.530	3.636
Int_Sales$_{AR}$	0.654	0.386	0.000	0.285	0.876	0.980	1.000
Total_Disc$_{AR}$	3.665	0.747	2.037	3.180	3.632	4.173	5.102
Num_Analysts	7.743	8.533	0	2	4	11	32
Free Float$_{AR}$	0.663	0.249	0.110	0.450	0.690	0.890	1.000
Stock Return$_t$	-0.256	2.737	-11.083	-0.894	0.000	0.831	5.500

The table presents details on the sample selection (Panel A) and descriptive statistics for the variables used in the daily information asymmetry regressions (Panel B). The final sample of 151 firms gives rise to 4,949 firm-day observations over the [-30;+2] day period surrounding the SNB announcement to discontinue the minimum EUR-CHF exchange rate. We measure daily *Bid-Ask Spreads* as the mean of minute-by-minute intraday differences between bid and ask quotes (divided by the mid-point). *Post_SNB* is a binary indicator that takes on the value of '1' beginning on day $t = 0$ of the SNB announcement (January 15, 2015). To measure the quality of a firm's foreign exchange risk disclosures, we construct *FXRisk_Disc* by scoring the following seven items as reported in the most recent annual report before the event (as indicated by the subscript *AR*): (i) revenues, (ii) assets, and (iii) costs and profits generated and held outside of Switzerland; (iv) the currency distribution of short-term monetary assets and liabilities; (v) the exposure to and (vi) the hedging strategy with regard to foreign currency risk; (vii) the sensitivity of net income or equity to changes in foreign exchange rates. We standardize the raw scores, ranging from 0 (worst) to 7 (best), for use in the regression analysis. See Appendix A for details. *Market Value* is the number of shares outstanding times the stock price at the end of each trading day (in CHF million). *Share Turnover* is the daily CHF trading volume divided by the market value at the end of the previous trading day. We compute *Return Variability* as the standard deviation of stock returns over half-hourly intervals on a given trading day. *Int_Sales* is the percentage of sales generated outside of Switzerland as shown in the most recent annual report. When exact data were missing (32 cases), we infer international sales from textual and other disclosures in the annual report. *Total_Disc* is a score, ranging from 1 (worst) to 6 (best), ranking the overall quality of a firm's annual report taken from the 2014 rating as published by the Institute for Banking and Finance of the University of Zurich. *Num_Analysts* is the number of analysts in *I/B/E/S* that cover the firm (i.e., provide a one-year-ahead earnings per share forecast) before the SNB announcement. If analyst data are missing, we set the variable to zero. *Free Float* is the percentage of shares available to ordinary investors at the end of the most recent fiscal year (source: Datastream). We compute daily *Stock Return* as the natural logarithm of price at the end of trading over price at the end of the previous day. Stock price, spread, and volume data are from Bloomberg. For expositional purposes, we multiply bid-ask spreads, share turnover, return variability, and stock returns by 100, expressing them in basis points. We do not winsorize or truncate the data.

Table 2: Analysis of Daily Changes in Information Asymmetry around Swiss Franc Shock

(N = 4,949) *[Days: -30 to +2]*	*(1)* *Log(Bid-Ask Spread)*	*(2)* *Log(Bid-Ask Spread)*	*(3)* *Log(Bid-Ask Spread)*	*(4)* *Log(Bid-Ask Spread)*	*(5)* *Log(Bid-Ask Spread)*	*(6)* *Return Variability*
Test Variables:						
Post_SNB	0.367***	–	–	–	–	–
	(3.30)					
Post_SNB × FXRisk_Disc	-0.103***	-0.105***	-0.113***	-0.104***	-0.105***	-0.125***
	(-5.36)	(-5.01)	(-5.49)	(-4.37)	(-4.24)	(-3.33)
Control Variables:						
Log(Market Value$_{t-1}$)	-0.243***	-0.293***	-0.277***	-0.288***	-0.299***	-0.197
	(-3.94)	(-4.79)	(-5.10)	(-4.76)	(-4.27)	(-1.43)
Log(Share Turnover$_{t-1}$)	-0.028***	-0.022**	-0.023**	-0.023**	-0.023**	0.018**
	(-3.00)	(-2.52)	(-2.56)	(-2.57)	(-2.53)	(2.47)
Log(Return Variability$_{t-1}$)	0.061**	0.088***	0.085***	0.089***	0.089***	0.040**
	(2.49)	(7.38)	(7.03)	(7.35)	(7.50)	(2.47)
Post_SNB × Int_Sales	–	–	–	0.003	-0.018	–
				(0.05)	(-0.28)	
Post_SNB × Total_Disc	–	–	–	0.006	0.006	–
				(0.17)	(0.16)	
Post_SNB × Num_Analysts	–	–	–	-0.005**	-0.005**	–
				(-2.29)	(-2.32)	
Post_SNB × Free Float	–	–	–	-0.154	-0.157	–
				(-1.26)	(-1.39)	
Stock Return$_t$	–	–	–	–	-0.005**	–
					(-2.58)	
Post_SNB × Stock Return$_t$	–	–	–	–	-0.004	–
					(-1.19)	
Fixed Effects	Firm	Firm & Day	Firm & Industry-Day	Firm & Industry-Day	Firm & Industry-Day	Firm & Day
Adjusted R^2	0.924	0.928	0.928	0.928	0.928	0.593

The sample comprises 151 firms that give rise to 4,949 firm-day observations over the [-30;+2] day period surrounding the SNB announcement to discontinue the minimum EUR-CHF exchange rate. We use the daily *Bid-Ask Spread* (*Return Variability* in column 6) as the dependent variable. We define *Post_SNB* as a binary indicator that takes on the value of '1' beginning on day $t = 0$ of the SNB announcement (January 15, 2015). To measure the quality of a firm's foreign exchange risk disclosures, we construct *FXRisk_Disc* by scoring seven disclosure items as reported in the most recent annual report before the event. For details on the remaining variables see Table 1. We include firm, day, or one-digit SIC industry-day fixed effects in the regressions, but do not report the coefficients. If indicated, we use the natural log of the raw values, and lag the variables by one day. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by firm and day. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 3: Analysis of Intraday Changes in Information Asymmetry around Swiss Franc Shock

Log(Bid-Ask Spread) as Dependent Variable	*(1)* *[Days: -30 to 0]*		*(2)* *[Days: 0]*	
Test Variables:				
09:00-09:30 Dummy	-0.025*	(-1.73)	–	
09:00-09:30 Dummy × FXRisk_Disc	-0.005	(-0.23)	-0.022	(-1.00)
09:30-10:00 Dummy	0.022	(1.49)	–	
09:30-10:00 Dummy × FXRisk_Disc	-0.037	(-1.63)	-0.045	(-1.52)
10:00-10:30 Dummy	0.030**	(2.00)	–	
10:00-10:30 Dummy × FXRisk_Disc	0.006	(0.45)	-0.003	(-0.14)
10:30-11:00 Dummy	0.701***	(22.71)	–	
10:30-11:00 Dummy × FXRisk_Disc	-0.057	(-1.55)	-0.079*	(-1.92)
11:00-11:30 Dummy	0.902***	(27.17)	–	
11:00-11:30 Dummy × FXRisk_Disc	-0.122***	(-3.06)	-0.159***	(-3.86)
11:30-12:00 Dummy	0.753***	(26.34)	–	
11:30-12:00 Dummy × FXRisk_Disc	-0.074***	(-2.63)	-0.107**	(-2.91)
12:00-12:30 Dummy	0.836***	(25.05)	–	
12:00-12:30 Dummy × FXRisk_Disc	-0.146***	(-3.95)	-0.164***	(-4.23)
12:30-13:00 Dummy	0.911***	(26.78)	–	
12:30-13:00 Dummy × FXRisk_Disc	-0.206***	(-6.10)	-0.197***	(-6.21)
13:00-13:30 Dummy	0.730***	(20.12)	–	
13:00-13:30 Dummy × FXRisk_Disc	-0.183***	(-5.14)	-0.202***	(-4.66)
13:30-14:00 Dummy	0.693***	(19.99)	–	
13:30-14:00 Dummy × FXRisk_Disc	-0.169***	(-5.12)	-0.179***	(-4.73)
14:00-14:30 Dummy	0.615***	(22.62)	–	
14:00-14:30 Dummy × FXRisk_Disc	-0.137***	(-4.76)	-0.142***	(-4.10)
14:30-15:00 Dummy	0.486***	(22.85)	–	
14:30-15:00 Dummy × FXRisk_Disc	-0.117***	(-4.94)	-0.131***	(-4.26)
15:00-15:30 Dummy	0.426***	(18.61)	–	
15:00-15:30 Dummy × FXRisk_Disc	-0.061**	(-2.15)	-0.072*	(-2.12)
15:30-16:00 Dummy	0.373***	(16.51)	–	
15:30-16:00 Dummy × FXRisk_Disc	-0.072***	(-2.76)	-0.080**	(-2.40)
16:00-16:30 Dummy	0.328***	(13.80)	–	
16:00-16:30 Dummy × FXRisk_Disc	-0.096***	(-4.08)	-0.133***	(-3.94)
16:30-17:00 Dummy	0.386***	(15.05)	–	
16:30-17:00 Dummy × FXRisk_Disc	-0.127***	(-4.92)	-0.151***	(-4.08)
17:00-17:30 Dummy	0.309***	(14.14)	–	
17:00-17:30 Dummy × FXRisk_Disc	-0.139***	(-6.29)	-0.172***	(-5.02)
Control Variables	Included		Included	
Fixed Effects	Firm & Time-of-Day		Time-of-Day	
Adjusted R^2	0.850		0.650	
N	64,012		2,112	

The sample comprises 151 firms that give rise to 64,012 (2,112) firm-intraday observations over the [-30;0] day period leading up to (on day $t = 0$ of) the SNB announcement to discontinue the minimum EUR-CHF exchange rate. The announcement took place at 10:30 am on January 15, 2015. We use the intraday *Bid-Ask Spread* as dependent variable (log transformed), and compute it as the mean of minute-by-minute differences between bid and ask quotes (divided by the mid-point) over 30-minute intervals. For each 30-minute interval *i* during trading hours (i.e., from 9 am to 5:30 pm) we construct a binary indicator that takes on the value of '1' during that time slot. For instance, the *11:30-12:00 Dummy* represents the 30 minutes from 11:30 am to noon. Technically, the first time slot of the day only comprises 28 minutes as SIX opens trade in each share at random within the first two minutes; the last slot of the day only comprises 20 minutes before the closing auction begins. To measure the quality of a firm's foreign exchange risk disclosures, we construct *FXRisk_Disc* by scoring seven disclosure items as reported in the most recent annual report before the event. We include the natural logs of *Market Value*, *Share Turnover*, and *Return Variability* (computed similarly as in Table 1, but at the end of each trading interval *i*) as control variables, each lagged by 17 trading intervals, as well as firm and time-of-day fixed effects in the regressions, but do not report the coefficients. The table reports OLS coefficient estimates and (in parentheses) *t*-statistics based on robust standard errors clustered by firm and trading interval. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed).

Table 4: Survey of Sell-Side Analysts – Information Sources to Assess Economic Impact of Swiss Franc Shock

Panel A: Short-term Information Sources

Question 8: Immediately after the SNB announcement (i.e., within the first one or two days), how important were the following information sources for your assessment of the impact of the Swiss franc shock on a typical firm you followed? [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 76)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Extremely Important [6 or 7]	*Not at all Important [1 or 2]*
(1) Personal experience including company/industry knowledge	5.84	***	3-9	72.00	5.33
(2) Private communication with management or investor relations	5.61	***	4-9	68.42	10.53
(3) Existing annual reports or other financial filings	5.35	***	1 and 5-9	57.33	9.33
(4) Ad hoc information provided by the firm after the shock	4.91	***	1-3 and 5-9	48.68	18.42
(5) Commercial data providers (e.g., Bloomberg)	4.00		1-4 and 7-9	24.32	24.32
(6) Stock price reactions	3.97		1-4 and 8-9	27.03	29.73
(7) Peer firms (e.g., other firms' ad hoc information)	3.42	***	1-6 and 8-9	9.46	35.14
(8) Media coverage (e.g., press articles, TV features)	2.76	***	1-7 and 9	5.41	54.05
(9) Peer analysts (e.g., other analysts' forecasts revisions)	2.14	***	1-8	0.00	67.12

Panel B: Medium-term Information Sources

Question 9: Relative to the previous question, which information sources gained or lost importance in the two to three weeks following the SNB announcement for your assessment of the impact of the Swiss franc shock on a typical firm you followed? [3-point Likert Scale: 1 to 3]

Responses (Maximum possible N = 76)	*Average Rating*	*Significantly Different Than [2 = Similar Importance]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Gained Importance [3]	*Lost Importance [1]*
(1) Private communication with management or investor relations	2.37	***	3-9	44.74	7.89
(2) Ad hoc information provided by the firm after the shock	2.32	***	3-9	36.00	4.00
(3) Personal experience including company/industry knowledge	2.13	**	1-2 and 6-9	22.67	9.33
(4) Stock price reactions	2.03		1-2 and 9	24.00	21.33
(5) Peer firms (e.g., other firms' ad hoc information)	1.97		1-2 and 8-9	14.86	17.57
(6) Existing annual reports or other financial filings	1.89		1-3	13.33	24.00
(7) Commercial data providers (e.g., Bloomberg)	1.86	**	1-3	6.76	20.27
(8) Peer analysts (e.g., other analysts' forecasts revisions)	1.80	***	1-5	6.76	27.03
(9) Media coverage (e.g., press articles, TV features)	1.76	***	1-5	8.11	32.43

The sample comprises up to 76 answers from respondents to a survey sent to sell-side analysts covering at least one firm listed on SIX during the SNB announcement. The table lists the average ratings (in decreasing order) of the responses to the survey question indicated in the table header as well as the percentages of responses in the two tails of the Likert scale. We also report the results from *t*-tests comparing the average rating of an item to the mid-point (where ***, **, and * stand for statistical significance at the 1%, 5%, and 10% levels) and to the average ratings of all the other items. For the latter test, we report the item numbers that are statistically different at the 10% level, using Bonferroni-Holm adjusted *p*-values to correct for multiple pair-wise comparisons.

Table 5: Survey of Sell-Side Analysts – Role of Financial Statements in Assessing Economic Impact of Swiss Franc Shock

Panel A: Usefulness of Existing Annual Report Disclosures

Question 10: How important were existing annual reports and other financial filings for your assessment of the following dimensions of a firm's currency exposure immediately after the Swiss franc shock (i.e., within the first one or two days)? [7-point Likert Scale: 1 to 7]

				% of Respondents Who Answered	
Responses (Maximum possible N = 77)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*Extremely Important [6 or 7]*	*Not at all Important [1 or 2]*
(1) Translational exposure (e.g., arising from foreign subsidiaries)	5.84	***	3-6	73.33	6.67
(2) Transactional exposure (e.g., currency mismatch between revenues and costs)	5.84	***	3-6	74.03	7.79
(3) Hedging strategy	4.80	***	1-2 and 4-6	36.84	13.16
(4) One-time gains/losses (e.g., on cash holdings)	4.36		1-2	36.84	25.00
(5) Operating and strategic responses (e.g., relocation decisions)	3.93		1-3	26.67	32.00
(6) Sensitivity to indirect effects (e.g., GDP growth)	3.89		1-3	19.74	28.95

Panel B: Firm-level Heterogeneity in the Usefulness of Existing Annual Report Disclosures

Question 12: Why was it more difficult to assess the impact of the Swiss franc shock for some firms than for others? Due to differences in the … [7-point Likert Scale: 1 to 7]

				% of Respondents Who Answered	
Responses (Maximum possible N = 69)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*Extremely Important [6 or 7]*	*Not at all Important [1 or 2]*
(1) Complexity of firms' operations	5.71	***	3-4	69.57	2.90
(2) Quality and availability of financial information	5.54	***	3-4	62.32	5.80
(3) Uncertainty about strategic responses	4.29	*	1-2	14.71	13.24
(4) Volatility of underlying business models	4.26		1-2	23.53	13.24

See the notes to Table 4.

Table 6: Survey of Investor Relations Managers – Demand for and Sources of Information on Economic Impact of Swiss Franc Shock

Panel A: Recipients of Internal and External Communication

Question 5: How important were the following internal and external stakeholders in your decision to start communicating about the impact of the Swiss franc shock on your firm? [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered: Extremely Important [6 or 7]*	*% of Respondents Who Answered: Not at all Important [1 or 2]*
(1) Financial analysts (sell-side or buy-side)	6.13	***	2-8	74.36	0.00
(2) Institutional investors	5.72	***	1 and 4-8	64.10	5.13
(3) Management or other internal departments (e.g., accounting)	5.38	***	1 and 5-8	64.10	12.82
(4) Media and financial press	5.08	***	1-2 and 5-8	38.46	7.69
(5) Suppliers and customers	3.95		1-4 and 7-8	15.38	20.51
(6) Banks and other lending institutions	3.79		1-4	12.82	25.64
(7) Retail investors	3.38	**	1-4	7.69	35.90
(8) External audit firm	3.23	***	1-5	10.26	43.59

Panel B: Information Sources for External Communication

Question 6: How important were the following information sources for your own preparation in advance of your communication with external stakeholders about the impact of the Swiss franc shock? [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered: Extremely Important [6 or 7]*	*% of Respondents Who Answered: Not at all Important [1 or 2]*
(1) Consultation with key management (e.g., CFO)	6.21	***	2-6	78.95	0.00
(2) Existing internal reports (other than financial statements)	5.10	***	1 and 4-6	51.28	10.26
(3) Existing annual reports or other financial filings	4.85	***	1 and 6	30.77	2.56
(4) Newly prepared ad hoc information and reports	4.36		1 and 6	35.90	25.64
(5) Feedback from analysts, the media, or the stock market	4.26		1-3 and 6	28.21	12.82
(6) Consultation with outside experts, auditors, suppliers, etc.	2.95	***	1-5	5.13	48.72

The sample comprises up to 39 answers from respondents to a survey sent to investor relations managers at firms listed on SIX that were potentially affected by the SNB announcement. The table lists the average ratings (in decreasing order) of the responses to the survey question indicated in the table header as well as the percentages of responses in the two tails of the Likert scale. We also report the results from *t*-tests comparing the average rating of an item to the mid-point (where ***, **, and * stand for statistical significance at the 1%, 5%, and 10% levels) and to the average ratings of all the other items. For the latter test, we report the item numbers that are statistically different at the 10% level, using Bonferroni-Holm adjusted *p*-values to correct for multiple pair-wise comparisons.

Table 7: Survey of Investor Relations Managers – Communication with External Stakeholders about Economic Impact of Swiss Franc Shock

Panel A: Communication Channels for Initial Response

Question 8: Immediately after the SNB announcement (i.e., within the first one or two days), how important were the following channels for your firm's communication with external stakeholders about the impact of the Swiss franc shock? [7-point Likert Scale: 1 to 7]

				% of Respondents Who Answered	
Responses (Maximum possible N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*Extremely Important [6 or 7]*	*Not at all Important [1 or 2]*
(1) Private communication with analysts or investors	5.31	***	2-4	66.67	15.38
(2) Presentations and Q&A at already pre-scheduled events (e.g., investor days or conference calls)	4.41		4	43.59	30.77
(3) Communication through media and financial press	3.74		1 and 4	17.95	30.77
(4) Ad hoc announcements or press releases	2.36	***	1-3	5.13	64.10

Panel B: Firm-level Heterogeneity in the Initial Response

Question 10: What motives did prevent you from communicating more proactively with external stakeholders about the impact of the Swiss franc shock? Please indicate the importance of the following motives. [7-point Likert Scale: 1 to 7]

				% of Respondents Who Answered	
Responses (Maximum possible N = 36)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*Extremely Important [6 or 7]*	*Not at all Important [1 or 2]*
(1) Upcoming regular financial filings or pre-scheduled events	4.56		5-8	44.12	20.59
(2) Uncertainty about development of foreign exchange rates	4.34		5-8	20.00	17.14
(3) Limited impact of Swiss franc shock on firm	4.25		8	27.78	22.22
(4) Little perceived information needs (e.g., existing annual reports or other financial filings provide accurate picture)	4.15		8	20.59	14.71
(5) Uncertainty about the effect of Swiss franc shock on firm	3.57		1-2 and 8	22.86	40.00
(6) Attracting unwanted scrutiny by investors, lending banks, etc.	3.29	**	1-2	17.65	44.12
(7) Fear of setting a disclosure precedent that might be difficult to maintain or is inconsistent with current policies	3.15	***	1-3	8.82	38.24
(8) Giving away company secrets or harming competitive position	2.80	***	1-5	2.86	45.71

See the notes to Table 6.

Appendix A: Construction of Foreign Exchange Risk Disclosure Score (*FXRisk_Disc*)

A.1. Components of FXRisk_Disc

We capture the quality of a firm's exchange risk disclosures with a manually coded score (*FXRisk_Disc*), ranging from 0 to 7. Higher values represent better disclosures. *FXRisk_Disc* comprises seven items. We award each item either 1, 0.5, or 0 points. We identify these items by scouring several disclosures that were released after the 2015 SNB announcement to discontinue the minimum EUR-CHF exchange rate (e.g., the "events after the balance sheet date" and "outlook" sections of the 2014 annual reports, press releases, or analyst presentations) for a randomly selected group of firms. We choose this timing because we want to determine – in hindsight – which disclosure items likely were informative for investors to assess the effect of the Swiss franc shock, and then check whether firms already provided these items beforehand.

Item I captures the fraction of revenues that are generated outside of Switzerland ("*Revenues Generated Abroad*"). The higher a firm's proportion of international sales, the more sensitive it should react to currency fluctuations, assuming there is at least some degree of price elasticity. Item II provides information about the geographical distribution of a firm's assets and, indirectly, about its cost structure ("*Assets Held Abroad*"). If these are monetary assets denominated in foreign currencies or non-current assets bounded to a specific location (i.e., non-transferable), then a sudden shock to the exchange rate might reduce their value in CHF. On the flip side, the effects of currency fluctuations might be mitigated through expenses that are denominated in the same foreign currencies. Item III reflects the geographical distribution of costs and/or profits ("*Costs Incurred/Profits Generated Abroad*"). A shock to CHF exchange rates should have less of an effect on firms with a larger fraction of their costs incurring abroad. Item IV considers the currency denominations of short-term financial positions ("*Currency Distribution of Short-term Monetary Assets and Liabilities*"). This information allows investors to assess the impact of

one-time translational gains and losses on cash and near-cash balance sheet items. Item V captures the aggregate foreign currency information of the entire balance sheet in all major currencies ("*Foreign Currency Exposure*"). Firms sometimes report the non-functional currency holdings of the group companies and not the aggregate foreign currency positions per se. Item VI provides information on a firm's hedging strategy with respect to foreign exchange risk ("*Hedging of Foreign Currency Risk*"). Currency hedges should reduce the effects of sudden exchange rate fluctuations. Item VII provides a direct estimate of the translational effects of a (hypothetical) percentage change in exchange rates on net income and/or shareholders' equity ("*Sensitivity of Net Income or Equity to Foreign Exchange Rate Changes*"). Table A1 details the coding guidelines we used to construct the *FXRisk_Disc* score.

An important feature of the *FXRisk_Disc* score is that it does not capture the actual currency risk exposure, but rather the firm's information policy regarding this risk. For example, we assign the same score to a firm with no hedging strategy that discloses this fact as to a firm with very detailed quantitative disclosures on how it is hedging currency risks. Furthermore, there likely exist interdependencies among the disclosure items. For example, investors might put more weight on the disclosures of the geographical asset distribution if a cost split by country is missing. Aggregating multiple items into a single score should help us to capture the overall quality of these disclosures, and at the same time reduce measurement error.

A.2. Data Collection Process

We start the data collection process by downloading the most recent annual reports for the sample firms that were available *before* the SNB announcement (i.e., for the fiscal year 2013). We use the English language version of the reports if available. For each disclosure item, we electronically search the respective document using keywords like "currency," "foreign exchange," "Euro," etc. In addition, we read the potentially relevant sections of the annual reports (e.g., footnotes on segment reporting and risk disclosures). Once we have identified all

the relevant passages with regard to a firm's foreign currency risk exposure, we apply the coding guidelines depicted in Table A1. The coding is done through the lens of an investor who tries to gauge the exposure of a firm to the Swiss franc shock. Table A2 provides illustrative examples for the seven disclosure items. Each example represents an excerpt from the annual report of a different firm, which has received a full score for the respective item. Notably, the level of detail and the format vary substantially across firms. Some firms provide the information in the form of a textual description (qualitative or quantitative), others in the form of a table or figure.

The data collection concludes with the computation of the aggregate *FXRisk_Disc* score. In Table A3, we provide descriptive statistics on the scoring of the seven items for the 151 sample firms. Disclosures on the geographical distribution of revenues and assets as well as information on the hedging strategy are by far the most common, with more than 70 percent of the firms receiving full scores. 59 percent also provide quantitative measures of the economic sensitivities of currency rate fluctuations. The remaining disclosure items are less widely used with only about 25 percent of firms receiving full scores.

Table A1: Coding Guidelines for Construction of *FXRisk_Disc*

Disclosure Item		*Coding Explanation*
I.	Revenues generated abroad	We search for tables, figures, or text explaining revenues generated in Switzerland versus abroad. We award 1 point if the firm separately lists this information among its geographical segment disclosures or we can determine it from comparable sources (e.g., the firm states that it exclusively operates in Switzerland). We award 0.5 points if the firm only provides qualitative information on foreign revenues, or does not report foreign revenues for all of its major segments. We award 0 points otherwise.
II.	Assets held abroad	We search for tables, figures, or text explaining the portion of non-current, operating, or total assets located in Switzerland versus abroad. We award 1 point if the firm separately lists this information among its geographical segment disclosures or we can determine it from comparable sources (e.g., the firm states that it exclusively operates in Switzerland). We award 0.5 points if the firm only provides qualitative information on foreign assets. We award 0 points otherwise.
III.	Costs incurred/profits generated abroad	We search for tables, figures, or text explaining the portion of costs incurred and/or profits generated in Switzerland versus abroad (in CHF versus other currencies). We award 1 point if the firm separately lists this information among its geographical segment disclosures or we can determine it from comparable sources. We also award 1 point if the firm provides information on the sensitivity of its profit margin to currency fluctuations. We award 0.5 points if the firm only provides partial information on the cost and profit distribution by currency (e.g., purchases or sourcing by country). We award 0 points otherwise.
IV.	Currency distribution of short-term monetary assets and liabilities	We search for tables, figures, or text explaining the portion of short-term monetary assets and liabilities held in Switzerland versus abroad (in CHF versus other currencies). We award 1 point (0.5 points) if the firm lists this information for at least two (one) of the following items: cash and cash-equivalents, accounts receivables, or accounts payables. We award 0 points otherwise.
V.	Foreign currency exposure	We search for tables, figures, or text explaining the (net) currency exposure of the firm, either on the aggregate group level or on the level of the individual group companies if non-functional currency holdings are shown. We award 1 point if the firm details its currency exposure by (major) balance sheet item. We award 0.5 points if the firm provides aggregate information on its currency exposure. We award 0 points otherwise.
VI.	Hedging of foreign currency risk	We search for tables, figures, or text explaining the firm's strategy of hedging foreign currency risk. We award 1 point if the firm provides quantitative information on its hedging strategy (e.g., a table showing currency forwards). The firm also receives 1 point if it indicates that it does not hedge its foreign currency exposure. We award 0.5 points if the firm provides qualitative (or incomplete) information on its hedging strategy. We award 0 points for missing or boilerplate disclosures.
VII.	Sensitivity of net income or equity to foreign exchange rate changes	We search for tables, figures, or text explaining the sensitivity of net income and/or shareholders' equity to changes in CHF exchange rates. We award 1 point if the firm provides information on the (hypothetical) translational effect of a percentage change in exchange rates. We award 0.5 points if the firm only provides qualitative information on exchange rate sensitivity or does not refer to specific percentage changes (e.g., provides the Value-at-Risk of its currency exposure). We award 0 points for missing or boilerplate disclosures (or if the disclosures exclusively relate to non-CHF exchange rates).

The table presents details on the scoring instructions for the seven items that make up the variable *FXRisk_Disc*, which we use to measure the quality of a firm's foreign exchange risk disclosures. Each disclosure item receives a score of 1, 0.5, or 0 points. *FXRisk_Disc* is the sum of points assigned to the seven items.

Table A2: Illustrative Examples of Company Disclosures for Components of *FXRisk_Disc*

Panel A: Item I – Revenues generated abroad

Sales by country			
Switzerland	1 844 525		1 756 243
Germany	447 224		449 021
France	120 169		110 553
Spain, Benelux	74 207		77 990
Eastern Europe	134 366		132 713
Sales by country	**2 620 490**	**3.7 %**	2 526 520

Source: Bell, Annual Report 2013, p. 33

Panel B: Item II – Assets held abroad

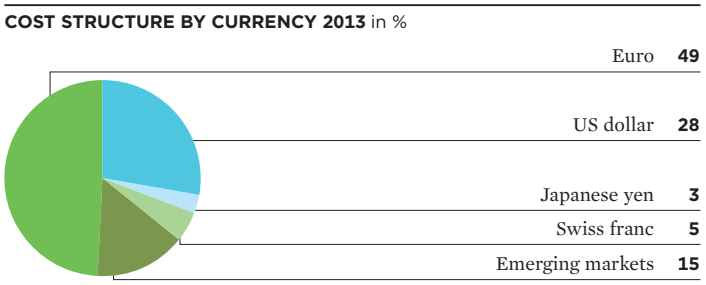
The allocation of assets is based on their geographical location and is as follows:

Non-current assets

in EUR thousands	2013	2012 restated
United States	78,421	85,630
Israel	68,289	66,357
Sweden	34,159	39,159
Switzerland	38,169	37,782
Other countries	35,025	47,696
Total	**254,063**	**276,624**
Non-current financial assets	3,282	3,940
Deferred tax assets	13,870	17,729
Total non-current assets	**271,215**	**298,293**

Source: Nobel Biocare, Annual Report 2013, p. 97

Panel C: Item III – Costs incurred/profits generated abroad



Source: Clariant, Annual Report 2013, p. 80

(Continued)

Table A2 (continued)

Panel D: Item IV – Currency distribution of short-term monetary assets and liabilities

Currencies of relevance for trade accounts receivable	2013	2012
CHF	1'689	1'711
EUR	33'959	13'018
GBP	1'147	323
USD	4'133	454
Other	6'046	1'039
Total, net	**46'974**	**16'545**

Currencies of relevance for trade accounts payable	2013	2012
CHF	1'150	2'641
EUR	26'568	1'751
Other	6'800	2'699
Total	**34'518**	**7'091**

Source: Calida, Annual Report 2013, p. 34 and p. 39

Panel E: Item V – Foreign currency exposure

The following table shows the foreign exchange risks from financial instruments whose currency differs from the functional currency of the Group company holding them.

in CHF 1 000	AUD	CAD	CHF	EUR	GBP	HKD	PLN	USD
At December 31, 2013								
Cash and cash equivalents	3 381	10 688	343	15 238	1 268	94	744	6 137
Trade accounts receivable	570	2 829	441	13 134	1 969	2 023	2 491	14 160
Other receivables				9		6		130
Financial assets								35
Trade accounts payable			–5 766	–2 283				–1 349
Other payables		–111	–847	–245				–772
Current financial liabilities				–1 264				
Currency exposure	**3 951**	**13 406**	**–5 829**	**24 588**	**3 237**	**2 123**	**3 235**	**18 340**

Source: Belimo, Annual Report 2013, p. 72

Panel F: Item VI – Hedging of foreign currency risk

The Group borrows and lends exclusively in Swiss francs. Its exposure to FX fluctuations is limited to that derived from supplier invoices denominated in foreign currencies. The Group monitors such FX exposure closely, and takes immediate action if it exceeds internally set triggers. As at 31 December 2013, the Group does not use hedging instruments to manage its FX risk.

Source: Cembra Money Bank, Annual Report 2013, p. 53

(Continued)

Table A2 (continued)

Panel G: Item VII – Sensitivity of net income or equity to foreign exchange rate changes

A 5 % strengthening of a certain currency would have increased the currency gain or loss on the basis of the foreign currency balances as of 31 December in the listed way. This analysis assumes that all other variables remain unchanged:

2013 in CHF 1 000	currency loss	currency gain
5 % revaluation of EUR vs. CHF	–	185
5 % revaluation of EUR vs. RON	37	–
5 % revaluation of RON vs. CHF	3	–
5 % revaluation of USD vs. CHF	135	–
5 % revaluation of USD vs. RON	72	–
5 % revaluation of USD vs. SGD	–	248

Source: Cicor, Annual Report 2013, p. 73

The table presents examples taken from firms' annual reports for each of the seven items that make up the variable *FXRisk_Disc*. Each illustrative disclosure item shown in the panels received a score of 1 point (out of 1, 0.5, or 0 points). *FXRisk_Disc* is the sum of points assigned to the seven items.

Table A3: Descriptive Statistics of Components of *FXRisk_Disc*

Disclosure Item (N = 151)		*Scoring Totals (in %)*			*Mean*
		1 point	*0.5 points*	*0 points*	
I.	Revenues generated abroad	78.81 %	12.58 %	8.61 %	0.85
II.	Assets held abroad	73.51 %	4.64 %	21.85 %	0.76
III.	Costs incurred/profits generated abroad	15.89 %	8.60 %	75.50 %	0.20
IV.	Currency distribution of short-term monetary assets and liabilities	25.17 %	22.52 %	52.32 %	0.36
V.	Foreign currency exposure	24.50 %	9.93 %	65.56 %	0.29
VI.	Hedging of foreign currency risk	84.11 %	7.95 %	7.95 %	0.88
VII.	Sensitivity of net income or equity to foreign exchange rate changes	58.94 %	15.89 %	25.17 %	0.67

The table presents descriptive statistics on the scoring of the seven items that make up the variable *FXRisk_Disc*. Each disclosure item receives a score of 1, 0.5, or 0 points. *FXRisk_Disc* is the sum of points assigned to the seven items. The sample comprises 151 firms listed on the Swiss exchange (SIX) during the SNB announcement to discontinue the minimum EUR-CHF exchange rate on January 15, 2015.

Appendix B: Sell-Side Analysts Survey

We developed our initial draft of the sell-side analyst survey after an extensive review of the related literature (e.g., Brown et al. 2015, 2016; Dichev et al. 2013; Nelson and Skinner 2013; Graham et al. 2005). We circulated the draft among several academics and practitioners to gain feedback, and implemented the revised version of the survey in *Qualtrics*, an online survey tool. The survey comprises 15 questions, divided into four topical sections, and is followed by a number of demographical questions. We display each survey section en bloc, but respondents have the possibility to skip certain questions and/or answers and can exit the survey at any point in time.[1] Wherever possible, we randomize the order of the answering choices. However, we do not randomize the order of the questions to not interrupt the logical flow of the survey.[2]

To identify a pool of suitable survey subjects we collect the names and contact information of all sell-side analysts covering at least one sample firm during the event period. We search the following four information sources: (1) companies' investor relations websites; (2) analyst coverage information as provided by *S&P Capital IQ*; (3) analyst coverage information as provided on the website of the *Swiss Exchange* (SIX); and (4) author information from actual analyst reports collected from *Investext*. The first two sources do not provide historical data, and hence yield coverage information as of February and March 2016 (i.e., the time of data collection). The latter two sources allow us to identify analyst coverage as of a specific point in time. We use the SIX website to extract the names of all analysts who issued an opinion on a specific firm in the 60 days following the event date (January 15, 2015). In addition, we scour the analyst reports on *Investext* that were issued over the same time frame for information on authorship (including analyst team members). We then update analysts' contact information based on the more recent data from S*&P Capital IQ* and company websites, and discard analysts who left the profession in

[1] In addition, we split the third section of the survey into two screens (i.e., Questions 8 and 9 are displayed together and separately from Question 10) to avoid any focus on "existing annual reports," which is the topic of Question 10.
[2] The survey instrument is available upon request from the authors.

the interim or vanished from the database. We further exclude analysts working for one of the three major banks in Switzerland, because we approach them using a slightly different method (described below). This procedure allowed us to identify 773 sell-side analysts who covered a sample firm during the event, of which 743 turned out to have a valid e-mail address. We use the latter number to calculate the response rate for this group.

We sent out a personalized e-mail with a survey link to the subjects on April 12, 2016. The e-mail explained why we address them and the general purpose of the survey, however, we did not mention that we were examining the usefulness of financial statement information for the assessment of the Swiss franc shock. The e-mail also indicated the length of the survey and the confidentiality of the responses. We sent out a reminder to non-responders after one week and again after four weeks, but only if they were working for brokerage houses whose policy was not to disallow survey participation or if they were covering multiple Swiss firms. We received a total of 66 responses until the end of May 2016, giving rise to a response rate of 8.9%. This number is rather conservative as our pool of subjects contains many analysts who were only tangentially affected by the Swiss franc shock (e.g., analysts from U.S. brokerage houses that only covered one single large-cap Swiss firm such as Nestlé).

For the analysts at the three major Swiss banks, we relied on personal contacts (i.e., senior analysts or analyst team leaders) to forward the original e-mail to the people on our subjects' list. These e-mails were sent in April and May 2016, and were followed up with two reminders. We received 11 responses out of 72 possible, yielding a response rate of 15.3% for this subset. In what follows, we report the demographics of all the 77 respondents to our sell-side analyst survey (Table B1) together with the responses to the survey questions not tabulated in the main text (Tables B2 to B4).

Table B1: Demographics of the Respondents to the Sell-Side Analysts Survey

(Maximum possible N = 77)	*Sample %*		*Sample %*
Primary Industries Covered		*Age of Analyst*	
Retail/Wholesale	10.34	<30	12.99
Construction	6.03	30 – 39	33.77
Chemicals	4.31	40 – 49	37.66
Software/Technology	6.03	50 – 59	14.29
Health care/Pharmaceuticals/ Biotechnology	6.03	60+	1.30
Telecommunications/Media	4.31		
Insurance	7.76	*Education of Analyst*	
Real estate	3.45	Bachelor's degree	15.58
Banks and other Finance	8.62	Master's degree	54.55
Manufacturing consumer goods	11.21	CPA, CFA, or AZEK degree*	23.38
Manufacturing industrials	17.24	Ph.D./doctoral degree	2.60
Consulting/Business services	3.45	Other	3.90
Transportation/Energy/Utilities	8.62		
Other	2.59	*Years as Sell-Side Analysts*	
		<4 years	19.48
Number of Industries Covered		4 – 9 years	31.17
1	40.26	10+ years	49.35
2 – 3	49.35		
4+	10.39	*Size of Current Employer*	
		One sell-side analyst	0.00
Number of Firms Covered		2 – 4 sell-side analysts	6.49
1	2.60	5 – 10 sell-side analysts	7.79
2 – 4	7.79	11 – 25 sell-side analysts	29.87
5 – 9	23.38	26 – 50 sell-side analysts	12.99
10 – 15	49.35	More than 50 sell-side analysts	42.86
16 – 25	12.99		
25+	3.90	*Headquarter of Current Employer*	
		Switzerland	40.26
% of Swiss Firms Covered		Rest of Europe	42.86
0 %	0.00	USA	11.69
1 – 24 %	46.75	Rest of World	5.19
25 – 49 %	14.29		
50 – 74 %	6.49		
75 – 99 %	7.70		
100 %	24.68		

* CPA = Certified Public Accountant; CFA = Chartered Financial Analyst; AZEK = Degree of the Swiss Training Center for Investment Professionals. The table lists the demographic information of the participants in the survey sent to sell-side analysts covering at least one firm listed on SIX during the SNB announcement (77 answers).

Table B2: General Information About Analysts' Perception of the Swiss Franc Shock

Panel A: Importance of Foreign Currency Exposure Before Swiss Franc Shock

Question 1: Before the Swiss franc shock, how important was the foreign currency exposure of a typical Swiss firm you followed for your earnings forecasts and stock recommendations? [7-point Likert Scale: 1 to 7]

Responses (N = 77)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Not at all Important [1 or 2]*	*Neutral [3 to 5]*	*Extremely Important [6 or 7]*
% of respondents who answered	4.88	***	10.39	53.24	36.36

Panel B: Expectations about Occurrence of Swiss Franc Shock in the Future

Question 2: As of the beginning of January 2015 (i.e., directly before the Swiss franc shock), when did you expect that the Swiss National Bank would most likely abandon the minimum Euro exchange rate, if at all? [Multiple Choice]

Responses (N = 77)	*Within the Next*				*Not in the Foreseeable Future*
	3 Months	*3 to 6 Months*	*6 to 12 Months*	*12 to 24 Months*	
% of respondents who answered	2.60	2.60	14.29	22.08	58.44

Panel C: Percentage of Covered Firms Affected by Swiss Franc Shock

Question 3: What percentage of Swiss firms you followed was at least somewhat affected by the SNB announcement (positively or negatively)? [0 – 100 %]

Responses (N = 77)	*0 – 24 %*	*25 – 49 %*	*50 – 74 %*	*75 – 99 %*	*100 %*
% of respondents who answered	7.80	2.60	3.90	15.59	70.13

Panel D: Impact of Swiss Franc Shock on Typical Firm

Question 4: How has the Swiss franc shock affected the typical Swiss firm in your portfolio? [5-point Likert Scale: 1 to 5]

Responses (N = 77)	*Average Rating*	*Significantly Different Than [3 = Neutral]*	*Negatively [1 or 2]*	*Neutral [3]*	*Positively [4 or 5]*
% of respondents who answered	1.94	***	84.42	15.58	0.00

(Continued)

Table B2 (continued)

Panel E: Importance of Foreign Currency Exposure After Swiss Franc Shock

Question 15: After the Swiss franc shock, how important is the foreign currency exposure of a typical Swiss firm you follow for your earnings forecasts and stock recommendations? [7-point Likert Scale: 1 to 7]

Responses (N = 77)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Not at all Important [1 or 2]*	*Neutral [3 to 5]*	*Extremely Important [6 or 7]*
% of respondents who answered	5.52	***	1.30	46.76	51.95

The sample comprises up to 77 answers from respondents to a survey sent to sell-side analysts covering at least one firm listed on SIX during the SNB announcement. The panels list the average ratings of the responses to the survey question indicated in the panel header as well as the percentages of responses in various bins of the Likert scale (or any other scale mentioned in the question). If applicable, we report the results from *t*-tests comparing the average rating of an item to the mid-point (where ***, **, and * stand for statistical significance at the 1%, 5%, and 10% levels). If multiple selections are available, we also compare the average rating of an item to the average ratings of all the other items, using Bonferroni-Holm adjusted *p*-values at the 10% level for the comparison.

Table B3: Timeliness of and Motivation for Analysts' Reaction to the Swiss Franc Shock

Panel A: Initial Response to Swiss Franc Shock for Firms Covered

Question 5.1: What is the percentage of Swiss firms you followed for which you individually assessed the impact of the SNB announcement immediately thereafter (i.e., within the first one or two days)? (Note: Alternatives must add up to 100 %) [0 – 100 %]

Responses (N = 77)	*Firms Assessed*		*Firms Not Assessed*
	No Material Effect	*Material Effect*	
% of respondents who answered	17.68	77.26	5.06

Question 5.2: Of those firms with a material effect (as indicated in question 5.1), how often did your assessment result in one of the following adjustments? (Note: Multiple adjustments are possible per firm) [0 – 100 %]

Responses (N = 77)	*Qualitative Adjustment*	*Quantitative Adjustment*	*Change in Earnings Forecast/Stock Recommendation*
% of respondents who answered	40.38	69.51	63.22

Panel B: Motivation for Initial Response to Swiss Franc Shock for Firms Covered

Question 6: What was the motivation to provide a quantitative or qualitative assessment of the effect of the SNB announcement on firms you followed immediately after the Swiss franc shock (i.e., within the first one or two days)? [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 76)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Extremely Important [6 or 7]	*Not at all Important [1 or 2]*
(1) Demand from clients (e.g., institutional or retail investors)	6.13	***	3-9	77.63	5.26
(2) Likely exposure of the firm to the currency shock	5.89	***	3-9	74.32	6.76
(3) Demand from internal departments (e.g., trading desk, risk management)	4.93	***	1-2 and 5-9	57.53	21.92
(4) Relative importance of the firm (e.g., size or liquidity)	4.67	***	1-2 and 7-9	38.36	17.81
(5) Availability of firm-specific information	4.18		1-3 and 9	26.39	20.83
(6) Personal job description or performance evaluation	4.08		1-2	34.25	31.51
(7) Peer pressure (from analysts inside or outside your firm)	3.82		1-4	23.29	30.14
(8) Reputation with management of the companies you follow	3.66		1-4	23.29	34.25
(9) Complexity of a firm's operations	3.56	*	1-5	15.49	33.80

(Continued)

Table B3 (continued)

Panel C: Medium-term Response to Swiss Franc Shock for Firms Covered

Question 7: What is the percentage of Swiss firms you followed for which you individually (re-)assessed the impact of the SNB announcement in the two to three weeks after the Swiss franc shock?					
Responses (N = 77)	*0 – 24 %*	*25 – 49 %*	*50 – 74 %*	*75 – 99 %*	*100 %*
% of respondents who answered	20.78	2.60	9.10	5.20	62.34

See the notes to Table B2.

Table B4: Methodology of Assessing Impact of the Swiss Franc Shock for Firms Covered

Panel A: Heterogeneity in Valuation Approach

Question 11: Assessing the impact of the Swiss franc shock (quantitatively and/or qualitatively) was … [Multiple choice]

Responses (N = 77)	*Very Similar for All Firms*	*Relatively Similar for Most Firms*	*Considerably More Difficult for Some Firms Than Others*
% of respondents who answered	7.79	45.45	46.75

Panel B: (Re-)Assessment of Economic Outlook for Firms Covered

Question 14: Which of the following techniques did you apply to incorporate the impact of the Swiss franc shock on a typical firm you followed in your earnings forecasts or stock recommendations? [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 75)	*Average Rating*	*Significantly Different Than [4 = Sometimes]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Always [6 or 7]	*Never [1 or 2]*
(1) Use of existing models with adjustment of quantitative inputs for individual firms (e.g., sales and margins figures)	5.93	***	2-5	74.76	5.33
(2) Re-assessment of entire situation of the individual firm (including strategic responses like relocation decisions)	4.29		1 and 5	38.67	25.33
(3) Adjustment of existing models (e.g., adjustment of weights or introduction of a new currency risk category)	4.27		1 and 5	43.24	32.43
(4) Use of existing models with adjustment of qualitative inputs for individual firms (e.g., market risk assessment)	3.75		1 and 5	22.67	37.33
(5) Switching to new valuation models	2.05	***	1-4	6.76	72.97

See the notes to Table B2. We do not report the answers to Question 13 "please indicate the ticker symbol of the three firms you followed for which the assessment of the impact of the Swiss franc shock was most and least difficult," because of its potentially confidential nature.

Appendix C: Investor Relations Survey

We developed the survey of firms' investor-relations reaction to the Swiss franc shock similarly to the sell-side analyst survey (see Appendix B). After receiving feedback from academics and practitioners on the initial draft, we implemented the survey in *Qualtrics*. The survey comprises 15 questions, divided into four topical sections, and is followed by a few demographical questions. We display each survey section en bloc, but respondents have the possibility to skip certain questions and/or answers and can exit the survey at any point in time. Wherever possible, we randomize the order of the answering choices. However, we do not randomize the order of the questions to not interrupt the logical flow of the survey.[3]

Our subject pool comprises the 151 sample firms. For each firm, we identify the name and contact information of the person responsible for investor relations. Our primary data sources are the company's website and firm information provided on the website of the *Swiss Exchange* (SIX). Because not all firms have a dedicated investor relations department or a designated head of investor relations, we search the company functions using the following algorithm: (1) head of investor relations, (2) (senior) investor relations manager, (3) head of communications, (4) assistant to chief financial officer, (5) investor relations team (e.g., e-mail addresses that start with info@, ir@, or investors@), (6) chief financial officer, and (7) chief executive officer. This way we were able to identify 149 valid e-mail addresses, which we use as the denominator in the calculation of the response rate.[4] Table C1, Panel B, shows the job titles of the survey respondents, and indicates that about 70% of the participants were either head of investor relations, head of communications, or senior investor relations managers.

[3] The survey instrument is available upon request from the authors.
[4] We sent out our survey to 148 of the 149 people identified in the search because one firm volunteered to pre-test the survey at an earlier stage and provided us with feedback on the questions.

To maximize turnout, we proceeded like follows: first, we contacted the *Swiss Society for Investor Relations* (an association of leading investor relations professionals), and asked them to send out the survey to their member firms on our behalf. 49 sample companies are represented among their members. Second, we directly contacted the remaining subjects through e-mail. In both cases, the initial survey request was administered at the end of May 2016. We sent out a personalized e-mail with a survey link to the subjects. The e-mail explained the general purpose of the survey, however, we did not mention that we were examining the usefulness of financial statement information for the assessment of the Swiss franc shock. The e-mail also indicated the length of the survey and the confidentiality of the responses. We sent out a reminder to non-responders after one week and again after four weeks, and made sure that the *Swiss Society for Investor Relations* reminded its members once. We received a total of 39 responses until the end of July 2016, giving rise to a response rate of 26.2%. This number seems high, but it is part of investor relations managers' job to reply to external information requests.

In what follows, we report the demographics of the 39 respondents to our investor relations survey (Table C1) together with the responses to the survey questions not tabulated in the main text (Tables C2 to C4).

Table C1: Demographics of the Respondents to the Investor Relations Survey

Panel A: Characteristics of Respondent Firms

	Full Sample (N = 151)		*Respondent Firms (N = 37)*	
	Mean	*Std. Dev.*	*Mean*	*Std. Dev.*
Bid-Ask Spread$_t$	0.515	1.249	0.386	0.407
FXRisk_Disc$_{AR}$	4.020	1.434	4.054	1.229
Market Value$_{t-1}$	8,790	32,369	5,032	8,702
Share Turnover$_{t-1}$	0.233	0.332	0.205	0.189
Return Variability$_{t-1}$	0.545	0.558	0.476	0.178
Int_Sales$_{AR}$	0.655	0.387	0.606	0.391
Total_Disc$_{AR}$	3.662	0.750	3.835	0.717
Num_Analysts	7.715	8.553	8.649	8.169
Free Float$_{AR}$	0.663	0.249	0.647	0.252
Stock Return$_t$	-0.254	0.325	-0.328	0.325

Panel B: Job Titles of Survey Participants

Job Title (N = 38)	*N*	*%*
Head of Investor Relations	12	31.58 %
(Senior) Investor Relations Manager	9	23.68 %
Chief Financial Officer	7	18.42 %
Head of Communications	5	13.16 %
Treasury or Accounting	3	7.89 %
Other	2	5.26 %

Panel A lists descriptive statistics of several firm attributes for the full sample and the 37 firms that self-identified and responded to the survey sent to investor relations managers at firms listed on SIX during the SNB announcement (two firms did not provide a ticker symbol). The panel reports means and standard deviations for the variables used in the daily information asymmetry regressions (see Table 1 for details). For each firm, we take the mean variable value over the [-30;+2] day period surrounding the SNB announcement to compute the sample distribution. None of the differences in means across samples is significant at conventional levels using *t*-tests. In Panel B, we report the job titles of the survey respondents (one respondent did not provide a job title).

Table C2: General Information About Investor Relations Managers' Perception of the Swiss Franc Shock

Panel A: Importance of Foreign Currency Exposure Before Swiss Franc Shock

Question 1: Before the Swiss franc shock, how prevalent was your firm's foreign currency exposure in the communication with external stakeholders (e.g., investors, financial analysts)? [7-point Likert Scale: 1 to 7]

Responses (N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Not at all Important [1 or 2]*	*Neutral [3 to 5]*	*Extremely Important [6 or 7]*
% of respondents who answered	4.44		12.82	56.41	30.77

Panel B: Expectations about Occurrence of Swiss Franc Shock in the Future

Question 2: As of the beginning of January 2015 (i.e., directly before the Swiss franc shock), when did you expect that the Swiss National Bank would most likely abandon the minimum Euro exchange rate, if at all? [Multiple Choice]

Responses (N = 39)	*Within the Next*				*Not in the Foreseeable Future*
	3 Months	*3 to 6 Months*	*6 to 12 Months*	*12 to 24 Months*	
% of respondents who answered	5.13	10.26	20.51	10.26	53.85

Panel C: Impact of Swiss Franc Shock on Typical Firm

Question 3: How has the Swiss franc shock affected your firm's business? [5-point Likert Scale: 1 to 5]

Responses (N = 39)	*Average Rating*	*Significantly Different Than [3 = Neutral]*	*Negatively [1 or 2]*	*Neutral [3]*	*Positively [4 or 5]*
% of respondents who answered	2.26	***	64.10	28.21	7.69

Panel D: Importance of Foreign Currency Exposure After Swiss Franc Shock

Question 15: After the Swiss franc shock, how prevalent is your firm's foreign currency exposure in the communication with external stakeholders (e.g., investors, financial analysts)? [7-point Likert Scale: 1 to 7]

Responses (N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Not at all Important [1 or 2]*	*Neutral [3 to 5]*	*Extremely Important [6 or 7]*
% of respondents who answered	4.95	**	5.12	66.67	28.21

(Continued)

Table C2 (continued)

The sample comprises up to 39 answers from respondents to a survey sent to investor relations managers at firms listed on SIX during the SNB announcement. The panels list the average ratings of the responses to the survey question indicated in the panel header as well as the percentages of responses in various bins of the Likert scale (or any other scale mentioned in the question). If applicable, we report the results from *t*-tests comparing the average rating of an item to the mid-point (where ***, **, and * stand for statistical significance at the 1%, 5%, and 10% levels). If multiple selections are available, we also compare the average rating of an item to the average ratings of all the other items, using Bonferroni-Holm adjusted *p*-values at the 10% level for the comparison.

Table C3: Timeliness and Means of External Communication About the Swiss Franc Shock by Investor Relations Managers

Panel A: Timeliness of Initial Response

Question 4: At what point in time did you start communicating with external stakeholders (e.g., investors, financial analysts, etc.) about the qualitative and/or quantitative impact of the Swiss franc shock on your firm? [Multiple Choice]

Responses (N = 39)	*Within ... of the SNB Announcement*				*More Than Three Months*
	1 Day	*1 Week*	*1 Month*	*3 Months*	
% of respondents who answered	46.15	17.95	25.64	5.13	5.13

Panel B: Nature of Initial Response

Question 7: <u>Immediately</u> after the SNB announcement (i.e., within the first one or two days), would you describe your firm's communication with external stakeholders about the impact of the Swiss franc shock as rather reactive or proactive? [7-point Likert Scale: 1 to 7]

Responses (N = 39)	*Average Rating*	*Significantly Different Than [4 = Both]*	*Mostly Reactive [1 or 2]*	*Both Reactive and Proactive [3 to 5]*	*Mostly Proactive [6 or 7]*
% of respondents who answered	4.15		23.08	53.84	23.07

Panel C: Medium-term Communication Channels

Question 9: Relative to Question 8, which information channels gained or lost importance in the <u>two to three</u> weeks following the SNB announcement? [3-point Likert Scale: 1 to 3]

Responses (Maximum possible N = 39)	*Average Rating*	*Significantly Different Than [2 = Similar Importance]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Gained Importance [3]	*Lost Importance [1]*
(1) Presentations and Q&A at already pre-scheduled events (e.g., investor days or conference calls)	2.41	***	3-4	43.59	2.56
(2) Private communication with analysts or investors	2.23	**	4	28.21	5.13
(3) Communication through media and financial press	2.13		1 and 4	25.64	12.82
(4) Ad hoc announcements or press releases	1.92		1-3	7.89	15.79

(Continued)

Table C3 (continued)

Panel D: Goals of External Communication

Question 11: What were the most important goals of your communication with external stakeholders about the impact of the Swiss franc shock? Please indicate the importance of the following goals. [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 38)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Extremely Important [6 or 7]	*Not at all Important [1 or 2]*
(1) Reassure existing investor base	5.82	***	3-9	60.53	0.00
(2) Reduce uncertainty and the "information risk" that investors place on your company	5.65	***	6-9	59.46	2.70
(3) Promote reputation for transparent reporting	5.26	***	1 and 6-9	50.00	5.26
(4) Build confidence in firm's reporting strategy	5.18	***	1 and 6-9	42.11	7.89
(5) Build confidence in firm's operating strategy	5.18	***	6-9	47.37	7.89
(6) Correct/prevent undervaluation of the stock price	4.11		1-5 and 8-9	21.05	15.79
(7) Level the playing field between different types of investors	3.95		1-5 and 8-9	21.62	21.62
(8) Increase stock liquidity and/or reduce stock volatility	3.26	***	1-7	7.89	34.21
(9) Attract new investors and increase general awareness of firm	3.26	***	1-7	7.89	36.84

See the notes to Table C2.

Table C4: Information Needs of External Stakeholders After the Swiss Franc Shock

Panel A: Communication Channels for Information Requests

Question 12: Compared to your firm's last earnings announcement, how many more or less information requests through the various channels did you receive from external stakeholders after the SNB announcement? [5-point Likert Scale: 1 to 5]

Responses (Maximum possible N = 39)	*Average Rating*	*Significantly Different Than [3 = Same]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Much More [5]	*Much Less [1]*
(1) Phone calls	3.87	***	2-4	28.95	0.00
(2) E-mails	3.72	***	1 and 3-4	25.64	2.56
(3) Website hits	3.26	**	1-2	3.23	0.00
(4) Downloads of financial reports or other company documents	3.25	***	1-2	0.00	0.00

Panel B: Nature of Information Requests

Question 13: Based on your impression, what type of information was particularly relevant to external stakeholders in their assessment of the Swiss franc shock for your firm? Firm-specific information about … [7-point Likert Scale: 1 to 7]

Responses (Maximum possible N = 38)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Significantly Different Than*	*% of Respondents Who Answered*	
				Extremely Important [6 or 7]	*Not at all Important [1 or 2]*
(1) Transactional exposure (e.g., currency mismatch between revenues and costs)	5.13	***	5-6	57.89	18.42
(2) Translational exposure (e.g., arising from foreign subsidiaries)	5.05	***		52.63	13.16
(3) Hedging strategy	4.97	***		50.00	13.16
(4) Sensitivity to indirect effects (e.g., GDP growth)	4.53	**		21.05	7.89
(5) One-time gains/losses (e.g., on cash holdings)	4.43		1	29.73	13.51
(6) Operating and strategic responses (e.g., relocation decisions)	4.14		1-3	21.62	21.62

Panel C: Usefulness of Existing Annual Report Disclosures

Question 14: Based on your impression, how relevant was the information provided in the existing annual report and financial filings to external stakeholders in their assessment of the Swiss franc shock immediately after the SNB announcement (i.e., within the first one or two days)? [7-point Likert Scale: 1 to 7]

Responses (N = 39)	*Average Rating*	*Significantly Different Than [4 = Neutral]*	*Not at all Important [1 or 2]*	*Neutral [3 to 5]*	*Extremely Important [6 or 7]*
% of respondents who answered	4.74	***	7.69	66.67	25.64

See the notes to Table C2.