

A Stake in the International: US Banks and Basel III Regulatory Announcements

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Abstract

How large are the stakes of international financial regulations for banks? One theory suggests that international cooperation in banking regulation reflects increased international demand to manage risk. A second theory suggests that strong states with high national regulations push forward international negotiations to help their own banks. The former presumes that banks will be hurt by more stringent international regulations while the latter expects that lead countries' banks will gain. This paper tests how the renegotiation of international banking standards in 2009 and 2010, Basel III, affected US banks. If new rules represent stringent regulation, US banks should be harmed by anticipated adjustment costs of compliance. If new rules primarily level the international playing field, US banks should benefit from relative gains. Using an event study methodology, I analyze how new information about negotiations affected US bank stock prices. I find regulated firms experienced negative and statistically significant stock returns but that effect sizes were small. The analysis provides evidence that financial regulations are aimed to manage risk and implies that US regulators are not wholly captured by the banking industries. Nevertheless, even the strongest international financial regulation holds only indirect effects upon firms.

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Regulatory networks have emerged as the primary form of governance within finance (Slaughter 2004, ch. 2; Kahler and Lake 2009), yet little empirical work exists about the strength of such governance. Political scientists implicitly assume that regulatory network agreements will be implemented (Drezner, 2007; Simmons, 2001), yet legal scholars emphasize that regulatory networks are not established by formal treaty, making their outcomes non-binding “soft law” (Boyle, 1999; Meyer, 2008; Shaffer and Pollack, 2009).¹ The strength of soft law agreements is, therefore, a relatively unasked yet important question. Rules-based agreement in banking is the most legalistic type of regulatory network outcome and therefore represents a most-likely case for a strong soft law agreement within finance. If bank rules have no direct effect upon regulated firms, then less legalistic outcomes, such as principles and standards, should have even smaller effects.²

Competing theories emphasize different US regulatory motivations that enabled rules-based cooperation to emerge within banking.³ One theory suggests that increased international demand to manage risk was the primary reason that countries agreed upon international bank rules (Kapstein, 1989). A second theory suggests that strong states with high national regulations pushed forward international negotiations to help their own banks (Oatley and Nabors, 1998). Because evidence consistent with each theory exists, it is difficult to distinguish among competing explanations.

This paper’s insight is that the distributional effects of international bank rules upon US regulated firms allows for a test of competing mechanisms and the magnitude of soft law’s effect in the most-likely case of banking. When stringent regulations are agreed upon, regulated firms might

¹ Bach and Newman (2010) is a notable exception within the political science literature, explicitly testing whether the securities regulatory network (IOSCO) has an effect upon domestic policy implementation and enforcement.

² “Legalistic” is conceptualized here as the three dimensions of legalism (precision, obligation, delegation) described in Abbott et al. (2000). In comparison to standards and principles, international bank rules equal or higher levels of precision, and unambiguously higher levels of obligation and delegation.

³ These theories explain the emergence of the Basel Accords (also known as Basel I) in 1988 (BCBS 1988). Singer (2004, 2007) nicely unifies the competing theories within a principal-agent framework to explain the conditions under which regulators will prefer international regulations. These works extend the debate in important ways, yet are less relevant for determining the distributional or net effects of regulations upon firms.

incur high costs of implementing regulations, or regulatory change might increase the competitiveness of domestic firms compared to foreign rivals, leading to positive net effects.⁴ This paper asks, *what are the effects of international financial regulations upon regulated firms?* If international bank rules primarily mitigate risk, then banks should be hurt by increased regulations as they incur adjustment costs to comply. In contrast, if international bank rules primarily benefit firms in strong states, then strong states' banks (i.e. US banks) should be helped by the details of the regulations which confer upon them competitive regulatory advantages.

Measuring regulatory effects is challenging because it is unclear whether change in firm profitability is due to the implementation of the regulation or other factors. One may observe firm profitability across time, but is it nearly impossible to isolate the proportion of firm profit due specifically to regulations. Alternatively, one may rely upon bankers' statements about the effect of regulations. However, banks routinely argue that stringent regulations impose high or unnecessary costs upon their operations, translating into costs upon the real economy. More generally, because banks enjoy private gains if they convince rulemakers about the negative effects of regulations, bankers' statements about regulatory effects cannot be taken at face value.

To circumvent difficulties associated with alternative measures, I measure the direct effects of regulations using regulated firms' stock prices. Stock prices are the outcome of aggregate investor behavior and investors have no incentive to deviate from their sincere beliefs about regulatory effects upon firms. Investors will either sell, or not buy as readily, stocks that are less desirable upon news of increased regulatory stringency. If investors perceive new regulations as imposing large costs upon regulated firms, then stock returns of regulated firms should be systematically negative. If investors perceive new regulations as conferring competitive regulatory advantages

⁴ The latter possibility is consistent with Stigler's (1971) insight that interest groups may demand regulation and benefit from its supply.

upon firms, stock returns should be systematically positive. If investors perceive both possibilities, the stock price reflects the *net* effect of both mechanisms, allowing one to dominate the other.

The renegotiation of international banking rules in 2009 and 2010, Basel III, nicely parallels the original debate about international cooperation in banking and provides an opportunity to undertake such an analysis. Basel III's final terms represented a clear increase in regulatory stringency, although it was impossible to foresee this outcome prior to negotiations beginning in September 2009. Following the financial crisis of 2007 and 2008, US bankers could anticipate that regulatory change would occur. Whether increases in regulatory stringency would constitute significant steps to better achieve financial stability, or whether regulatory changes would be merely window dressing, however, remained unclear. The first BCBS press release in September 2009 indicated that regulations would be more stringent, and the final rules released in December 2010 confirmed that required levels of bank capital were increased by 50%, and a new leverage ratio was introduced (GAO 2012, 8).

This increase in regulatory stringency could be explained by each mechanism of the original debate. Consistent with the first theory, Basel III's required minimum capital level increases might mitigate risk but impose costs upon firms. Consistent with the second theory, the details of the stringent regulations might advantage US banks compared to European rivals. As of 2009, European banks held less capital than did US banks and the newly required leverage ratio was already implemented in the US but was not required in Europe.

Using an event study methodology, I measure whether new information about Basel III negotiations affected regulated US bank stock prices. New information is available on days when the regulatory network, the Basel Committee on Banking Supervision (BCBS), made a press release

about Basel III negotiation progress.⁵ Each press release acts as an unanticipated shock, as BCBS meetings are private and meeting outcomes cannot be determined ahead of time. Regulated firms' stock prices proxy for the perceived effect of regulations. Again, if investors perceive that regulations hurt firms, stock returns should be systematically negative, whereas if investors perceive that regulations help firms, stock returns should be systematically positive. The analysis estimates each firm's effect individually, and the general effect of the international regulation is the average of estimated firm effects.

By estimating counterfactual stock returns using firm-specific regressors identified via a Lasso estimator, this paper improves upon existing event studies that typically use one regressor common to all firms. It minimizes error correlation and allows for a short estimation period. Where standard event studies require long periods of observed data (180 days and more) in order to identify a counterfactual, firm-specific regressors enable shorter estimation periods (20 to 30 trading days prior to the event), maximizing the information present in the days just before the event of interest and approximating a regression discontinuity. This also enables more flexibility to test result sensitivity across different length estimation periods.

This methodology is applied to public stock price data for the largest available sample of regulated firms. The sample includes 46 US-headquartered banks that are publicly traded on US stock exchanges and were likely to be subject to Basel III regulations. It considers five "events", each a press release about BCBS negotiation progress, beginning with the announcement

⁵ Throughout Basel III negotiations, 27 member countries comprised the BCBS. Established in 1974 with 12 member countries (Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States), Spain joined in 2001 and 14 additional countries (Argentina, Australia, Brazil, China, Hong Kong, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, and Turkey) joined the BCBS upon invitation in 2009. Each country is represented by two senior bank regulators, with the exception of the US which has four senior bank regulators (the Federal Reserve Board of Governors, the Federal Reserve Bank of New York, the Federal Deposit Insurance Corporation (FDIC) and the Office of the Comptroller of the Currency (OCC)) attending BCBS meetings.

in September 2009 that new regulations will be negotiated through December 2010 when the final rules are made public. Each press release provides new information that regulations will be stringent and some press releases provide regulatory details.

The analysis finds that US regulated firms experienced negative and statistically significant stock returns but that effect sizes were substantively small. The earliest press releases, announcing that the BCBS would renegotiate bank standards with stricter definitions and higher levels of capital, and a consultative proposal providing the first details, had the largest estimated effect of decreasing firms' stock returns on average by -1.07% and -0.61% respectively.⁶ Later events also had systematically negative estimated effects, although with varying levels of statistical significance. Results are consistent using different counterfactuals and controlling for possible anticipation effects. Compared to ongoing daily variation in stock returns, there is no evidence these negative effects are especially large or lead investors to fundamentally trade regulated stocks at lower levels on an ongoing basis.

Because I find a systematically *negative* stock returns, the analysis as a whole is most consistent with the interpretation that financial regulations are aimed at managing risk and that they impose net costs upon regulated firms. On event days, it seems that investors are either selling bank stocks, or not buying bank stocks as readily, as they might in the absence of the regulatory news. Finally, because the negative effects associated with BCBS press releases do not represent intercept changes, or permanent changes in a bank stock's trading level, I conclude that even the strongest international financial regulation hold only small direct effects upon firms. While banks may experience small, negative direct effects associated with these regulations, it does not seem that this represents a persistent new trend.

⁶This is using the shortest, 20-day Rolling Estimation Window, explained below.

The paper will proceed as follows. Section 1 discusses the competing theories explaining international bank rules, and the theories' applicability to the case of Basel III. Section 2 presents statistical analysis of the impact of Basel III on stock returns. A final section concludes.

1 Competing Theories of International Bank Agreement

The regulator's dilemma, the tradeoff between financial stability and competitive domestic firms, was first articulated by Kapstein (1989). His insight was that international agreement enabled regulators to simultaneously increase financial stability while maintaining domestic competitiveness, alleviating the regulator's dilemma. Despite clearly acknowledging that US power was essential to establish international bank rules, Kapstein (1989, 1991) argues that the primary motivation of US regulators to initiate the Basel Accord was its priority to increase international financial stability in the wake of the 1982 debt crisis and because of industry advances such as securitization that increased information asymmetries between regulators and regulated firms. While the US had to flex its market power to compel international regulators to negotiate minimum capital standards, Kapstein primarily views international bank regulation as the realization of increased international demand for higher levels of financial stability led by the US.

In contrast, Oatley and Nabors (1998) emphasize that the primary motivation for US leadership in negotiating the Basel Accord was for competitive advantage. Japanese banks had rapidly grown in size and expanded internationally throughout the 1980s, threatening US bank dominance (44). Negotiating Basel I was an opportunistic advance by the United States to constrain Japan and other foreign banking competition. They show bank market conditions as evidence and emphasize the degree of US coercion required to achieve international agreement. They conclude

that the Basel Accords represent an international agreement primarily aimed at increasing US bank competitiveness vis-a-vis foreign banks.

The relative contribution of each mechanism is difficult to discern because different types of evidence support each argument. Revisiting this debate is ever more important in a world where international financial operations continue to proliferate and where regulatory networks have emerged as the key form of international governance.

In both accounts, there are clearly implied distributional effects. In Kapstein's account, banks should prefer increasing regulatory stringency internationally over unilaterally because the former *maintains* international competitive positions. Oatley and Nabors, however, identify the possibility that increasing regulatory stringency internationally might *benefit* firms in some states. Further, the possibility that states might benefit from international regulation is consistent with theoretical (Underhill and Zhang, 2008), empirical (Stratmann and Krozner, 1998) and anecdotal (Johnson and Kwak, 2010) stories about financial regulatory capture at the domestic and international levels. This paper revisits this debate and uses the clearly implied distributional effects to test these mechanisms in a recent case.

Basel III as a Parallel Case

The renegotiation of international bank rules, Basel III, in 2009 and 2010 is an ideal case where each mechanism behind increased international regulatory stringency could plausibly be at work and where each mechanism has distinct observable implications.

It is reasonable to think that US regulators sought increase capital minimums in 2009 as part of an increased demand for international financial stability. At the national level, the US Treasury and Federal Reserve received staunch criticism for ad hoc handling of firm bailouts and failures

throughout 2007 and 2008 (Wessel, 2009; Paulson, 2010). At the international level, the G20 in September 2009 would officially call upon the BCBS to renegotiate capital minimums. Despite both sets of pressures, it was not clear whether increases in regulatory stringency would be sincere increases or merely window dressing.

If increases in regulatory stringency were aimed at mitigating international risk, regulators would be primarily concerned with ensuring stability and the net effect on banks would be negative. A firm facing increased regulations must change internal processes to become compliant and monitor and report upon this on an ongoing basis. Specific to bank regulations, if a firm must increase its regulatory capital to remain compliant, it must increase its equity, change its asset mix and/or sell firm assets. Increasing equity means issuing new stock shares so that there is additional capital to support risk-weighted assets. A bank might change its asset mix in order to hold assets weighted with a lower risk. Finally, selling assets will shrink the amount of assets against which capital will be held, increasing capital ratio. These are all costly and adjustment costs and ongoing operational costs should be a source of systemically negative stock returns.

In contrast, the details of the regulations might confer competitive advantages upon firms within certain states. The US, in the case of Basel III, could increase its domestic bank competitiveness compared to European rivals. While the United States continually delayed Basel II implementation since 2006, the EU has implemented Basel II since 2006, *decreasing* the amount of capital that European banks held compared to US banks. Additionally, the US successfully pushed for a leverage ratio to become a part of Basel III rules. US banks have complied with leverage ratios for decades, while EU regulators previously did not require leverage ratios. Therefore, if they primarily increased US bank competitiveness compared to foreign rivals, US banks could plausibly enjoy a net benefit from the regulatory details despite a net increase in regulatory

stringency.

Stock Returns As A Proxy

Stock returns provide a useful proxy to measure the perceived effect of international financial regulations upon regulated firms. To adjudicate among hypotheses, I analyze the stock returns of regulated firms when information is released about the Basel III negotiations. Within political science, a few studies have utilized stock price changes as a source of inference. Mosley and Singer (2008), McGillivray (2003), and Jensen and Schmith (2008) all use stock price changes across a long period of time to assess differences across countries. Most similar to my approach, Bechtel and Schneider (2010) show that European defense manufacturers experience positive abnormal returns following specific types of European Security and Defense Policy meetings.

Analyzing stock return reactions to regulations has a long precedence in management studies.⁷ Economists are interested in the degree of gains and losses of firms, however, and are not interested in using stock returns to proxy for institutional effectiveness. To the author's knowledge, there is no empirical assessment of bank reactions to Basel Accord announcements.

There is a large literature in economics that debates whether stock price movements are best explained by the efficient market hypothesis, where investors rationally and consistently recalculate firm value, or by behavioral theories, where investors trade based on expectations of the future value of the stock itself distinct from the underlying firm value.⁸ Regardless of an investor's

⁷ For instance, there are at least six management studies that establish the relative gains and losses of banks, securities, and insurance firms in response to the 1998 Financial Services Modernization Act (also known as the Gramm-Leach-Bliley Act), which repealed remaining Glass-Steagall provisions separating commercial and investment banking (Cyree, 2000; Akhigbe and Whyte, 2001; Carow and Heron, 2002; Hendershott, Lee and Tompkins, 2002; Mamun, Hassan and Lai, 2004; Yildirim, Kwag and Collins, 2006).

⁸ For an overview of the efficient market hypothesis and behavioral theory challenges, see Malkiel (2003) and Kindleberger (2005, p.38–63). For examples of behavioral theories across time, see Kindleberger (2005), Galbraith (1954, p.71-92), and Akerlof and Shiller (2009).

trading strategy, all investors seek profit. Because of this, either explanation captures the changing perception of investors about the value of the stocks in which they trade. New information that changes investor perception of a stock will cause him or her to act, with the change reflected in the stock price and occurring on the day that new information is available.

Hypotheses

This paper tests two hypotheses to measure the effects of international bank rules upon regulated firms. Each hypothesis addressed one of the competing mechanisms explaining cooperation and the observable outcome derived from the distributional implications for regulated firms.

Hypothesis 1: If regulations are primarily aimed at mitigating risk, increased company costs will lead to negative stock returns.

Hypothesis 2: If regulations are primarily aimed at increasing domestic competitiveness versus foreign rivals, increased regulatory stringency will result in positive stock returns.

2 Stock Return Analysis

An event study is used to analyze regulated firms' stock returns on days when new information is released about Basel III negotiations over the period September 2009 through December 2010. This allows for firm-level estimates using daily data.

Events and Key Assumptions

Although no formal rules govern BCBS negotiations, informal BCBS practice is to negotiate on a consensus basis and in an opaque environment, and to release information publicly through

Event Description	Meeting	Press Release	Basel III Regulatory Details?
1 Agree to Negotiate	2009 September 6	2009 September 7 (Monday)	No
2 Consultative Proposal	2009 December 8–9	2009 December 17 (Thursday)	Yes
3 Agree to Finalize	2010 July 14–15	2010 July 26 (Monday)	No
4 “Calibration” (Minimums)	2010 September 12	2010 September 12 (Sunday)	Yes
5 Final Rules Release	2010 Nov 30 - Dec 1	2010 December 16 (Thursday)	Yes

Table 1: *Events*: Between September 2009 and December 2010, five BCBS meetings resulted in press releases providing public information about Basel III negotiations. Event 1 and Event 3 merely state broad agreement to move forward with negotiations to increase regulatory stringency, without providing details of the regulations, while Event 2, Event 4, and Event 5 provide details about some aspect of the likely Basel III rules. SOURCE: BCBS press releases, available on the BIS website, http://www.bis.org/list/press_releases/index.htm.

press releases (Zaring, 1998, 287–290). To negotiate Basel III, the BCBS followed its established consultative process whereby draft proposals of rules are publicly released and a few months are allotted during which interested parties may submit formal written responses. Upon international agreement, each BCBS member is expected to implement Basel III in his or her home country. Table 1 identifies the five press releases that comprise the events of interest.

The research design makes two important assumptions. First, the content of each press release is assumed to be unanticipated. Second, the content of each press release increases the cumulative certainty that new rules will be negotiated and that the rules will be more stringent than the status quo. Each assumption is justified in turn.

It is reasonable to assume that Basel III press release contents are relatively unanticipated. First, BCBS meetings are active negotiations, the outcomes of which cannot be known with certainty prior to each meeting. In a rare description of BCBS meeting proceedings, Sheila Bair, the US Federal Deposit Insurance Corporation (FDIC) chairman during this period, gives no impression that BCBS meeting outcomes were determined prior to each meeting (Bair, 2012, 257–272). In contrast, she documents a fragmented US negotiating position just days prior to certain BCBS meetings about Basel III (Bair, 2012, 266). If the US position was unclear prior

to meetings, it is reasonable that the collective outcome of a 27-country negotiation was also not foreseeable. Also because meetings are active negotiations, no negotiation updates occur between BCBS meetings.

Second, there are limited opportunities for the public to learn about negotiation progress prior to each press release because the BCBS is an extremely opaque negotiating body (Zaring, 1998, 288). Meeting minutes are either not taken or never publicly released, and the organization maintains closed archives.⁹ Although it is possible for the public to know BCBS meeting dates, consistent with the assumption that press releases reflect new public information, newspaper coverage never reports meeting *outcomes* prior to BCBS press releases.¹⁰ BCBS press releases are not released at a set time following a BCBS meeting, further limiting possible anticipation of a press release. As shown in Table 1, press releases range from being announced on the same day as the BCBS meeting (as in the case of Event 4, where both the meeting and press release occur on September 12, 2010), to being announced more than two weeks after the meeting (as in the case of Event 5, where the meeting was held on November 30 and December 1, 2010 but a press release detailing meeting outcomes was not made until December 16, 2010). Further, newspaper coverage about the Basel Committee between events provides no indication that there are any non-events, where investors expected, but the BCBS did not make, a press release about negotiation progress.

Finally, I ensure that results are not sensitive to this assumption by re-estimating the effects using a most likely anticipation point for each event, and through an analysis of bank stock returns before and after each press release to look for patterns of early or late stock price adjustment.

⁹ The forward of a new BCBS history specifically acknowledges that the author’s access to BCBS archives was granted under special permission. Even then not all archives were made available and access was restricted to the period ending in 1997 (Nout Wellink in Goodhart (2011, ix-x)).

¹⁰ This statement is a generalization of all *Financial Times* and *Wall Street Journal* newspaper coverage surrounding the events. One exception is a leak on the Japanese market just prior to Event 5. Figure D in the Appendix shows the number of Reuters news stories that mention the “Basel Committee” on the days just before and just after each press release.

Discussed at more length below, results are not sensitive to the robustness check and no clear pattern of early or late adjustment exists.

The second assumption, that each press release increases certainty that more stringent regulations will be put into place, is reasonable but requires caveats. Ideally, investors' expectations about Basel III regulations could be compared to the actual press release content to understand the degree to which press release information differs from expectations. Unfortunately, to the author's knowledge, no such measure exists given the multiple dimensions of Basel III regulations (e.g., capital minimums, definition of capital, implementation timeline). Therefore, I assume that each press release adds certainty that international regulatory stringency will increase on a cumulative basis.

Newspaper coverage of Event 1 and Event 2 are clearly consistent with this assumption. Event 1 is a press release on September 7, 2009 that unexpectedly announced agreement among BCBS members to update capital standards. Without providing details, the BCBS publicly committed itself to increase minimum capital levels and to introduce additional measures such as a leverage ratio. The *Financial Times*' London Edition reported on September 8, 2009 that, "Regulators have agreed tough rules for banks...that would force many institutions in Europe to raise tens of billions of euros in capital in coming months."¹¹ Similarly, Event 2, the consultative document released on December 17, 2009, was reported in the media as more stringent than expected. "The description of what will count as tier 1 capital and how the leverage ratio will be calculated was stricter than some analysts had expected."¹² The consultative proposal provided some details about capital definitions and invited public, written comments due in April, 2010.

¹¹ Jenkins, Patrick, Norma Cohen, and James Wilson, 2009. "Europe's Banks Face Capital Push After Regulators Agree to Tough Rules." *Financial Times*, September 8, London Page 1.

¹² Jenkins, Patrick and Brooke Masters, 2009. "Tougher Than Expected Framework Leaves Room for Manoeuvre." *Financial Times*, December 18, London Page 8.

Somewhat inconsistent with the assumption the each event increases the cumulative certainty of stringent regulations, Event 3, on July 26, 2010, occurred in the wake of media reports that bankers were trying to weaken Basel III proposals. On July 28 the *Financial Time* reported that “...the principles outlined late on Monday by the Basel Committee on Banking Supervision contained far-reaching concessions [by regulators towards industry preferences for weaker regulations].”¹³ The BCBS press release did not provide details, however, and announced general agreement to move forward with negotiations without announcing regulatory detail. In analyzing Event 3, we should further keep in mind its close proximity to the US Dodd-Frank legislation, which was signed into law on July 21, 2010.

Consistent with the assumption, Event 4 and Event 5 provide regulatory details that confirm increased regulatory stringency. Event 4 on September 12, 2010 was “calibration”, the unveiling of the actual minimum capital levels that banks would have to hold. The *Wall Street Journal*’s front page headline read, “Banks Get New Restraints - Historic Refashioning of Rules.”,¹⁴ while the front page of the *Financial Times* explained, “global banking regulators on Sunday sealed a deal to in effect triple the size of the capital reserves that the world’s banks must hold against losses...”¹⁵ It was clear that regulatory increases were high. At the same time, it was noted that firms welcomed the certainty about the regulations with which they would have to comply. The final rules release, Event 5 on December 17, 2010, added additional certainty about both the detailed regulations and the implementation timeline. The *Wall Street Journal* stated, “the resulting compromise was rules that are much tougher than the current requirements but don’t

¹³ Murphy, Megan, and Patrick Jenkins, 2010. ”Shares Bounce as Regulators Soften Rules.” *Financial Times*, July 28, London Page 5.

¹⁴ Paletta, Damian and David Enrich, 2010. “Banks Get New Restraints - Historic Refashioning of Rules.” *Wall Street Journal*, September 13, A1.

¹⁵ Masters, Brooke, 2010. “Basel Deal Reached on Banks’ Reserves.” *Financial Times*, September 13, London Page 1.

fully kick in for nearly a decade.”¹⁶ Thus, regulations were confirmed to be of high increased regulatory stringency compared to the existing regulations.

Sample

The effect of regulations should be estimated using the largest possible sample of firms for which a theoretical effect is expected on the days of BCBS press releases. Although all chartered banks in the United States must meet regulatory capital minimums, at the time of Basel III negotiation only the largest banks (those with more than \$250 billion of consolidated assets or \$10 billion of foreign assets) were required to comply with Basel III’s precursor regulations. As of 2009, only 9 banks met this criteria (GAO, 2007, 24). I report results for this smaller group in a robustness check, but the sample of my main results include all banks with more than \$10 billion in consolidated assets to ensure results are not driven by sample selection.¹⁷ 46 large banks fitting this definition have all necessary information to be included in the sample.¹⁸

Table A in the Appendix lists the sample banks and each bank’s consolidated asset size and capital ratio (“Tier 1 Capital Ratio”) that would be observed at the beginning of the Basel III negotiation period (2009 Q2 ratios would be observed at the time of Event 1 in 2009 September)

¹⁶ Enrich, David, 2010. “Global Finance: New Rules Mean More Capital for Banks.” *Wall Street Journal*, December 17, C3.

¹⁷ This threshold because it is the largest firm supervisory grouping. For regulatory purposes, US banks are placed into a “peer group” depending upon the bank’s consolidated asset size, with the largest peer group, Peer 1, comprised of all bank holding companies with more than \$10 billion assets. As of June 2012, in implementing Basel III, the Fed proposed an even broader group of all banks with more than \$500 million in consolidated assets.

¹⁸ A bank has full information if it meets all of the following criteria: (1) bank must be publicly traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) or the NASDAQ exchanges, (2) bank must be US-headquartered (i.e. federally incorporated in the United States), (3) bank must be actively traded on all trading days between 2009 January 4 and 2011 April 1, (4) bank must have regulatory capital data available for Q1 2009, and (5) bank must be designated by the Federal Reserve as a Peer 1 Bank Holding Company as of Q1 2009. Stock data comes from The Center for Research in Security Prices (CRSP), regulatory capital data comes from Compustat, and the Federal Reserve Bank Holding company designation comes from BHCPR Peer Group Average Reports, available at http://www.ffiec.gov/nicpubweb/content/BHCPRRPT/BHCPR_Peer.htm (August 18, 2012).

and the end of the Basel III negotiation period (2010 Q3 ratios would be observed at the time of Event 5 in 2010 December). Tier 1 Capital Ratios represent the best proxy for firm-specific adjustment costs resulting from more stringent regulations. Since Basel III sets the definition of capital and the minimum levels of regulatory capital that regulated banks must hold, it is reasonable to expect that, as of Event 1 in 2009 September, all else equal, Wells Fargo, whose 2009 Q2 Tier 1 Capital Ratio was 9.80%, would face higher adjustment costs to comply with Basel III than would Bank of America, whose 2009 Q2 Tier 1 Capital Ratio was 11.93%.

Calculating Abnormal Firm Return

Event studies test whether a treated firm's observed stock return differs from the expected stock return when new information is made public. On the day of a BCBS press release, I estimate each regulated bank's Firm Abnormal Return, a firm's observed stock return (observed) minus its expected stock return (estimated). When a press release is announced on a non-trading day (Event 1 is US labor day and Event 4 is a Sunday), the estimation is for the first trading day following the announcement. To model the firm's expected stock return, I identify a set of stocks that strongly correlates with the regulated bank's stock returns prior to the press release. The correlated stocks should be a set of firms that themselves should not be affected by the press release event. For the case of Basel III, I limit possible correlate stocks to non-financial firms. This minimizes confounding effects, such as the possibility that a bank stock is best predicted by a securities firm's stock which might also be affected by Basel III. The correlate stocks are identified out of all publicly traded non-financial firms for which full information exists.¹⁹ From

¹⁹ There were 2726 non-financial firms that met all of the following criteria: (1) non-financial firms (SICcode<6000 or SICcode>6999) (2) that trade on the NYSE, AMEX, or NASDAQ stock exchanges (3) with active trading on all days from 2009 January 1 through 2011 April 11. Stock price and SIC data comes from Center for Research in Securities Prices (CRSP).

this pre-event relationship, the correlated firms' stock returns are observed, and the regulated firm's expected firm return is estimated on an event day.

To select the subset of the 2726 non-financial firms that best correlate with each regulated firm's stock returns prior to each event, I employ a variable selection method called Lasso.²⁰ The Lasso estimator identifies the most sparse, weighted-average subset among 2726 non-financial firms' stock returns that best approximates that specific bank's stock returns during the Estimation Window, the untreated period preceding the event. The observed stock returns of the non-financial firms that comprise the sparse, weighted-average subset are used to determine the expected stock return on the day of the press release. If the relationship between the bank and the non-financial firms remains as in the immediate past, then no statistically significant effect should be observed. If, however, the relationship between the bank and non-financial firms is positive or negative, systematically across firms, this is evidence consistent with the expectation that investors are reacting to new information available on the press release day.

In contrast to typical event studies, which require a long Estimation Window, Lasso enables a short estimation window, approximating a regression discontinuity and prioritizing the most recent market experience.²¹ Using a short estimation window approximates a regression discontinuity design and prioritizes the most recent market experience. Standard event methods require long Estimation Windows and an arbitrary cut off prior to an event of interest. The ability to test for

²⁰ See (Tibshirani, 1996) and Hastie, Tibshirani and Friedman (2009, p.68–72). Selecting lambda is an important modeling choice in these models, and in all specifications I use 5-fold cross-validation to produce a series of 100 lambda and select the largest lambda within one standard deviation of the minimum.

²¹ Event studies often regress all stocks against a single regressor, such as the S&P 500, or an equally-weighted market return to approximate the capital asset pricing model. However this requires a long Estimation Window in order to obtain a reasonable model fit. Variations, including Fama and French's (1993) 3-factor model and Carhart's (1997) 4-factor model, face the same difficulties. The longer the Estimation Window, the less that current information may be privileged in estimating the Expected Firm Return. Second, by using the same predictive index to estimate Expected Firm Return for all firms, it is difficult to apply an event study technique to regulatory events since regulations affect multiple firms on the same day, leading error terms to be correlated. Management scholars interested using an event study methodology to estimate the effects of regulation use seemingly unrelated regression (SUR) models, although these rely on long time series.

result sensitivity based on the Estimation Window is an advantage of this method that increases confidence in results.

Quantity of Interest: Average Abnormal Return

The quantity of interest for each event is the Average Abnormal Return, the simple average of estimated Firm Abnormal Returns as described above.²² On days of BCBS press releases, I expect that investors will learn more about the international regulations, will trade regulated firm stocks (e.g. banks) accordingly, and that the Average Abnormal Return of regulated stocks will be statistically distinguishable from zero. When BCBS press releases occur on non-trading days (e.g. Event 1 and Event 4), the expectation is that the adjustment will occur on the first trading day following the press release.²³ If BCBS press releases lead investors to perceive regulated banks as a better investment today compared to yesterday, demand for bank stocks will increase, I will observe positive Abnormal Firm Returns for these banks, and a positive Average Abnormal Return in aggregate. Conversely, if BCBS press releases lead investors to perceive regulated banks as a less profitable investment today compared to yesterday, demand for bank stocks will decrease, I will observe negative Abnormal Firm Returns for these banks, and a negative Average Abnormal Return in aggregate. I estimate the 95 percent confidence interval around the estimated Average Abnormal Return by following the modified bootstrap process of Chatterjee and Lahiri (2011), which they show to be a consistent estimator of Lasso estimators.²⁴

²² This is a standard quantity of interest in an event study.

²³ Event 1 is a press release made on US Labor Day (2009 September 7) and Event 4 is a press release on a Sunday (2010 September 12). The first trading days following these events, and the days I expect to observe Average Abnormal Returns, are 2009 September 8 and 2010 September 13 respectively.

²⁴ Residuals from estimating each firm's expected firm return are used to create a bootstrapped set of observed returns. For each bootstrap iteration, I re-estimate each firm's Abnormal Firm Return, and the aggregate Average Abnormal Return, by re-sampling, with replacement, the residuals obtained from the original point estimate calculation, and add this to the fitted values of the original data to obtain a new set of outcome variables. I re-estimate each event's Average Abnormal Return using 100 bootstrap iterations. Using the point estimates from the original

Thus, I am able to test hypotheses about whether Average Abnormal Return systematically differs from zero for regulated firms. Hypothesis 1 leads me to expect that increased regulatory stringency will result in a negative Average Abnormal Return for regulated firms on the first possible trading day following each announcement. Hypothesis 2 expects a positive Average Abnormal Return.

Models

The main model specification uses 20 trading days prior to the press release to create a counterfactual (“20-day Rolling”).²⁵ This approximates a regression discontinuity, testing whether stock returns on event days are different than stock return patterns just prior to the press release date. Three alternative estimation windows test the robustness of pre-press release period. First, I extend the pre-trading day data to 30 trading days prior to the press release (“30-day Rolling”). Second, I use a long-term data trend, using all data from January 1, 2009 up until the day prior to the press release. By using all stock data until the day before press releases, it assumes that no anticipation effects (“Event Study, No Anticipation”).

The final Estimation Window specification accounts for possible anticipation effects. Using newspaper coverage, for each event I identify the first three days before each event where no Reuters newspaper coverage mentions “Basel Committee”.²⁶ While not a perfect measure, this is a consistent way to identify the earliest date prior to each event when public discussion about Basel III is likely to have occurred. Anticipation windows vary between 7 days (prior to Event

data and the sample standard deviation from bootstrapping, and assuming a normal distribution, I obtain the 95 percent confidence intervals.

²⁵ A shorter estimation window makes it difficult for lasso to identify a sparse subset of the data and to not overfit the data. This is much shorter than event studies that typically use 180 days or more of trading data.

²⁶ Using “Basel Committee” is preferable to using “Basel III” because the name “Basel III” only came into widespread use in January 2010 and beyond, while “Basel Committee” was discussed since 2008. Figure D in the Appendix shows newspaper coverage of each term from 2009 through 2012.

1) to 16 days (prior to Event 5). This model uses all data from January 1, 2009 through the day prior to anticipation effects (“Event Study, Anticipation”).

I ensure that results are not sensitive to the relatively small sample of 46 firms. First, I remove Firm Abnormal Returns for rare cases where no Lasso estimation is identified and therefore there exists no obvious counterfactual. Second, I drop each firm individually and calculate the Average Abnormal Return and 95 percent confidence interval. If a bank is driving the estimation, I remove that bank from the sample and re-run the exercise. If the subsequent estimation is not sensitive to dropping each firm, I drop the bank from that event’s Average Abnormal Return estimation. For these reasons, some events’ estimates of Average Abnormal Return reflect samples slightly smaller than the 46 sample firm maximum.

Results

Figure 1 displays the Average Abnormal Returns for each event using the four Estimation Windows. The main results, 20-day Rolling estimation windows are the black circles, the 30-day Rolling estimation window estimates are the white circles, the Event Study, No Anticipation Control estimates are the black triangles, and the Event Study with a control for anticipation are the white triangles.

Event 1, the announcement of BCBS negotiations, has a clear negative and statistically significant effect across all Estimation Windows. The 20-day Rolling and 30-day Rolling Estimation Windows estimate an average abnormal effect of -1.07% and -1.29% respectively, while both Event Study estimations estimate a negative Average Abnormal effect of -1.75%. That is, on average, regulated stocks were expected to have stock returns 1.07% to 1.75% higher than observed on September 8, 2009.

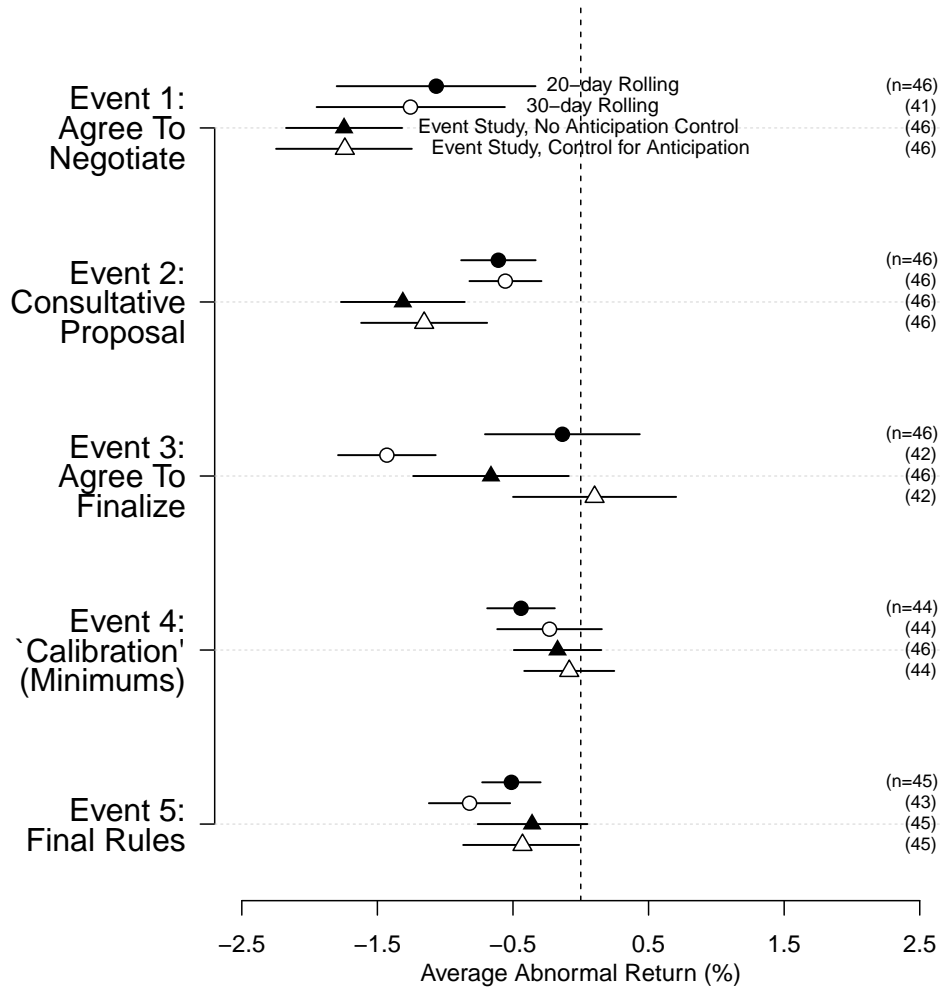


Figure 1: *Average Abnormal Returns on Event Days*: For each event, the Average Abnormal Return with 95 percent confidence interval reflecting the experience of 46 United States regulated firms. Average Abnormal Return is the average of the full sample of firms' Abnormal Firm Return, with expected firm return identified using a lasso estimator.

Event 2 similarly shows an unambiguous negative and statistically significant effect. The 20-day and 30-day Rolling models estimate an effect of -0.61% and -0.56% respectively, while longer-term patterns of stock returns in the Event Study estimations are even more negative, with estimated average abnormal stock returns of -1.16% and -1.31%.

Event 3 is affected by multiple confounders and has inconclusive findings. There is some evidence that regulated firms experienced negative and statistically significant returns compared to the longer term stock return patterns (30-day Rolling and Event Study No Anticipation Control).

However, compared to the shorter-term stock returns (20-day Rolling) and controlling for possible anticipation effects (Event Study With Anticipation), there is no clear effect. This press release is the most vague among all five press releases by merely announcing that negotiations will continue. It also occurs the week following the signing of the US Dodd-Frank Act, which likely affected the stock returns during a portion of the Estimation Window. Finally, as discussed above, this is the only event where media coverage suggests that industry groups are possibly successful at watering down Basel III proposals. Despite these confounders, there is still no evidence that regulated firms enjoy positive net effects from competitive advantage of regulations.

Event 4, announcing the regulatory minimums, is negative and statistically significant compared to the stock returns in the immediate past (the 20-day Rolling model), but not compared to longer estimation windows (30-day Rolling, both Event Study models). Given that this is the most detailed press release, it is surprising that the effect is not large. It is possible that, regulatory details are already largely priced into existing stock prices and there is limited room for adjustment.

Event 5, the final rules release, is negative and statistically significant when using 20-day and 30-day Rolling Estimation Windows and when using a long estimation window that controls for anticipation effects (“Event Study, Control for Anticipation”). The magnitude of the estimated effect ranges from -0.82% using the 30-day rolling Estimation Window to -0.43% using the Event Study with an anticipation control. It is negative but not statistically significant when using a long Estimation Window without controlling for anticipation (“Event Study, No Anticipation Control”).

Together, the findings provide evidence that there are some negative and statistically significant average abnormal returns associated with Basel III regulatory announcements. There is no

evidence that Basel III negotiations provide a net positive effect for banks. The average abnormal return for an event ranges between -1.75% and 0.00%. Early events are associated with more negative abnormal returns, while later events show some evidence of additional negative returns, although the statistical significance is less clear. These results hold across different Estimation Windows and controlling for possible anticipation effects.

Placebo Test and Smaller Subset

Figure B in the Appendix shows the robustness test using the small subset of the largest, most international firms (white upside-down triangles) and a placebo test of the estimation model (black squares). The nine firms most clearly subject to regulations include Bank of America, Bank of New York, Citigroup, JP Morgan, Northern Trust, PNC, State Street, US Bancorp and Wells Fargo (GAO, 2007, 24). Because they were the firms targeted to implement the advanced Basel II approach, these firms would have the highest certainty of being regulated under Basel III. I estimate the effect upon this small set of firms. I expect even stronger negative results than with the larger sample. Results are more clearly negative for all events except Event 5, where the larger sample is negative and the smaller sample is not significant. Again, this lends additional confidence that the model is estimating an effect specific to bank regulatory announcements.

Finally, I ensure the validity of the model through a placebo test (black squares in Figure B). This is the results of taking random samples of the 2726 non-financial firms (without replacement), treating them as if they were financial firms, and identifying the Average Abnormal Return using a 20-day Rolling Estimation Window. Because non-financial firms should have no direct effect from Basel III regulatory announcements, and given that I sample across industries, the Average

Abnormal Return should be zero for each event.²⁷ I take 25 random samples of 250 firms for each event. The results are clearly zero, adding validity to the estimation strategy.

Cumulative Abnormal Returns and Anticipation

To conduct a final check for anticipation effects and to get a sense of the magnitude of effects, Figure C in the Appendix includes the Average Abnormal Returns, and the Cumulative Average Abnormal Returns estimated for days preceding and following each Event. We see no clear anticipation effect across days. Further, the Cumulative Average Abnormal Returns plots imply that press release days do not represent an intercept shift for banks. That is, Basel III press releases do not seem to lead to negative abnormal returns and then persistent average abnormal returns at a new, lower level. I conclude that anticipation does not seem to affect the results and, although preliminary, the magnitude of effects does not constitute an intercept shift.

Across-Firm Effects

In addition to the negative effect across banks, are investors distinguishing among banks based on anticipated adjustment costs? I use each firm's Tier 1 Capital Ratio as a proxy for the amount of adjustment costs that a firm should incur. If investors are distinguishing among firms, we should see a strong positive association between Tier 1 Capital Ratio and Firm Abnormal Return on each event day.

Figure 2 shows Abnormal Firm Return regressed upon each firm's Tier 1 Capital Ratio. Surprisingly, there is no strong correlation between a firm's Tier 1 Capital Ratio and stock performance the day of regulatory announcements. This holds if you add a control for firm size (log of

²⁷ For each randomly selected firm that I treat as a financial firm, I limit the possible estimates to firms outside of its industry.

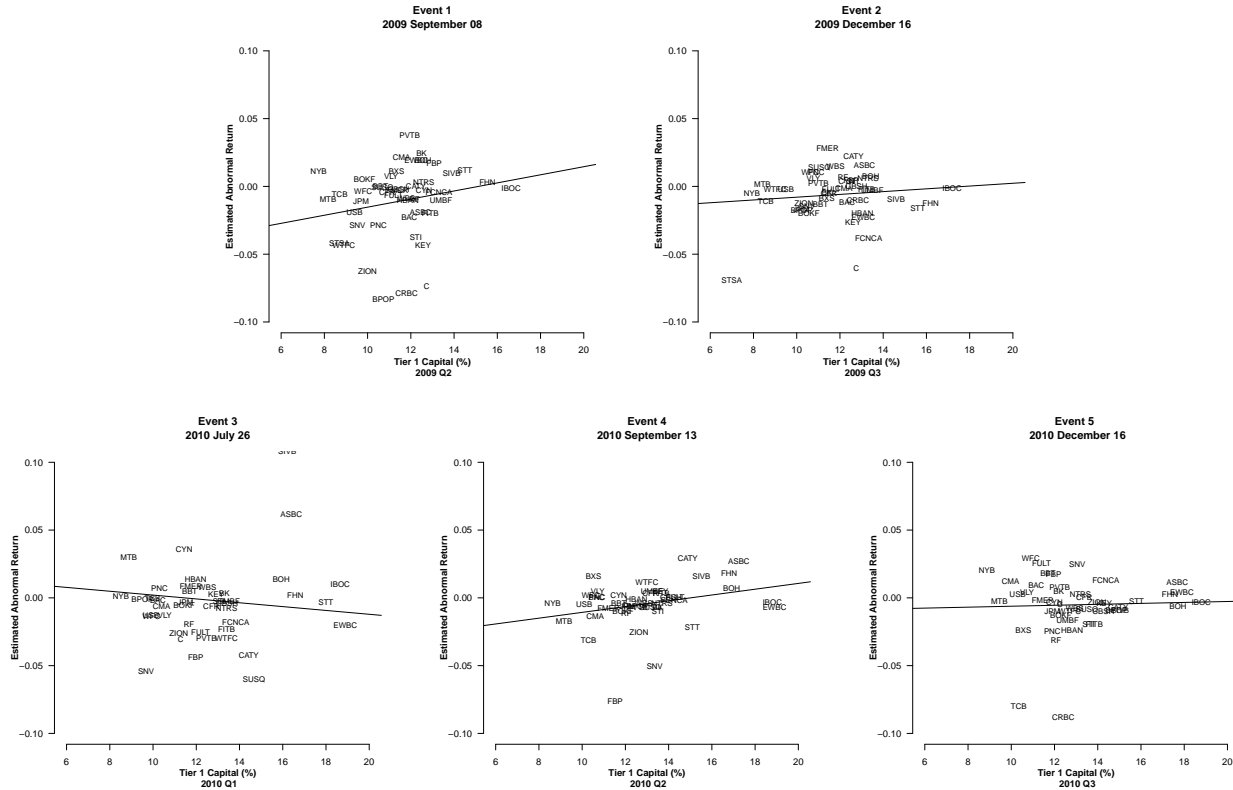


Figure 2: *Cross-Section Abnormal Firm Returns*: For each event day, each firm’s (represented by ticker symbol) Firm Abnormal Return and Tier 1 Capital Ratio is plotted. The solid black line in each plot is the fitted simple regression of Firm Abnormal Return on Tier 1 Capital Ratio. Event 1 and Event 4 graphs reflect the Abnormal Firm Returns for the first trading day following the press release given that the press releases that comprise these events are made public on non-trading days (Event 1 on September 7, 2009 is US Labor Day and Event 4 on September 12, 2010 is a Sunday).

consolidated assets).

Investors do not seem to be distinguishing among firms based on their most recent regulatory capital numbers. As opposed to buying “winners” (i.e. firms with high Tier 1 Capital Ratios) and selling “losers” (i.e. firms with low Tier 1 Capital Ratios), negative Average Abnormal Returns seem to be driven by investors generally selling or not buying as readily the large bank *sector*. Alternatively, it is possible that Tier 1 Capital is a poor proxy for adjustment costs. Many firms hold a buffer, or overcomply, with minimum standards (Winecoff, 2012). Some firms, such as Bank of America and Citigroup, were re-capitalized with government funds or through equity

offers during 2009 and perhaps investors identify among the sources of Tier 1 Capital. Thus, although there is evidence that is consistent with regulations mitigating risk and imposing costs upon firms, it does not seem that investors use Tier 1 Regulatory Capital as a strong indicator of firm-specific costs.

Conclusion

The preceding analysis provides evidence that Basel III negotiation progress resulted in negative and statistically significant abnormal stock returns for regulated banks. The estimated magnitude across events and estimation windows ranged from average abnormal return of -1.75% to 0.00%. Because bank regulations seem to have negative effects upon bank stocks, the results are most consistent with Hypothesis 1 and the theory that international regulations are aimed at mitigating risk. There is less evidence that Basel III regulations conferred strong competitive advantages upon firms (Hypothesis 2). This does not mean that there are no competitive effects at play, but that, in the case of Basel III, competitive effects were dominated by perceived costs associated with risk mitigation.

The pattern of negative abnormal stock returns is also telling. I find a negative effect on average across banks but no strong association between the individual firms' Abnormal Firm Returns and Tier 1 Capital Ratios. This seems to imply that investors are generally bearish about the banking sector, as opposed to selling banks with lower Tier 1 Capital Ratios and buying banks with higher Tier 1 Capital Ratios.

This analysis considered only the net direct effects of regulations at the point of regulatory announcement. The long-run implications are unclear. If regulations mitigate risk effectively, the

value of firms in the long run may increase.²⁸ Another open question concerns the differential effects of the regulatory announcement across countries. This paper has focused on the United States case in order to test competing mechanisms from an important existing debate. The effect upon European banks should be more negative than for US banks for multiple reasons. First, given the experience implementing Basel II in the mid-2000s, Europe has higher credibility of implementation than does the US. Second, certain types of capital that are favored in Europe were treated unfavorably in Basel III negotiations. Detailed comparison remains an open research topic.

Importantly, the analysis provides evidence that, in an important case, regulators were not completely captured when writing international bank rules. It is possible that this is a function of a unique post-financial crisis environment, but it is still evidence against regulatory capture at an important point in regulations. That early events had the most clear negative effects and late events had less clear effects may imply the importance of setting a strong agenda upfront. Given the ongoing threat of regulatory capture within finance, instead of defining regulatory capture as something that is either omnipresent or wholly absent, regulatory capture, and the degree of threat it poses, should be considered at different parts of the regulatory process.

This paper has uniquely isolated the effect of international bank regulations upon regulated firms at the point when regulations are announced. Using an updated event study approach that approximates a regression discontinuity, I find that regulated firms experienced negative stock returns associated with Basel III regulations. In an important case of soft law, regulators do seem to be mitigating risk. The substantive effects are small in that they do not represent an intercept shift. But banks certainly have at least a small and negative stake in international bank rules.

²⁸I thank Bob Keohane, David Lake, and Helen Milner for separately emphasizing this point.

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Appendix

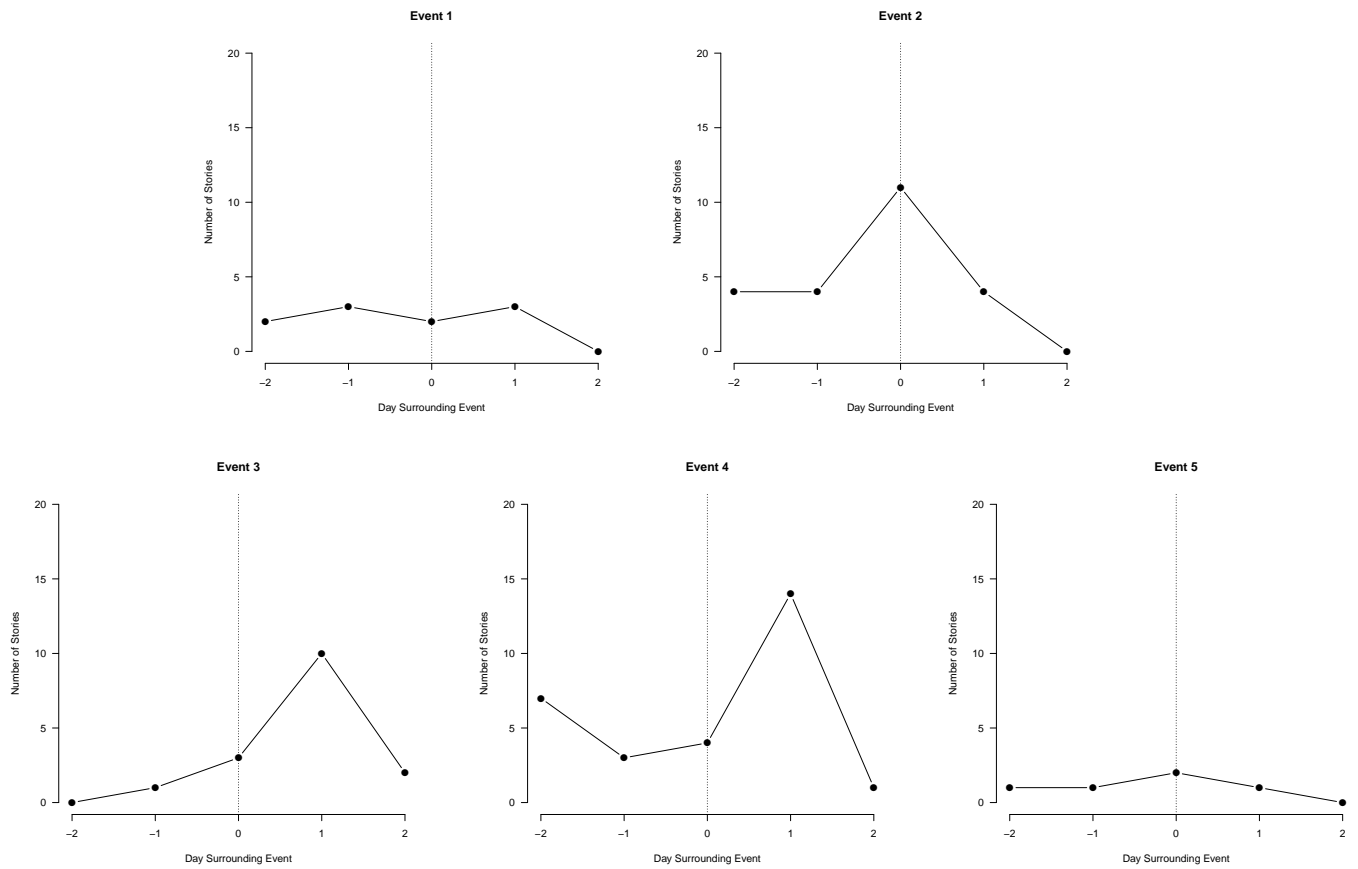


Figure A: *Newspaper Coverage - Events*: For each event, the number of Reuters news stories including the words "Basel Committee" just before (days -2 and -1) and just after (days 0, 1, and 2) each BCBS press release event. SOURCE: Factiva.

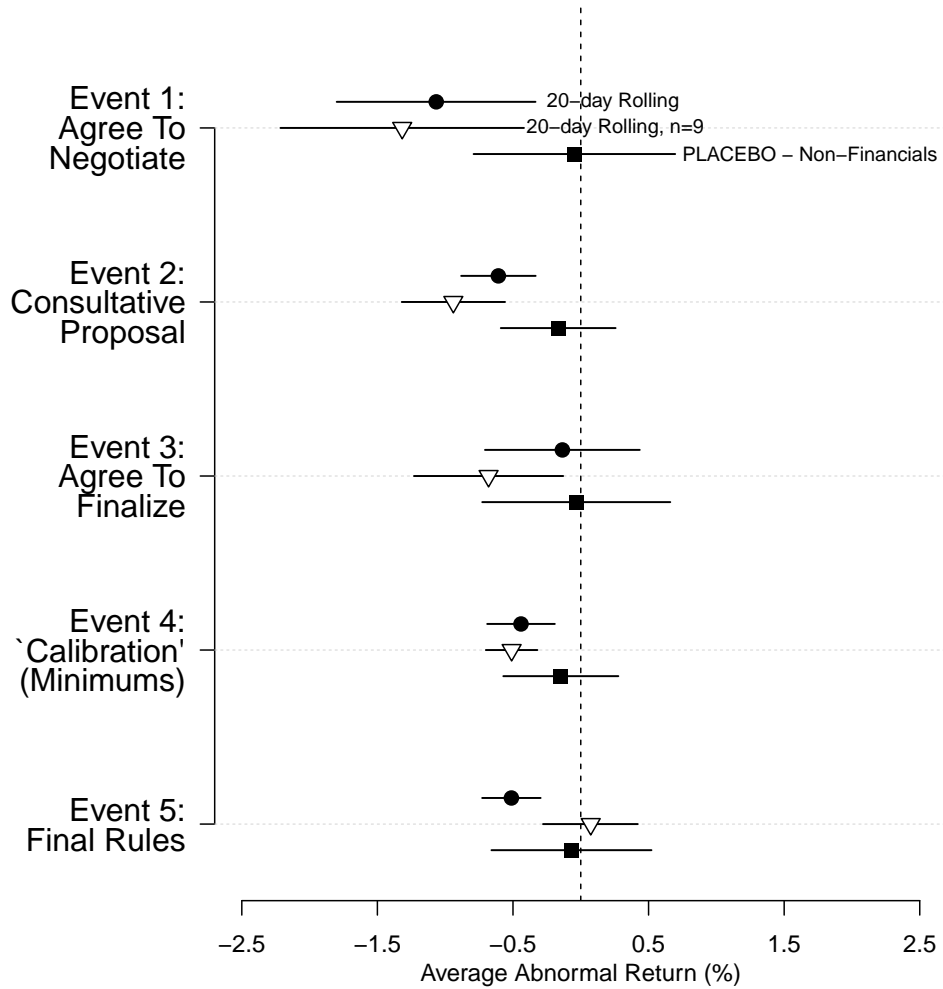
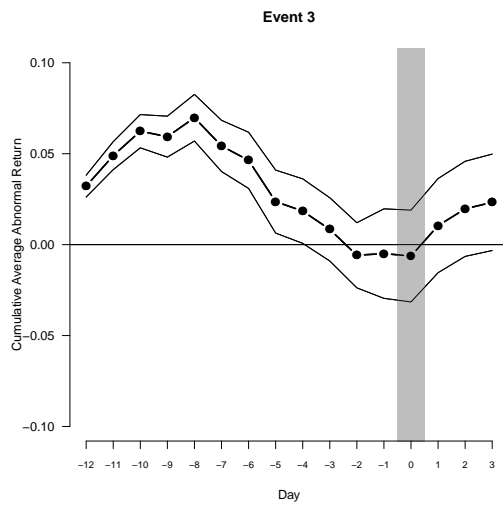
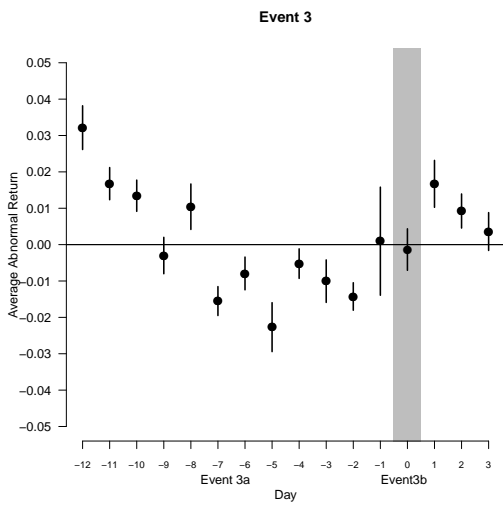
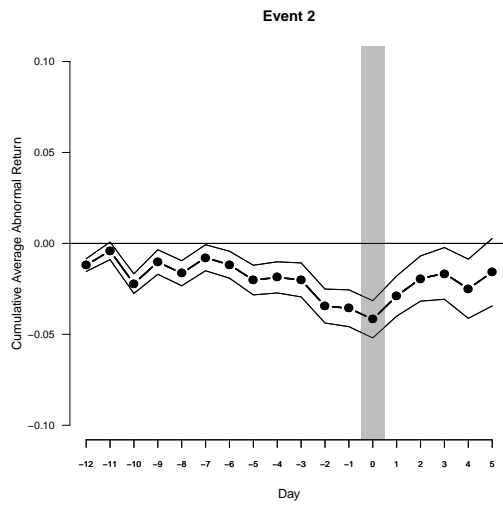
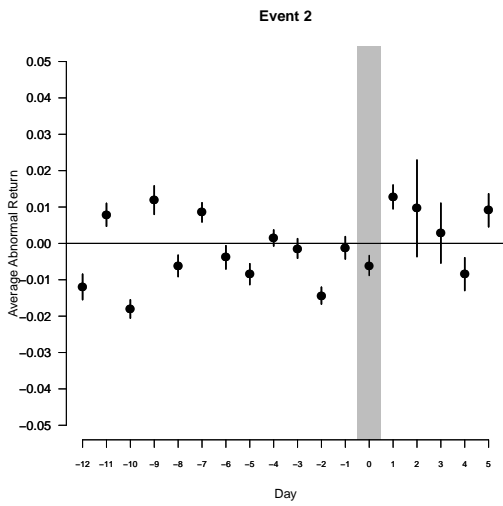
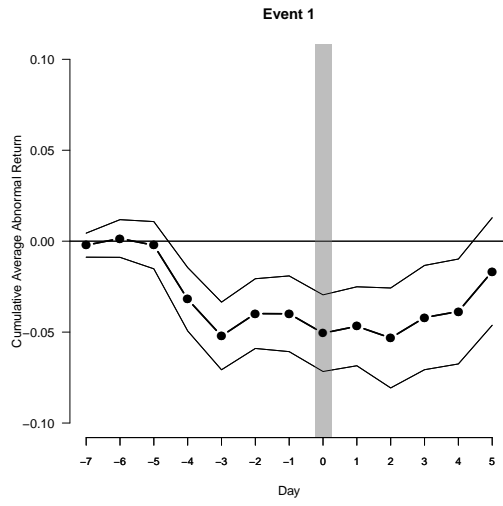
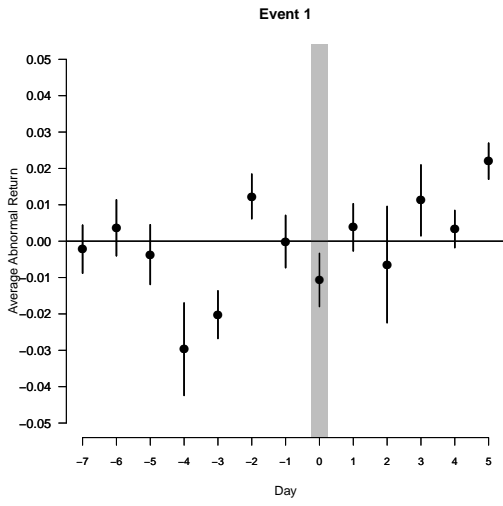


Figure B: *Placebo Test and Small Sample*: For each event, the Average Abnormal Return with 95 percent confidence interval reflecting the experience of 46 United States regulated firms. Average Abnormal Return is the average of the full sample of firms' Abnormal Firm Return, with expected firm return identified using a lasso estimator. The small sample (n=9) includes BAC, BK, C, JPM, NTRS, PNC, STT, USB, WFC. The Placebo includes, for each event, 25 samples of 250 randomly selected non-financial firms.



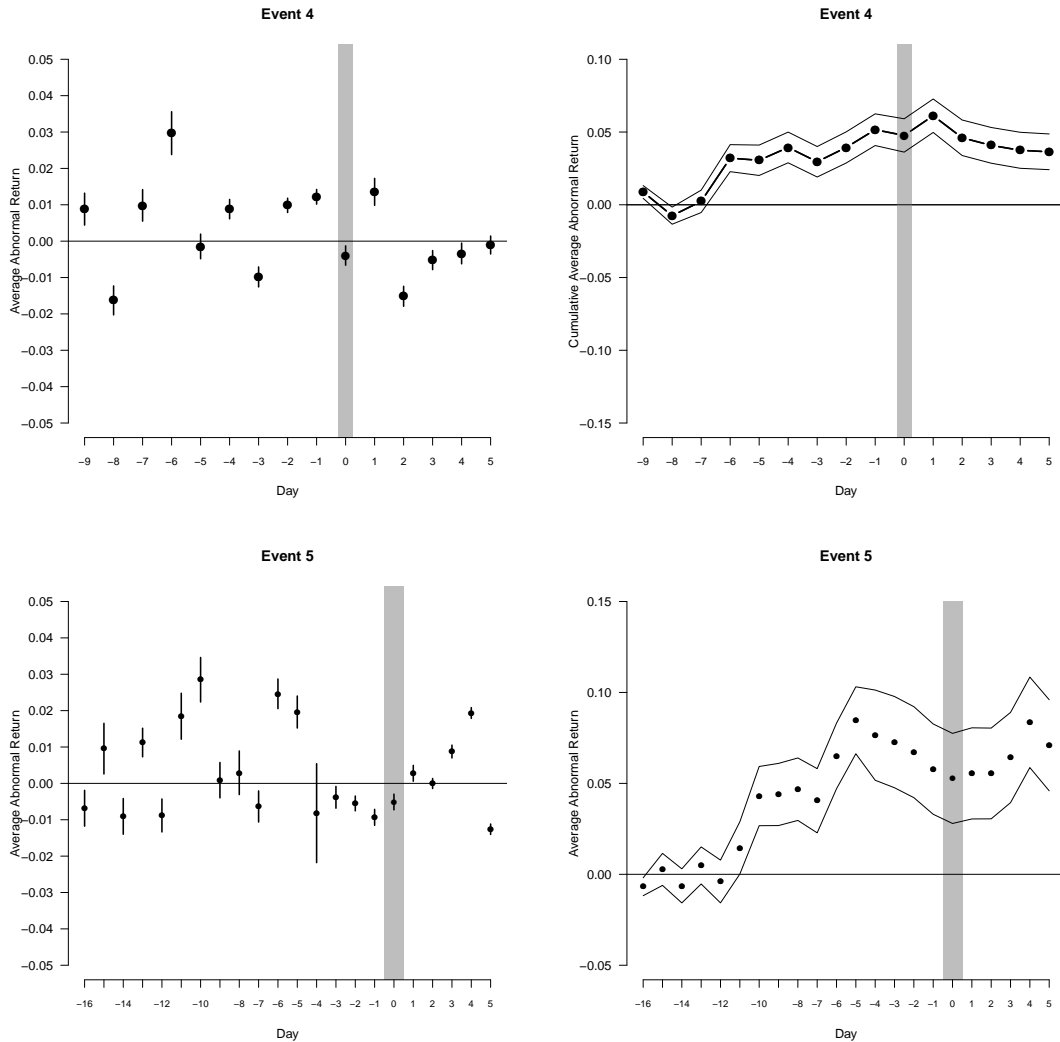


Figure C: *Average Abnormal Return Surrounding Event Days and Cumulative Abnormal Return Using 20-day Rolling Estimation Window*: Using the 20-day Rolling Estimation Window, the left graphs show the Average Abnormal Returns across days surrounding the BCBS press releases, including the 95 percent confidence interval. The right graphs are the Cumulative Abnormal Return from the first plotted day with estimated 95 percent confidence intervals. In both graphs, the gray bar indicates the day of a BCBS press release, and the horizontal black line indicates zero abnormal return. For each graph, the start day is the first of the three days prior to the event for which there is no newspaper coverage mentioning the “Basel Committee”). That is, the fourth day from the left of each graph is the first day for which anticipation effects, if they are present, are expected to start.

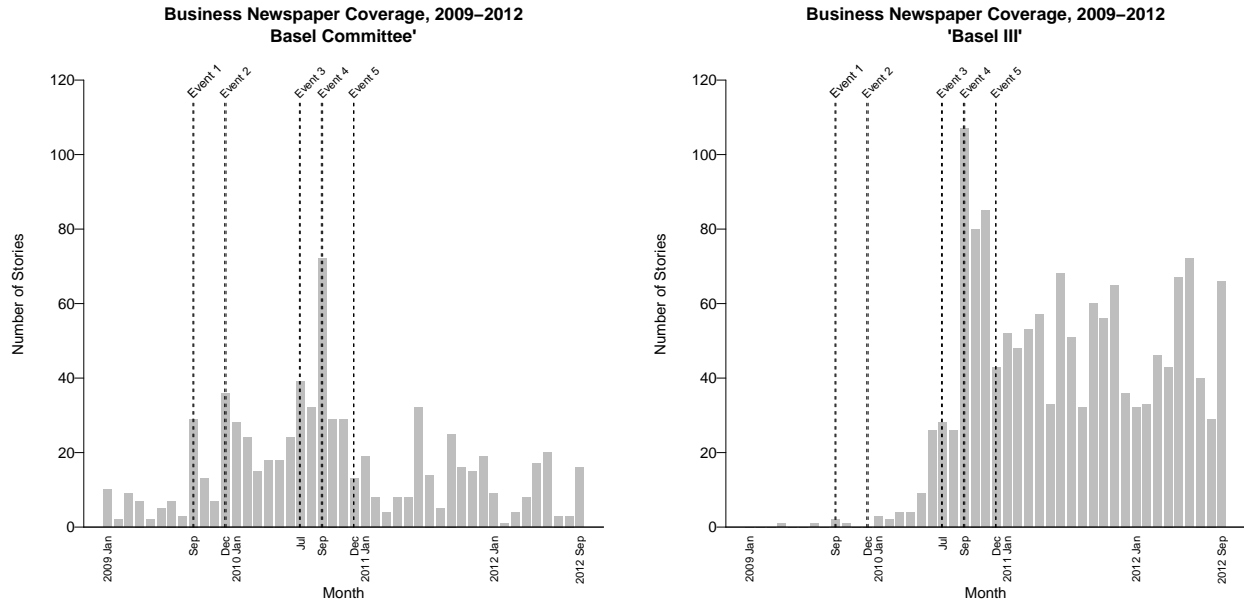


Figure D: *Newspaper Coverage*: The number of *Financial Times*, *Wall Street Journal*, and *American Banker* newspaper stories that mention the “Basel Committee” and “Basel III”, respectively, during each month of 2009 Jan through 2012 Sep. SOURCE: Factiva.

Ticker	Company Name	Consolidated Assets (\$bill)		Tier 1 Capital Ratio (%)	
		FY 2008	FY 2009	2009 Q2	2010 Q3
Assets >\$1 trillion					
BAC	Bank of America Corp	\$1,817	\$2,223	11.93%	11.16%
C	Citigroup Inc	1,938	1,856	12.74	12.25
JPM	JPMorgan Chase & CO	2,175	2,031	9.70	11.90
WFC	Wells Fargo & Co	1,309	1,243	9.80	10.90
Assets >\$100 billion					
BBT	BB&T Corp	152	165	10.60	11.70
BK	Bank of New York Mellon Corp	237	212	12.50	12.20
FITB	Fifth Third Bancorp	119	113	12.90	13.85
KEY	Keycorp	104	93	12.57	14.30
PNC	PNC Financial Services Grp Inc	291	269	10.50	11.90
RF	Regions Financial Corp	146	142	12.16	12.07
STT	State Street Corp	173	157	14.50	15.80
STI	Suntrust Banks Inc	189	174	12.23	13.58
USB	US Bancorp	265	281	9.40	10.30
Assets >\$10 billion					
ASBC	Associated Banc Corp	24	22	11.93	17.68
BOKF	BOK Financial Corp	22	23	9.76	12.30
BXS	Bancorpsouth Inc	13	13	10.92	10.56
BOH	Bank of Hawaii Corp	10	12	12.02	17.71
CATY	Cathay General Bancorp	11	11	12.50	14.95
CRBC	Citizens Republic Bancorp Inc	13	11	12.16	12.41
CYN	City National Corp	16	21	12.00	12.00
CMA	Comerica Inc	67	59	11.06	9.97
CBSH	Commerce Bancshares Inc	17	18	11.05	14.27
CFR	Cullen Frost Bankers Inc	15	16	10.64	13.38
EWBC	East West Bancorp Inc	12	20	13.67	17.90
FBP	First Bancorp PR	19	19	14.03	11.96
FCNCA	First Citizens Bancshares Inc NC	16	18	13.29	14.38
FHN	First Horizon National Corp	31	26	14.97	17.34
FMER	Firstmerit Corp	11	10	11.86	11.46
FULT	Fulton Financial Corp PA	16	16	11.20	11.40
HBAN	Huntington Bancshares Inc	54	51	11.16	12.82
IBOC	International Bancshares Corp	12	11	16.27	18.79
MTB	M&T Bank Corp	65	68	8.76	9.45
NYB	New York Community Bancorp Inc	32	42	7.86	8.87
NTRS	Northern Trust Corp	82	82	13.00	13.20
BPOP	Popular Inc	38	34	11.16	14.87
PVTB	Privatebancorp Inc	10	12	10.13	12.25
SIVB	SVB Financial Group	10	12	13.74	15.04
STSA	Sterling Financial Corp	12	10	9.10	10.50
SUSQ	Susquehanna Bancshares Inc	13	13	11.13	13.51
SNV	Synovus Financial Corp	35	32	11.06	13.06
TCB	TCF Financial Corp	16	17	11.20	10.35
UMBF	UMB Financial Corp	10	11	13.93	12.61
VLY	Valley National Bancorp	14	14	12.07	10.73
WBS	Webster Financial Corp	17	17	12.00	12.94
WTFC	Wintrust Financial Corporation	10	12	9.10	12.70
ZION	Zions Bancorp	55	51	9.33	13.97

Table A: *Banks in Sample*: The table gives key firm size and capitalization characteristics of the 46 banks in the main sample. SOURCE: Compustat.