Forward-Looking Provisions and the Economic Cycle: Credit Supply and Real Effects

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Abstract

We analyze the effects of provisioning based on *expected*—rather than *incurred*—credit losses. For identification, we use credit registry data (matched with firm- and bank-level balance sheets, including private firms) to exploit a 2007 Colombian reform introducing this provisioning scheme. Using a short window around implementation we find a substantial credit contraction and negative real effects among affected firms (i.e., those requiring more provisioning). Using a longer window that includes periods of adverse macroeconomic before and after the accounting reform, we find that these patterns of credit reduction are stronger in adverse periods, which raises concerns about credit procyclicality. All these effects are stronger for less-capitalized banks. These banks increase the search-for-yield in unaffected loans, raise loan portfolio concentration and have higher ex-post loan defaults. That is, the overall impact of forward-looking provisioning on the economic cycle crucially depends on banks' capitalization.

Keywords: Loan provisions, IFRS9, ECL, corporate real and credit supply effects of accounting, bank risk-taking, procyclicality.

JEL Classification: E31, G18, G01, G21, G28.

1. Introduction

Following the 2008 financial crisis, the method used to measure impairment allowances—based on *incurred* credit losses (ICL)—has been gradually replaced by an alternative approach of building provisions based on *expected* credit losses (ECL).¹ This move is considered to be a major development in the history of the banking industry, with the American Banks Association describing it as "the most sweeping change to bank accounting ever".² It responds to the perception that under the ICL model, losses were recognized "too little and too late" (e.g., Gaston and Song, 2014).³

However, whether forward-looking provisioning necessarily reduces the amplitude of economic fluctuations remains an open question. On the one hand, provisioning based on the ECL model, by leading to a timelier recognition of losses, is expected to reduce the procyclicality of bank credit, mitigating the impact of future adverse macroeconomic periods, including the severity of recessions and crises (Laeven and Majnoni, 2003; Jiménez et al., 2017; Huizinga and Laeven, 2019). On the other hand, by increasing the cost of lending (provisions affect bank profits and capital), ECL provisioning could have adverse consequences in the supply of commercial credit, especially in periods of financial stress where the need for financing is acuter.⁴ Moreover, the effect of ECL provisioning on bank risk-taking is also unclear. While tighter provisioning incentivizes banks to avoid borrowers requiring high provisions, it may also induce banks to search for yield among less-impacted borrowers to avoid lower profitability (Freixas and Rochet, 2008).

¹ The standards IFRS9 and CECL are crucial examples. The IASB introduced the ECL in the accounting standard IFRS9, which was implemented in 2018 in more than 120 countries. In the U.S., the FASB did so in ASU 2016-13 (also known as "CECL" short for "Current Expected Credit Loss"). The implementation of CECL in the U.S. started in 2020, but due to COVID-19 crisis, regulators allowed for a delay in its implementation.

² Other key institutions share this view, e.g., the Global Public Policy Committee states that "For many banks, the adoption of ECL accounting will be the most momentous accounting change they have experienced".

³ During the Global Financial Crisis of 2008, the provisioned amounts under ICL were not sufficient to face the downturn. As such, banks had to create additional provisions resulting in lower earnings at a time when profits were low or even negative. This reduced the banks' regulatory capital during the economic downturn, leading to severe funding and capital pressures, forcing many banks to deleverage. They did so by reducing the amount of risk-weighted assets—restricting new lending—thereby exacerbating procyclicality in the credit cycle.

⁴ The possibility that provisioning under expected losses could lead to credit tightening, amid the COVID-19 pandemic, was the main reason for the delay in the implementation of the CECL in the U.S. (FDIC, 2020), along with a delay in the implementation of ECL under IFRS9 (IFRS, 2020). Similarly, the Bank of England stated that "it would not be reasonable to reevaluate a borrower's idiosyncratic risk at this time (...) in calculating expected losses" (Benediktsdottir, Fedlber, and Liang, 2020).

Overall, despite the relevance and the intriguing nature of the question, there is still a paucity of empirical evidence on how the effect of ECL provisioning varies with the economic cycle (and hence affects procyclicality). This gap in the literature is understandable, as the vast majority of accounting standards using the ECL model have only been implemented very recently. In this paper, we overcome this difficulty by studying a pioneer implementation of ECL provisioning in Colombia. The regulation was unveiled in 2007, offering a time window long enough to include periods with varying degrees of financial and economic stress, both before and after the new regulation.

After the Latin American financial crisis of the late 1990's, Colombia reformed the system used by banks to assess credit risk. The new system—Sistema de Administración de Riesgo de Crédito-included a provisioning scheme, similar to ECL provisioning in IFRS9 and CECL, based on expected losses. This rule is especially suited to identify the longer-term impact of recent ECL provisioning schemes. First, given that the Colombian regulation was introduced before the Global Financial Crisis, our setting offers a rare opportunity to analyze the effect of ECL provisioning during the adverse aggregate economic conditions that triggered the global shift to ECL.⁵ The length of our sample period allows us to contrast the effect of the ECL model in several periods of varying financial stress and economic growth, before and after the implementation of the reform. Second, the Colombian setting allows us to exploit a combination of proprietary administrative datasets whose granularity offers unique opportunities for the empirical identification of the effect of ECL provisioning on bank lending (including credit supply and risk taking by banks) and on the real economy (i.e., firm-level real effects). Finally, the identification of the effect of the Colombian rule change is enhanced by plausible exogenous cross-sectional variation stemming from the pre-existing legal framework (the provisioning scheme defines the level of provisions based on an arbitrary rule on firm size).⁶

⁵ This analysis is not yet possible in the case of IFRS9 and CECL as these standards have been introduced only recently. Furthermore, there has been a relaxation of its implementation during the COVID period.

⁶ The regulation imposed that banks provision once they lend, not when there are signs of incurred losses during the life of the loan. Expected losses were not based on the "internal rating" approach but rather on a statistical relationship given by the regulator. This procedure—which is similar to the "standardized approach" commonly used in banking—required different provisioning depending on several parameters, a key one being firm size (see Section 2 for details). Importantly, our results are not driven by size as we compare firms close to the policy threshold. Moreover, we analyze other (salient) thresholds for firm size (smaller and larger than the policy one) and do not find any results around those placebo thresholds.

Our empirical tests are based on comprehensive loan-level data from the universe of commercial loans granted by banks operating in Colombia. We complement this data with accounting information of banks and borrowing firms. We use the supervisory credit registry with loan level information of all corporate loans in a bank-dominated economy. For each loan we have information not only on volume but also on other loan terms such as loan interest rate, collateral, maturity, as well as defaults.⁷ Moreover, we match this dataset with supervisory bank-level information and with firm balance-sheet data (e.g., firm sales and size) including information for non-listed (private) firms.

To analyze the impact of the accounting reform, we use two time windows around the Colombian reform. Our first set of tests focuses on a short window of one year before and after the implementation of the new provisioning scheme (i.e., 2006Q2 to 2008Q2). Critically, the window ends before the failure of Lehman Brothers in September 2008. To analyze how the effect of the ECL varies with the economic cycle, our second set of tests expands the window from 2001 to 2012. This longer window allows us to exploit variation in aggregate financial and economic conditions.⁸ To the extent that there are periods of high CDS spreads (or low GDP growth) both before and after the accounting reform, we can compare the different regulatory effects in normal and adverse macro periods. That is, in addition to cross-section variation, our setting offers enough time variation to compare the effectiveness of both ICL and ECL provisioning during periods of both low and high financial or economic stress.

Analyzing the short window around the implementation of the new rule, we observe a doubling in the level of provisions in the quarters immediately after the introduction of the regulation. This stark increase in provisions cannot be explained by deterioration in economic conditions, as the Colombian economy was expanding around the implementation of the new provisioning scheme.⁹ Moreover, the rise in provisions exhibits substantial heterogeneity reflecting specific features of the regulation. Consistent with the key parameters dictating the

⁷ Note that most credit registers in the world do not have loan rates.

⁸ We measure financial conditions using the CDS spread on Colombian sovereign bonds, and measure economic conditions using regional GDP growth which allows us to exploit within-country variation.

⁹ During the 2006Q2-2008Q2 period, the economy was expanding as indicated by all major economic indicators displayed in Figure 1. Furthermore, the IMF's (Article IV) assessment of the Colombian economy (IMF, 2008) stated that "Sound economic policies have contributed to strong economic performance in recent years. This performance has been accompanied by a significant reduction in macroeconomic vulnerabilities".

level of provisioning, the increase in provisions is concentrated among loans granted to borrowers more affected by the rule, and among non-collateralized loans.

We then gauge the impact of the new provisioning scheme on lending, using a difference-in-difference approach to exploit the key regulatory drivers of the level of provisioning imposed by the new scheme. Under the new regime, the volume of loans extended to borrowers requiring higher provisions declines by 31 percent relative to the loans given to similar firms less impacted by the reform. This relative decrease in credit volume is coupled with an increase in loan interest rate of 5 percent, along with a decrease in maturity of 5 percent as well. Furthermore, we also find that the reform significantly affects the real activity of borrowers requiring relatively higher provisions (i.e., the borrowers most affected by the accounting rule) with liabilities, sales, and assets of these borrowers declining on average a touch below 30 percent. Importantly, the effects are significant after the implementation of the accounting reform, but not before (i.e., it satisfies the parallel trend assumption). Additionally, the effects are only significant around the regulatory (real) threshold, but not around placebo (salient) thresholds (below or above the policy threshold).

We then use a much longer window around the introduction of the rule change to explore the impact of the new provisioning scheme as a function of varying financial conditions. We find that the credit contraction induced by the new accounting rule is even more pronounced when the CDS spread of sovereign bonds is higher (i.e., under adverse financial conditions).¹⁰ The negative effect on real outcomes is also stronger in periods of financial stress, with lower survival rates of firms requiring higher level of provisions. The patterns are unlikely to be driven by a differential effect of adverse economic conditions on firms with different size, as the size of our treatment and control firms is very similar. Moreover, we do not find significant results using placebo thresholds below (or above) the regulatory threshold. Critically, these results suggest that the negative effect of the new provisioning scheme on credit is more pronounced when the economic conditions deteriorate, which raises concerns of increasing procyclicality of bank credit.

To further understand the mechanisms for the results, we obtain additional insights from exploring variation based on the level of bank capitalization. We find that the impact

¹⁰ As a robustness test, we measure variation in economic conditions by GDP growth at the local level (note sovereign CDS are at the aggregate level). GDP growth exhibits substantial variation not only before/after the accounting reform but also at the national/local level. Our inferences remain unaltered.

on the contraction in both credit supply and real outcomes is significantly stronger in the subsample of "weaker" banks (i.e., banks with lower levels of capital). We also find that, after the introduction of the new rule, banks with lower capital expand relatively more their credit supply among borrowers with higher yield, which tend to be riskier. This suggests that, after reducing credit to the borrowers for whom the new rule requires a higher increase in provisions, weaker banks engage in search-for-yield among the borrowers that are less impacted by the reform. That is, the new rule induces risk-taking among weaker banks, consistent with a strategy compensating for the lower profitability from granting a lower credit volume to a segment of borrowers.

To understand the net effect of the above results, we aggregate the data at the loan portfolio level and examine changes in portfolio characteristics of banks. Under the new regulation, weaker banks end up with more concentrated portfolios across borrowers and across economic sectors. Moreover, they also exhibit higher ex-post loan defaults, suggesting that weaker banks do not replace riskier borrowers with a less risky portfolio strategy.

Our results have implications for the ongoing debate on the economic consequences of estimating loan loss provisions based on ECL, a provisioning scheme embraced by recent accounting standards around the world (i.e., IFRS9 and CECL). ECL provisioning was proposed as a response to the perception that under the ICL model bank provisioning was insufficient and untimely, thereby increasing procyclicality.¹¹ However, the COVID-19 crisis revealed that, under certain circumstances, the ECL can also induce procyclicality. The unexpected nature of the pandemic would have required that provisions based on expected losses be taken ahead of defaults and hence be front-loaded, thereby affecting banks' income and capital levels (Borio and Restoy, 2020). This concern triggered a variety of responses from bank regulators and supervisors, accounting regulators, and legislators.¹²

Our results support the validity of this concern. While our analyses do not directly test the effect of the Colombian rule change on *aggregate* credit supply and *macroeconomic* real effects, using a diff-in-diff approach we document that: (i) around the policy

¹¹ See Laeven and Majnoni (2003), Beatty and Liao (2011), Bushman and Williams (2012), Huizinga and Laeven (2019).

¹² As explained by Borio and Restoy (2020), the authorities' response included three types of initiatives: (i) allowing banks to temporarily suspend the application of the ECL model, (ii) enhancing existing arrangements so as to temporarily sterilize the effect on regulatory capital, and (iii) issuing pragmatic implementation guidance to avoid a boost in provisions. For more details, see López-Espinosa et al. (2021).

implementation (in good times) the ECL induces a reallocation of credit away from riskier borrowers, which are the ones most affected by economic crises. (ii) Effects are stronger during adverse macroeconomic times. (iii) The effects of ECL provisioning on the economic cycle depends on the level of banks' capital. (iv) The new scheme can have unintended effects on banks with lower capital levels and on borrowers (i.e., including lower survival rates). Importantly, our results indicate that the ECL does not necessarily result in weaker banks assuming less risk. These banks avoid borrowers requiring higher regulatory provisions but assume risk by searching for yield among borrowers requiring less provisioning. These banks also end up with concentrated loan portfolios and with more ex-post loans defaults. The effect becomes more acute when economic conditions deteriorate, which is at odds with the notion that ECL provisioning mitigates procyclicality in bank credit.

Our paper relates to the burgeoning literature on the effect of switching from ICL to ECL provisioning. This literature is mainly focused on the recent implementation of IFRS9. Using reconciliation disclosures on the day-one impact of IFRS9 in the European Union, Gaffney, and McCann (2019), Ertan (2020), and Löw, Schmidt, and Thiel (2019) provide evidence consistent with IFRS9 inducing an increase in provisions and a decline in credit.¹³ Unlike our study, none of these papers analyzes how the effect of ECL provisioning varies with the economic cycle. A key advantage of our setting is that, unlike the recent introduction of IFRS9, the Colombian regulation was implemented in 2007, thereby offering time series variation to compare the effect of ECL provisioning during adverse macroeconomic periods to that in times of relatively benign macroeconomic conditions.¹⁴

Our evidence also adds to this previous research in other ways. First, our setting offers a unique opportunity for the empirical identification of the effect of ECL provisioning on lending. The granularity and comprehensiveness of our combined datasets allows us to address two unexplored consequences of ECL provisioning, namely whether the credit

¹³ This recent literature includes papers that explore other aspects of the accounting change. López-Espinosa, Ormazabal, and Sakasai (2020) document an increase in the informativeness of LLP amounts reported under ECL provisioning (vis-à-vis those reported under ICL) when credit conditions are relatively more adverse. Beatty and Liao (2020) show that, compared to the ICL model, analyst provision forecasts have incremental predictive power for future non-performing loans. Harris, Khan, and Nissim (2018) and Lu and Nikolaev (2019) develop models for estimating expected credit losses using publicly available information.

¹⁴ Another stream of research on the relation between bank provisioning and economic cyclicality studies the dynamic component of the provisioning schemes introduced as part of the macro-prudential toolkit of some countries (Agénor, and da Silva, 2016; Jiménez et al., 2017; Gómez et al., 2020). The provisioning scheme we study is fundamentally different from the dynamic provisions in prior studies.

contraction induced by ECL provisioning affects firms' outcomes (i.e., "real effects") and banks' risk-taking behavior (i.e., "search for yield", portfolio concentration and ex-post loan defaults). Ours is also the first paper documenting that the effect of ECL provisioning critically depends on banks' capital.¹⁵

We also contribute to the literature on the credit channel during normal and crisis times (e.g., Amiti and Weinstein, 2018; Ivashina and Scharfstein, 2010; Chodorow-Reich, 2014; Bolton et al., 2016; Di Maggio et al., 2017; Beck et al., 2018). We add to this work by providing evidence on whether the effects of provisioning based on expected vs. incurred credit losses vary with the credit cycle. Our paper also speaks to research showing that bank capital requirements affect credit supply, which in turn induces real effects (e.g., Bridges et al. (2014), Fraisse, Lé, and Thesmar (2020)). We extend this literature by documenting that the impact of provisioning based on expected losses critically depends on the level of bank capitalization. Finally, our results on risk-taking—search-for-yield and portfolio concentration—are in line with those in Di Maggio and Kacperczyk (2017) in the context of the impact of zero lower bound interest rate policy on the U.S. money fund industry, which fundamentally differs from the accounting rule we analyze.

The rest of the paper is organized as follows. Section 2 provides the institutional background. Section 3 describes the data. Sections 4, 5, and 6 present, respectively, the analysis exploiting variation around the policy implementation, the analysis exploiting variation in periods with benign and adverse macroeconomic conditions, and the analysis exploiting variation in bank capital. Section 7 concludes.

2. Institutional Background

The Latin American financial crisis in 1998 generated the perception that banks' credit management systems were not effective. As a response, Colombia's financial regulator, the *Superintendencia Financiera de Colombia*, pushed for a major reform of the risk-management systems of Colombian banks. In particular, the regulator required banks to implement a risk management system known as *Sistema de Administracion de Riesgo de Credito* (henceforth we refer to the system as "SARC"). SARC was introduced through the

¹⁵ To the extent that this paper is focused on loan loss provisions (LLP), our study also complements a sizable literature in accounting research that studies LLP reporting. See Ryan (2011) for a survey of this literature and López-Espinosa et al. (2021) for an updated discussion incorporating recent papers.

"Circular Externa 11", which established general principles for the evaluation of credit risks.¹⁶ The new approach was aimed at addressing perceived deficiencies in risk assessment practices, including ad-hoc classification of risks and insufficient provisioning (SFC, 2013). SARC was implemented in three phases extended over several years.¹⁷

The methodological framework to estimate expected losses of commercial loans was introduced in 2005—in a later phase of the implementation of SARC—and is commonly known as *Modelo de Referencia de Cartera Commercial*.¹⁸ A central point of the new risk management system was a provisioning scheme based on the expected losses of each individual loan. The methodology entered into effect on July 1st, 2007, for all commercial banks operating in Colombia. As shown in Figure 1, when the new model was first implemented in the third quarter of 2007, the macroeconomic conditions in Colombia were stable (the spillover of the 2008 financial crisis is not noticeable in the economic indicators until 2009).¹⁹

Remarkably, the modifications introduced by the new provisioning scheme capture the essence of the Expected Credit Loss (ECL) model in recent accounting standards IFRS9 and CECL. That is, the new rule is based on the idea of provisioning based on expected, rather than incurred losses. To illustrate, under Colombian regulation, provisions are computed based on the following expression,

$$Expected Loss = PD*EAD*LGD$$
(1)

where *PD* is the probability of default, *EAD* is the exposure at default that is, the outstanding debt at the time of default, and *LGD* is the expected loss given default.

Table A2 in the Appendix illustrates the difference in the procedure to compute loan provisions before and after the regulatory change (see also Table A3 in the Appendix for details on parameter values given the type of collateral). The new Colombian rule introduces

¹⁶ SARC modified the second chapter of Circular Externa 100 of 1999, which is focused on credit risk management. Circular Externa 11 of 2002 established the timing for the implementation of SARC.

¹⁷ The three phases were the following: (i) First, banks were required to prepare and present an implementation plan, (ii) second, banks were required to gather historical data and build information systems and software for the assessment and management of credit risk (iii) finally, banks were required to apply the methodology to estimated expected losses.

¹⁸ The framework is defined in Circular 052 of 2004 and in Circular 020 of 2005 (new Appendix III of chapter 2 of Circular Externa 100 of 1999).

¹⁹ The Central Bank began to ease credit conditions at the end of 2008.

three changes in this computation. First, similar to IFRS9/CECL the new scheme imposes a timelier recognition of losses. As illustrated in the example, the new scheme prescribes a provisioning amount even at origination, when the loan is not in arrears. Moreover, when the loan is still performing (i.e., less than 90 days in arrears) the new scheme imposes substantial provisioning (see the values of the parameters in Tables A2 and A3 in the Appendix)²⁰. In contrast, the previous rule did not impose substantial provisions until the loan was non-performing (i.e., more than 90 days in arrears). Second, under the new methodology the probability of default depends on whether the volume of assets of the borrower is below/above an arbitrary regulatory threshold, namely COP 2 billion.²¹ Third, the recovery rate is a function of the type of loan collateral and the number of days in arrears (this reflects heterogeneity in the characteristics of the collateral that is relevant for credit risk).²²

In sum, the key feature of the Colombian provisioning methodology is the recognition of loan provisions based on expected—rather than realized—credit losses. In a way, by introducing the new scheme, the Colombian regulator was a pioneer in the implementation of ECL provisioning. This suggests that studying the effect of the Colombian regulatory change can shed light on the potential economic consequences of recent rule changes IFRS9 and CECL. This is especially important considering that there is limited historical data to assess the effect of these accounting standards.

3. Datasets

We merge three proprietary datasets. The first dataset contains supervisory quarterly information on commercial bank lending at the loan level. The second dataset contains annual

²⁰ The regulation defines two PD matrices: A and B, depending on the economic conditions. In Table A2 in the Appendix, we report the PD of matrix A, which was used by the banks in 2007 to compute the expected loss provisions and that was stated for periods of high economic growth. The PD of matrix B has lower PDs compared to matrix A and was stated for periods of low economic growth. Later on, in July of 2010, the dynamic provisioning scheme was implemented and incorporated new conditions to accumulate and de-accumulate loan provisions based on financial and economic conditions.

²¹ The regulatory document includes matrices containing estimates of the 12-month probability of default as a function of firm size (SARC classifies commercial firms as "Small", "Medium", and "Large"—depending on the value of their assets) and the credit rating assigned to the borrower. The number of days in arrears is considered not only in the computation of PD, but also in that of LGD. The regulatory document also provides specific LGD values as a function of loan collateralization.

 $^{2^{\}hat{2}}$ Similar to the Colombian rule, both IFRS9 and CECL provide specific guidance on the quantification of *PD*, *EAD*, and *LGD*.

financial information at the firm level from non-financial firms. The third dataset contains monthly financial information at the bank level.

The first dataset uses supervisory information on the universe of commercial loans. The data is obtained from reports sent quarterly by every commercial bank to the Colombian financial supervisor (*Superintendencia Financiera de Colombia*). Reports are mandatory, updated electronically, and include detailed characteristics of all the new and continuing loans made to firms by every bank in Colombia. All loans must be reported regardless of their size. For each loan, the dataset includes the issuing bank, the borrower, the outstanding amount, the (annualized) interest rate, the maturity of the loan, the fraction covered by collateral, and some information about the borrowing firm (size, location, and sector). The credit registry also provides information on the value of provisions at the loan level.

We aggregate the observations at the firm-bank-quarter level, to which we refer as "loan" level. Average loan characteristics are weighted by loan volume. Aggregated loan volume is the sum of the value of all outstanding loans that a firm holds from a certain bank in a given quarter (see definition in Table A1 in the Appendix). Since loans are tracked quarterly, we can observe their evolution until maturity. Therefore, we observe whether the debtor obligations are being fulfilled, and if they are not, by how much and for how long each loan has been underperforming. Lenders are mandated to classify their borrowers into categories based on the volume of the borrowers' reported assets. We exclude from our study loans to individuals pursuing entrepreneurial activity, as our study focuses on credit granted to corporations.

The second dataset includes financial and balance sheet information at the firm level. The data is extracted from the Financial Statement Database processed by the *Superintendencia de Sociedades*.²³ The database includes a unique identification number, company name, place of incorporation, sector, balance sheet information (i.e., assets, liabilities, and equity), and income statement information. We remove observations with negative assets, liabilities, and operational income. In addition, we exclude firms undergoing liquidation at the start of the sample period.²⁴

²³ The *Superintendencia de Sociedades* is a regulatory agency of the Government of Colombia that oversees corporations (see <u>https://www.supersociedades.gov.co/SitePages/Inicio.aspx</u>).

²⁴ As established by Law 550 from 1999, firms in liquidation are temporarily protected from creditors to give them time to restructure their operations, akin to Chapter 11 in the United States.

The third dataset contains financial information reported by all commercial banks to the Colombian regulator. The data includes detailed monthly balance sheets and income statement information on the reporting banks. We use these data to construct bank-quarter level measures of bank size, risk, capital, and performance. Our dataset includes information on 29 commercial banks, 11 of which are foreign. All banks are privately owned. Total assets are not highly concentrated across banks. For example, in the quarter prior to the introduction of the reform, the top 5 (10) banks had 58 (82) percent of total assets. Furthermore, of the top 5 (10) banks only 1 (1) was foreign.

We compare the relative impact of the Colombian rule change on firms around the lower regulatory size threshold used to classify borrowers, namely COP 2 billion (roughly USD 1 million). In particular, we focus on firms with assets (measured in 2005) between COP 1.5 billion and COP 2.5 billion (i.e., roughly USD 0.75 million and 1.25 million, respectively).²⁵ Focusing our tests on firms around the regulatory threshold enhances empirical identification; these are firms with similar characteristics split into two groups based on a relatively arbitrary criterion. In particular, the arbitrariness of the threshold mitigates the concern that our inferences could be affected by a differential effect of adverse economic conditions on firms with different size (we check other firm size thresholds, below and above the policy one, as placebo tests). Finally, the sample period in our first set of tests is defined as a symmetric window of one year (four quarters) around the Colombian reform, namely from the second quarter of 2006 to the second quarter of 2008. Our sample consists of 17,324 firm-bank-quarter observations, 29 banks and 2,560 firms.

Table 1A presents descriptive statistics of the characteristics for this sample at the firm-bank-quarter, firm-year, and bank-quarter levels. The average provision rate is around 1.4 percent of loan volume. The mean (median) loan volume is COP 127 million (COP 81 million), which corresponds to roughly USD 67,000 (USD 40,000), while the average interest rate is 18 percent.²⁶ Table 1A also shows that the average collateral rate is 17 percent, the

²⁵ The size threshold is defined by the Law 905 of 2004 that differentiated among micro, small, medium, and large firms depending on the number of employees and the value of assets. The financial regulator used the size definition in Law 905 of 2004 to set the size threshold for the computation of the loan provisions in the SARC.

²⁶ Around 97 percent of the number of loans in our dataset are denominated in Colombian pesos. We restrict our analysis to loans in domestic currency. Including these loans does not alter our results in any significant way as they only account for less than 10 percent of the total value of loans.

average maturity is close to two years, and that 22 percent of loans are in arrears (i.e., the payments are at least one day late).

Table 1B, presents a descriptive comparison of firms slightly below and above the regulatory size threshold. The quarterly variables are measured in 2007Q2, that is, in the quarter prior to the implementation of the reform (consistently, the annual variables are measured in 2006, that is, in the year prior to the implementation of the reform). As shown in the last two columns, the statistical distribution of all variables is similar in the two groups, with all normalized differences statistically insignificant (Imbens and Wooldridge, 2009). The average loan loss provisions for the observations below (above) the regulatory threshold are, respectively, 1.3 and 1.4 percent of the outstanding loan volume. The corresponding average interest rates are, respectively, 18.3 and 18.7 percent, the average maturity of loans is, respectively, 1.8 years and 2 years. The percentage of loans in arrears is also similar in the two groups (20.3 and 19.3, respectively). Observations below (above) the regulatory threshold are also indistinguishable across several firm-level variables such as total value of loans, liabilities, and sales. Finally, Table 1B, also shows that the banks that serve both groups of firms also exhibit similar capital ratios and amount of non-performing and delinquent loans.

4. Short-window analysis around the implementation

In our first set of tests, we focus on observations within a window of four quarters around the implementation of the new provisioning scheme, namely between 2006Q2 and 2008Q2. We start with a short-window analysis because such an exercise is less likely to be confounded by the effect of economic cycles and thus enhances identification. Moreover, a deep understanding of the effect of the new regulation requires testing whether the rule already had an effect at the outset or whether the rule had either a leading or a lagged effect.

While overlapping in time, our short-window analysis is not confounded by the effect of the Great Recession. Unlike recent provisioning rules, the Colombian scheme entered into effect before the Global Financial Crisis that followed the collapse of Lehman Brothers in mid-September 2008. Moreover, the timing of the recession varied by country. In terms of expectations there was initial uncertainty about whether and how the crisis in Wall Street would end up affecting emerging markets (Eichengreen, 2009). As shown in Figure 1, during the time of our short-window analysis around implementation, Colombia experienced strong economic growth (more than 5 percent in all periods), stable unemployment, and a rising stock market (the effect of the 2008 financial crisis was not noticeable until later on, in 2009). Consistently, top-left panel in Figure 2 shows that since 2006 the Colombian CDS spread on 5-year sovereign debt did not increase in a significant manner until 2009.

4.1. Effect on the volume of provisions

4.1.1. Graphical Evidence

As an initial step to understand the impact of the new provisioning scheme, we analyze graphically the evolution of the volume of provisions around the Colombian accounting reform. We conduct this analysis to confirm that the new rule indeed had a significant effect in bank provisioning (i.e., the regulation was effectively enforced). Figure 3 presents the average rate of provisions to outstanding loans for the quarters immediately before and after the implementation of the new rule. To further identify the effect of the reform, we split the sample into groups of borrowers that would be impacted differently by the new rules. In particular, we explore cross-sectional variation in the effect of the accounting change on the volume of provisions along the three main parameters used to compute the regulatory provision rate: borrower size, collateral, and delinquency (i.e., loans with significant numbers of days in arrears).

In Figure 3, panel to the left, we split the sample into the size of the firm falls little above or little below the regulatory size threshold. Two important patterns emerge from this analysis. First, the average value of provisions increases significantly immediately after the reform, not before. Second, the effect of the regulation is significantly stronger among firms below the threshold. More concretely, the gap between the average provisions of the two groups widens after the accounting change (from virtually zero to roughly one percentage point of outstanding loans). In Figure 3, middle panel, we split the sample into loans with and without collateral. The figure shows that the increase in provisions is more pronounced among loans without collateral. After the accounting change the difference between the provisions rate of loans without collateral increases from 0.1 percentage point to 1 percentage point. In Figure 3, panel to the right, we split the sample into sectors with above/below median default rates (delinquencies greater than 90 days). Consistent with loan loss

provisioning under the new rule being more sensitive to the number of days in arrears, Panel C shows that, firms in sectors with higher default rates exhibit a relatively higher increase in the level of provisions. After the implementation of the new scheme the provisions rate in riskier sectors increases from 0.2 percentage point higher to 0.9 percentage point higher, relative to that in less risky sectors.

Overall, Figure 3 shows that after the introduction of the new provisioning scheme, the overall level of loan loss provisions increases dramatically. The increase in provision rates is especially sharp among borrowers more affected by the regulation, namely borrowers a touch below the regulatory size threshold, without collateral, and in sectors with higher delinquency rates. This evidence is consistent with the predicted effect of the new scheme on loan loss provisions based on the key parameters defined in the regulation (i.e., borrower size, collateral, and delinquency) and thus confirms that the Colombian reform had a significant effect in bank provisioning (i.e., the regulation was effectively enforced).

4.1.2. Regression analysis

To analyze more formally the effect of the reform on the level of provisioning, we estimate the following model focusing on the four quarters before and after the implementation of the regulation (2006Q2-2008Q2):

$$Provision_{f,b,q} = \alpha + \beta_1 Post_q + \beta_2 Higher_Treatment_f + \beta_3 Higher_Treatment_f^*Post_q + (2)$$

$$\beta_4 Collateral_{f,b,q} + \beta_5 Collateral_{f,b,q}^*Post_q + \beta_6 Arrears_{f,b,q} + \beta_7 Arrears_{f,b,q}^*Post_q + \varepsilon_{f,b,q}$$

where *Provision*_{*f,b,q*} is the ratio of provisions to loan volume given to firm *f* by bank *b* in quarter *q*. *Post*_{*q*} is an indicator variable that equals one starting in the third quarter of 2007 (i.e., the first quarter of implementation of the accounting change), and zero otherwise. *Higher_Treatment*_{*f*} is an indicator that equals one if the volume of assets is between COP 1.5 billion and COP 2 billion (i.e., the regulatory threshold defining the amount of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2), and zero otherwise (i.e., zero for firms with assets between COP 2 billion and COP 2 billion). Firms below COP 2 billion are subject to a higher level of treatment, as the regulation imposes higher provisions on these firms. *Collateral*_{*f,b,q*} is the fraction of firm *f*'s outstanding loans from bank *b* in

quarter q that are covered by the firm's assets (the fraction is weighted by loan volume). Arrears_{f,b,q} is an indicator of whether firm f holds a loan in arrears from bank b in quarter q.

Table 2 presents the results of this analysis. In columns (1) and (2) we conduct the analysis separately for the four quarters prior and after to the reform. Column (1) shows that, prior to the implementation of the new provisioning scheme, bank provisions were unrelated to borrower size and to loan collateral. Furthermore, it also shows that the provision rate of loans in arrears have a provision rate 0.38 percentage point higher. In contrast, column (2) shows that, under the new rule, provisions are higher for firms with *Higher_Treatment=*1, for loans without collateral, and for loans in arrears. Column (3) presents the results of estimating equation (1) pooling observations from the four quarters before and after the implementation of the new rule. Column (3) confirms that, under the new provisioning scheme, the average provision rate of loans is 2.3 percentage points higher than in the quarter prior to the reform (from around 1.4 percent). Column (3) also confirms that the increase in provisions after the reform is concentrated among firms with *Higher_Treatment=*1 and uncollateralized loans (the increase in provisions is also more pronounced among loans in arrears, but the difference is not statistically significant).

One potential concern about the results in columns (1)-(3) is that the documented increase in provisions could be confounded by a simultaneous increase in loan defaults (such an increase in loan defaults could be a random coincidence or could reflect the possibility that the regulation was introduced in anticipation of a deterioration in the credit conditions). In columns (4) and (5) we assess the empirical validity of this concern. In particular, we replace the dependent variable with $Default_{f,b,q}$, an indicator variable that equals one if firm f holds a loan from bank b in quarter q that is more than 90 days past due. In contrast to the results in column (3), the coefficient on $Higher_Treatment_f*Post_q$ and the coefficient on $Collateral_{f,b,q}*Post_q$ in columns (4) and (5) are not statistically significant. That is, we find no significant increase in the default rates in the quarter of the implementation of the reform.²⁷ In summary, the results in Table 2 confirm that the implementation of the accounting change induced an increase in the level of provisions, particularly for firms below

²⁷Moreover, the credit quality remains stable during 2007-2008 as shown in *Reporte de Estabilidad Financiera*, 2009 produced by the Colombian central bank.

the regulatory threshold defining the amount of provisions (i.e., firms with *Higher_Treatment=*1), uncollateralized loans, and (to a lesser extent) loans in arrears.

4.2. Effects on the credit supply

We next study whether the increase in provisions induced by the reform affects credit supply. Specifically, we estimate the following model:

$$y_{f,b,q} = \alpha + \sum \beta_q Higher_Treatment_f^*Quarter_q + \gamma_{f,b} + \gamma_{b,q} + \varepsilon_{f,b,q}$$
(3)

where $y_{f,b,q}$ are a series of loan-level variables—provisions, volume, maturity, and interest rate—aggregated at the firm-bank-quarter level (i.e., firm *f*, bank *b*, and quarter *q*). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is between COP 1.5 billion and COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform, and zero for the remaining firms with assets between COP 2 billion and COP 2.5 billion (recall that firms below COP 2 billion are subject to a higher level of treatment, as the regulation imposes higher provisions on these firms). To the extent that firms around the threshold are similar in size, the variation in treatment is relatively exogenous. *Quarter_q* is an indicator for quarter *q*. Equation (3) also includes firm-bank fixed effects $\gamma_{f,b}$, to control for time-invariant firm-bank characteristics (including the determinants of firm-bank matching), as well as bank-quarter fixed effects $\gamma_{b,q}$ to control for quarterly movements in credit supply at the bank level. We exclude the quarter prior to the implementation of the new rule—2007Q2—so that all coefficients of interest are relative to that quarter. Standard errors are double-clustered at the firm-bank and quarter levels.

Figure 4 presents the results of estimating equation (3) for loan volume, interest rate, and maturity. For completeness, we also re-estimate equation (3) using provision rates as alternative dependent loan-level variables. In consistency with prior analyses, Panel A of Figure 4 shows that, under the new provisioning scheme, the increase in provision rates is significantly stronger for firms with higher provisions. By the end of our sample period, the average provision rate of firms below the size threshold is 4 percent larger than that of firms above the size threshold (relative to the quarter of the implementation of the reform). This relative increase in the provision rate of loans to firms with higher provisions increases the opportunity cost associated with lending to this group of firms. This suggests that the

implementation of the new provision scheme could lead to a relative tightening of credit terms for firms with higher provisions.

The evidence in Panels B, C, and D of Figure 4 is consistent with this idea. Panel B shows that, under the new provisioning scheme, the volume of lending to firms with higher provisions gradually declines relative to that of firms with lower treatment intensity. By the end of the sample period, the value of loans to firms with a size immediately below the regulatory threshold is 10 percent lower than that of firms immediately above that threshold. Consistent with a tightening of lending conditions to firms with higher provisions, Panel C shows a relative increase in the interest rate paid by firms with higher provisions on their loans. By the end of the sample period the difference in the interest rate charged to firms with higher provisions relative to that of firms with less treatment intensity increases 0.6 percentage points relative to the quarter of the implementation of the reform. Similarly, Panel D shows a relative decline in the maturity of loans to firms with higher provisions (around 6 percent), relative to the quarter of the implementation of the reform.

Consistent with the previous analyses, we estimate the following model to calculate the average effect of the accounting change on credit supply across firms with different levels of provisions:

$$y_{f,b,q} = \alpha + \beta Higher_Treatment_{f}*Post_{q} + \gamma_{f,b} + \gamma_{b,q} + \gamma_{s,q} + \varepsilon_{f,b,q}$$
(4)

where $y_{f,b,q}$ and *Higher_Treatment_f* are defined as in equation (3), and *Post_q* is an indicator variable for quarters after 2007Q2. In addition to the firm-bank fixed effects $\gamma_{f,b}$, and bankquarter fixed effects $\gamma_{b,q}$, we also include sector-quarter fixed effects, $\gamma_{s,q}$ to control for variations in credit demand at the sectoral level. Standard errors are double-clustered at the firm-bank and quarter level. The results of estimating equation (4) are displayed in Tables 3 through 5. Starting with Table 3, we find that banks reduce the supply of credit to firms with higher provisions. The estimated coefficients point to a relative reduction between 24 and 31 percent (columns 1-3).

Table 3 also presents placebo tests that repeat the previous analysis with alternative salient thresholds that do not coincide with the regulatory threshold (see columns 4-6 and 7-9). In contrast with those in columns 1-3, the coefficients on the interaction between *Higher Treatment* and *Post* in these placebo tests are not statistically significant, suggesting

that the results in columns 1-3 are attributable to the regulation. This evidence corroborates that our inferences are not affected by a differential effect of adverse economic conditions on firms with different size.²⁸

4.3. Effects on loan characteristics

To further understand the effect of the new rule on credit supply, we replicate the previous analysis replacing the dependent variable with two alternative loan margins. In Table 4, we use as dependent variable *Interest Rate_{f,b,q}*. This is the loan interest rate (measured in percent) of loans extended to firm f by bank b in quarter q. In Table 5, the dependent variable is *Maturity_{f,b,q}* which is defined as the (logs) loan maturity in quarter q of loan extended to firm f by bank b.

As Table 4 indicates, there is a relative increase in the interest rate charged to firms below the regulatory size threshold. The magnitude of the difference is roughly 0.8 percentage points (columns 1-3), and there is no effect on the placebo thresholds (columns 4-9). Similarly, Table 5 reveals that, after the reform, the average loan maturity of such firms declines by roughly 5 percent relative to that of larger firms (columns 1-3). Again, the coefficients on the interaction between *Higher_Treatment*_f and *Post*_q in the placebo tests are not statistically significant.

To further corroborate that the results in Tables 3-5 relate to the new rule, we exploit cross-sectional variation in the second of the main parameters determining the provision rate, namely collateralization. To capture this variation ex-ante (i.e., before the loan contract) we use asset tangibility (defined as the ratio of tangible assets to total assets), as tangible assets are easier to use as collateral than intangible assets.²⁹ As shown in Table A5B in the Appendix, we find that the effects of the regulation are less pronounced for borrowers operating in sectors with relatively more tangible assets (i.e., larger credit, lower interest rates, and longer maturities).

4.4. Real effects

²⁸ We also provide an additional robustness check by using an alternative placebo date of implementation of the reform 2006Q2 one year prior to the actual reform. Results of this test are displayed in Table A5A in Appendix and show no impact of this placebo date of reform.

²⁹ The values of tangibility used in the analysis—presented in Table A4 in the Appendix—are calculated per industry at 4-digit ISIC level.

We next analyze whether the credit contraction among firms that require higher provisioning under the new regulation, translates into an impact on the real activity of these borrowers. Whether the real effects of such credit contraction are first order is an empirical question, as borrowers can in principle switch credit suppliers. We conduct this analysis at the firm-level using end-of-year annual balance-sheet data from 2006 to 2008.³⁰ We use annual data as Colombian commercial firms are required to disclose financial reports only once a year. In particular, we estimate the following model:

$z_{f,y} = \alpha + \beta_1 Higher_Treatment_f * Pre_y + \beta_2 Higher_Treatment_f * Post_y + \gamma_f + \gamma_{b,y} + \gamma_{r,s,y} + \varepsilon_{f,y}$ (5)

where the dependent variable $z_{f,y}$ is one of the following five variables for firm f in year y. *Volume*_{f,y} is the total volume (in logs) of firm f's outstanding loans at the end of year y. *Liabilities*_{f,y} is the value of total liabilities (in logs) at the end of year y. *Revenue*_{f,y} is the value of firm f's total revenues (in logs) at the end of year y. *Assets*_{f,y} is the value of firm f's total assets (in logs) at the end of year y. Finally, *Fixed Assets*_{f,y} is the value of fixed assets of firm f(in logs) at the end of year y, proxying for investment. As in prior tests, *Higher_Treatment*_f is an indicator that equals one if the firm's volume of assets is between COP 1.5 billion and COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the year prior to the implementation of the reform (i.e., 2006), and zero otherwise. *Post*_y is an indicator that equals one if observation is after 2006 (i.e., after the new accounting regime), and zero otherwise. Finally, we also include firm fixed effects γ_f , bank-year fixed effects $\gamma_{b,y}$, and region-sector-year fixed effects $\gamma_{r,s,y}$ to control for demand shocks.³¹

Results are displayed in Table 6. Columns 1-2 reveals that, consistent with the previous results (i.e., Table 3), the volume of loans granted to firms below the regulatory size threshold exhibits a relative decline roughly 45 percent in the year of the implementation of the reform (recall that these firms receive a higher treatment in the sense that they require higher provisioning). Similarly, columns 3-4 show a relative decline in total firm liabilities (many of which are bank loans) of around 40 percent. This suggests that our sample firms

³⁰ Our sample period includes the years 2006 and 2007 because SARC was first implemented in 2007. We also include the year 2005 to check for pre-trends in our data. We exclude 2008 to avoid observations after the Lehman Brothers crisis. As a robustness check, we repeat the analysis including data from 2008. The results are similar to the ones using the sample ending in 2007.

³¹ In cases where the firm holds loans from more than one bank, the bank-year fixed effects are defined based on the bank from which the firm holds the largest value of outstanding loans.

were not able to substitute bank lending for other debt contracts. Consistent with the credit contraction having substantial real effects, columns 5-6 uncover a relative 20 percent decrease in the sales of firms with higher treatment. Similarly, columns 7-8 show a 30 percent relative decline in the assets of borrowers with higher treatment after the implementation of the new provisioning scheme. Columns 9-10 suggest fixed assets, which proxy for investment, also decline by roughly 20 percent. Overall, the evidence in Table 6 is consistent with the notion that the contraction of credit had significant negative consequences on firm investment and on firm performance.

5. Long-term analysis: Benign vs adverse financial conditions

The previous section analyzes the effect of the reform around a short window surrounding the introduction of the regulatory change. We next conduct a similar analysis taking a longer window around the introduction of the new provisioning scheme, from 2001 to 2012. This extension serves two purposes. First, a long-term analysis reveals whether the effect of the new rule documented in Tables 2-6 is permanent or temporary. Second, a longer horizon allows us to test the differential effect of new provisioning scheme in varying financial conditions and test whether provisioning under ECL reduces procyclicality (i.e., reducing credit shortage during crises), as intended by the regulator.

5.1. Effect on the credit supply

We first repeat the analysis of Table 3 (i.e., the regulatory effect on credit supply) using firm-bank-quarter observations from 2001Q1 to 2012Q4 to test for the differential effect of the regulation across varying financial conditions. More concretely, we proxy for financial stress using the CDS spread of sovereign debt.³² We introduce a double interaction *Higher_Treatmentf*CDSq-1* along with a triple interaction, *Higher_Treatmentf*Postq*CDSq-*, where *CDS* is the Colombian CDS spread on 5-year sovereign debt in foreign currency in quarter *q-1*. As in Table 3, we conduct placebo tests that repeat the analysis using salient size thresholds different from the regulatory threshold.

³² As shown in top-left panel of Figure 2, the period 2001 to 2012 in Colombia exhibits substantial variation in CDS spread of sovereign debt both before and after the reform.

Table 7 presents the result of this test. Remarkably, the relative contraction of credit induced by the new provisioning scheme—columns 1 and 2—is more pronounced under adverse financial conditions (the coefficient on *Higher_Treatmentf*Postq*CDSq-1* is negative and significant). For example, a one standard deviation increase in CDS_{q-1} is associated with a reduction in loan volume in *Higher_Treatmentf* firms of around 11 percent. This result contrasts with the main objective of provisioning based on expected losses, namely, to decrease procyclicality (i.e., to mitigate credit shortage during crisis periods). Furthermore, this impact only occurs around the regulatory size threshold (columns 1 and 2), not around the placebo thresholds (columns 3 through 6), suggesting that the results are indeed driven by the new provisioning scheme.

In addition to analyzing how the accounting regime affects the impact that financial distress has of the supply of credit, we also test for the impact that economic activity over time has on credit supply. As top-right panel of Figure 2 shows, there is large variation in the Colombian quarterly GDP real growth between 2001 to 2013. Importantly during both periods prior and post reform in 2007Q2 there is important variation in aggregate economic growth.³³ To analyze the impact that economic activity has on the supply of credit, and to control for variations in the business cycle across regions, we focus on GDP growth at a subnational level. In particular, we focus on the GDP growth of Colombian departamentos.34 As the bottom panels in Figure 2 show, there is a large dispersion of GDP growth of departamentos, with an important fraction of departamento-year pairs with negative growth, both before and after the accounting reform. To test the varying impact effect of the reform different levels of economic activity we introduce the interactions across Higher Treatment_f*GDP_{d,v} and Higher Treatment_f*Post_a*GDP_{d,v}, where $GDP_{d,v}$ is the growth of GDP of *departamento d* in year y. Again, we also conduct placebo tests using salient size thresholds different from the regulatory threshold.

Results of this exercise are displayed in Table A5C in the Appendix. Consistent with the results above, we find that the relative contraction of credit induced by the new provisioning scheme—columns 1 and 2—is stronger under weaker economic conditions. For

³³ Colombia also experienced large variation on credit growth before and after the accounting reform, see Figure A1 in the Appendix.

³⁴ *Departamentos* are country subdivisions akin to states. There are 33 Colombian departamentos, each with an average population of around 1.5 million habitants.

example, a one standard deviation decline in $GDP_{d,y}$ is associated with a reduction in loan volume in *Higher_Treatment_f* firms of around 16 percent. Importantly, this effect is absent when we study the placebo size thresholds (columns 3 to 6).³⁵

5.2. Real effects

We next explore whether the credit contraction documented in Table 7 is accompanied by an effect in the real economy. In particular, we extend the specification in equation (5) (i.e., the real effects of the reform) using the longer sample period (i.e., from 2001 to 2012) and including the double interaction *Higher_Treatment*/**CDS*_y and the triple interaction *Higher_Treatment*/**Post*y**CDS*_y (given the yearly data on firms' balance sheets, *CDS*_y is the average CDS 5-year sovereign spread in year y). The results of this test are displayed in Table 8. Columns 1 through 3 present the results on real outcomes using the regulatory threshold. Consistent with the previous section we find that during episodes of financial stress (i.e., higher sovereign CDS spreads) the real outcomes of the borrowers whose provisions increased relatively more, are associated with a reduction in liabilities, revenue, and assets. Specifically, a one standard deviation increase in sovereign CDS spreads is associated with a reduction of 22 percent of liabilities, 18 percent of revenue, and 13 percent of assets for the borrowers with relatively higher provisions. This result does not hold if we use placebo thresholds (columns 5-7 and 9-11), suggesting that this variation was driven by the new provisioning scheme.

To uncover whether the new provision scheme impacts the survival of borrowers, we define *Survival_f* as an indicator variable for whether firm f, which was operating in 2007, is still operating in 2012. In this exercise, we control for the ratio of leverage of the firm in 2007 as well as for region-industry fixed effects, as possible determinants of survival. The results of this analysis are displayed in column 4. Borrowers with higher provisions (i.e., more impacted by the new provisioning scheme) exhibit a 7 percent lower probability of surviving the Global Financial Crisis. Again, this result does not hold if we use placebo thresholds (columns 8 and 12).

³⁵ As displayed in Table IA1 in the Internet Appendix this results holds if instead of a continuous variable of economic growth, we use indicators of low economic growth, proxied by economic growth in the bottom quartile.

6. Variation based on banks' level of capital

Our last set of tests explores cross-sectional variation in the patterns documented in previous sections. Specifically, we measure variation in banks' capital levels. We focus on capital levels as capital ratios are key metrics in prudential regulation and because the level of capital has been found by prior literature to be a key determinant of bank risk-taking behavior, especially during crisis periods (Jordà, Richter, Schularick, and Taylor, 2021).

6.1. Short-window analysis around the implementation

We start by introducing a triple interaction, *Higher_Treatmentf*Postq*Tier1*_{b,07Q2} in equation (4). *Tier1*_{b,07Q2} is defined as the Tier1 capital ratio of the bank in 2007Q2 (i.e., the quarter prior to the implementation of new provision scheme). We control for time-varying changes in the demand for credit by including firm-quarter fixed effects, which allow us to compare the loan conditions that the same firm obtains from banks with varying degrees of capitalization. To avoid sample attrition, we repeat the analysis without including firm-quarter fixed effects (which restrict the sample to firms that at a given quarter have loans with more than one bank).

As shown in Table 9, the coefficient on the triple interaction is positive, suggesting that the patterns in Table 3 are driven by banks with lower levels of capital. That is, the results suggest that financially weaker banks are more likely to decrease credit to borrowers requiring a higher level of provisioning as a result of the regulatory reform. A one standard deviation decrease in Tier1 capital ratio is associated with a decrease in bank lending of around 11 percent.

Table A5D in the Appendix presents a placebo version of this test using placebo thresholds above and below the actual regulatory threshold. As shown in the table, the coefficient on $Higher_Treatment_f*Post_q*Tier1_{b,07Q2}$ is not statistically significant in these alternative analyses, which suggests that the patterns in Table 9 are attributable to the new provisioning rule.

6.2. Search for yield

To further understand how the new accounting rule affects banks' risk-taking behavior, we analyze whether the contraction in lending to firms with higher provisions induce banks to search for yield within the constraints imposed by the regulation. In particular, we test whether weaker banks (i.e., banks with lower capital levels) switch credit from firms with lower ex-ante loan interest rates to firms with higher ex-ante loan interest rates (which tend to have higher ex-post default rates). To do so, we calculate borrowers' ex-ante yield, measured as the average interest rate (weighted by loan volume) at the firm-bank-quarter level. The yield is calculated in the quarter prior to the implementation of the reform (i.e., 2007Q2). We refer to the firm-bank-quarter observations with below (above) median values of the loan interest rate as *LowerYield (HigherYield)*. We then re-estimate equation (4) introducing the interactions *Higher_Treatment_f*HighYield_{f,b,07Q2}* and *Higher_Treatment_f*Post_q*HighYield_{f,b,07Q2}*. Finally, we partition the sample based on whether the bank exhibits a tier1 capital ratio below (above) the median in 2007Q2.

The results of this analysis are presented in Table 10. Columns 1 and 2 (3 and 4) present the results for the subsample of lower-capital (higher-capital) banks. We find that for banks with lower capital the coefficient on *Higher_Treatment_f*Post_q*HighYield_{f,b,07Q2}* is positive and significant. The magnitude of the coefficient suggests that, after the reform, bank lending to borrowers with higher yield increases by 26 percent compared with borrowers with lower yield. In contrast, the coefficient is indistinguishable from zero for banks with higher capital. These results are consistent with the notion that, while on average weaker banks cut credit to borrowers requiring higher provisions, banks are less likely to do so if the borrower pays a higher yield. That is, weaker banks appear to "search for yield" to mitigate the adverse effect on profitability of the reduction in credit volume induced by the reform.

Table A5E in the Appendix repeats the analysis in Table 10 pooling observations from the two subsamples (i.e., lower-capital, and higher-capital banks). The coefficient on $Higher_Treatment_f*Post_q*HighYield_{f,b,07Q2}$ is positive and significant, which suggests that the effect of lower-capital banks dominates; there is an average "search for yield" effect in the economy. Table A5F in the Appendix presents a version of this test using placebo size thresholds (above and below the actual regulatory threshold). As shown in the table, the coefficient on $Higher_Treatment_f*Post_q*HighYield_{f,b,07Q2}$ is not statistically significant in these alternative analyses, suggesting that the patterns in Table 10 are attributable to the new provisioning rule.

6.3. Portfolio reallocation

We next analyze whether the change in bank lending behavior elicited by the new rule, results in a reshaping of the loan portfolio of weaker banks (i.e., the banks with lower capital). In particular, we explore the possibility that, as a consequence of weaker banks' reduction of their exposure to borrowers that require higher provisions (see tests in section 4), the portfolio of these banks becomes more concentrated. This is important, as more concentrated portfolios provide less risk diversification and thus can potentially be riskier. We collapse observations at the bank-quarter level and estimate the following model:

$$y_{b,q} = \alpha + \beta_1 Post_q + \beta_2 Post_q * Tier I_{b,07Q2} + \gamma_b + \gamma_q + \varepsilon_{b,q}$$
(6)

where $y_{b,q}$ is one of the following four measures for bank b in quarter q. Herfindahl Firms_{b,q} is the Herfindahl index of the borrowers in a bank's lending portfolio (i.e., the Herfindahl index at the borrower level). The index is computed as the sum of the squares of the shares of the borrowers in the portfolio of loans (the share of a borrower in the portfolio is computed as the volume of the loans to that borrower divided by the aggregated value of the loans in the portfolio) and it measures the concentration of borrowers in the loan portfolio of a bank. *Herfindahl Sectors*_{b,q} is the Herfindahl index of sectors of the borrowers in a bank's lending portfolio (i.e., the Herfindahl index at the sector level). As before, the index is the sum of the squares of the shares of the sectors in the loan portfolio (the share of a sector in the portfolio is computed as the volume of the loans to borrowers in that sector divided by the aggregated volume of the loans in the portfolio) and it measures the concentration of sectors of activity of borrowers of a bank. Arrears b,q is the average fraction of loans extended by bank b that are late in quarter q. Delinquency_{b,q} is the average fraction of loans extended by bank b that are more than 90 days late in quarter q. Both of these measures are designed to test whether the performance a bank's portfolio changed with the new scheme of provisioning. Finally, *Post_q* and *Tier1*_{*b*,07Q2} are as previously defined. Also, as in prior tests, equation (6) includes bank fixed effects γ_b , as well as quarter fixed effects γ_q .

Table 11 presents the results of this analysis. The estimated coefficient on $Post_q *Tier1_{b,07Q2}$ is negative and significant in columns 1-2 and 3-4. This suggests that, after the reform, the loan portfolios of weaker banks become more concentrated (the pattern holds regardless of whether the Herfindahl index is computed at the firm level or at the sector level). The magnitude of the effect is economically meaningful. A one standard deviation increase

in the capital ratio is associated with an increase in the firm-level (sector-level) Herfindahl index of 0.02 points (0.03 points). Consistent with the notion that more concentrated portfolios provide less risk diversification, or that searching-for-yield leads to riskier lending, Table 11 reveals that the portfolio of weaker banks experiences an increase in late repayments and delinquency (see columns 5-6 and 7-8). More concretely, a one standard deviation increase in capital ratio is associated with an increase of loans in arrears of 6.8 percentage points (37 percent) and an increase in delinquency of around 0.1 percentage point (11 percent).

6.4. Long-term analysis: Benign vs adverse financial conditions

To further dig into the previous results, we next explore cross-sectional variation in our long-term analysis in section 5. That is, we test whether the differential effect of the new regulation under varying conditions depends on the level of bank capitalization.

In particular, we repeat the analysis in Table 7 introducing the quadruple interaction $Higher_Treatment_f^*CDS_{q-1}^*Post_q^*Tier1_{b,07Q2}$ (all variables are as previously defined). Results of this exercise are displayed in Table 12. The coefficient on this interaction is positive and economic significant. This means that the introduction of the reform makes weaker banks relatively more procyclical with borrowers requiring higher provisions. More concretely, after the introduction of the reform a one standard deviation reduction in capital ratio during a period of crisis—proxied by the 90th percentile of sovereign CDS spreads (around 360 basis points)—leads to a relative contraction in bank lending to borrowers requiring more debt of around 15 percent. This pattern is consistent with the notion that the more pronounced credit contraction during crisis periods induced by the reform (see Table 7) is concentrated among weaker banks and borrowers with higher provisions.

In sum, the results in section 6 (Tables 9 through 12) suggest that the contraction of credit induced by the new rule is driven by weaker banks. By increasing the level of provisions, the new rule causes weaker banks to reduce credit to the borrowers more impacted by the reform. However, this does not result in a decrease in the risk of weaker banks, as they end up with less diversified portfolios and engage in search for yield to make up for the loss in profitability resulting from the lower credit volume.

7. Conclusions

We study the economic consequences of a rule change in Colombia that shifted the estimation of banks' loan loss provisions based on *expected* credit losses, as opposed to provisioning based on *incurred* credit losses.

We first analyze the effect of the regulation using a short window around the introduction of the new rule. Consistent with the reform having a strong effect on bank provisioning, we observe a remarkable increase in the overall level of provisions around the introduction of the regulation. The increase is concentrated among borrowers requiring a higher level of provisions (firms below a pre-established volume of assets, loans without collateral, and loans granted to borrowers in sectors with higher delinquency). In parallel, we observe a significant tightening of credit margins (under the new regime, borrowers requiring higher provisioning obtain relatively less credit, pay higher interest rates, and are granted loans with shorter maturity). The new provisioning scheme also has significant consequences on the real economy in terms of firm-level sales (output) and assets. Moreover, results are economically and statistically insignificant with other firm size salient thresholds, below and above the policy one, which serve as placebo tests.

We next take a longer window around the introduction of the new provisioning scheme to compare the effect of the rule under adverse macroeconomic conditions with that under benign economic conditions. Contrary to claims that provisioning based on expected vs. incurred losses reduces procyclicality, we find that the credit contraction induced by the regulation is more pronounced in times of adverse overall credit conditions. Not only that, but we find that borrowers more impacted by the reform (i.e., borrowers with a relative higher increase in provisions) exhibit a lower survival rate during episodes of financial stress.

We obtain additional insights from exploring variation in the previous patterns based on the level of bank capitalization. First, our evidence suggests that the effect of the new rule is significantly stronger for weaker capitalized banks. By increasing the level of provisions, the new rule induces weaker banks to reduce credit to riskier borrowers based on the accounting rule. Second, such credit contraction does not result in a decrease in the risk of weaker capitalized banks, as they end up with less diversified loan portfolios and engage in search for yield in non-affected borrowers by the accounting rule to make up for the loss in profitability resulting from the lower credit volume. Moreover, they end up with higher expost loan defaults. Overall, our results suggest that the effect of provisioning based on expected vs. incurred losses on procyclicality crucially depends on the level of banks' capital, and that the new scheme can have unintended effects on banks with lower capital levels.

Our results have implications for the ongoing debate on the economic consequences of estimating loan loss provisions based on expected credit losses, a provisioning scheme embraced by recent accounting standards around the world (i.e., IFRS9 and CECL). Critically, while provisioning based on expected losses was proposed in the aftermath of the global 2008 financial crisis as a response to the perception that under the incurred loss model bank provisioning was insufficient and untimely, currently there is the concern that, under some circumstances such as the recent COVID-19 crisis, forward-looking provisions exacerbate procyclicality in bank credit. Our results support the validity of this concern (we find that the Colombian reform induces a more pronounced credit contraction among riskier borrowers during adverse macroeconomic periods while having unintended effects on bank risk-taking).

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This figure displays a series of macroeconomic and financial variables around the period of implementation of the new scheme of provisions in 2007Q2. *GDP growth rate* is the annualized quarterly growth rate of Colombian gross domestic product (percent). *Unemployment rate* is the quarterly unemployment rate in Colombia, calculated as the share of the number of people over 16 actively searching for a job as a percentage of the total labor force. *Stock Market* is the quarterly average of the value of the main Colombian stock market index (*COLCAP*). It tracks the performance of the 24 most liquid stocks traded in the Colombia Stock Exchange (*Bolsa de Valores de Colombia*). *Colombian pesos per Dollar* is the quarterly average of the exchange rate of Colombian pesos per U.S. dollar.



Figure 2 – Long-term Analysis: CDS Sovereign Spreads and GDP Growth and Distribution (National and Subnational)

The panel in the top-left displays the Colombian CDS spread on 5-year sovereign debt in foreign currency (basis points). The panel in the top-right exhibits the evolution of quarterly Colombian GDP. The panel in the bottom-right (bottom-left) displays the distribution of GDP growth per *Departamento* (akin to a Colombian state) in the periods prior (after) to the implementation of reform.



Figure 3 – Evolution of Provisions around the Implementation

The figure plots the average rate of provisions of loans partitioning the sample based on borrower classification (Panel A), loan collateralization (Panel B), and sector riskiness measured as the average default rate of the sector (Panel C). The rate of provisions is computed as the amount of loan loss provisions divided by the value of outstanding loans. The vertical bar in all panels displays the quarter of implementation of SARC. "Below Threshold" refers to firms that in 2007Q2 had a volume of assets between COP 1.5 billion and COP 2 billion, while "Above Threshold" are firms with assets between COP 2 billion and COP 2.5 billion. COP 2 billion, is the regulatory threshold defining the level of provisions. In Panel B, "Collateral" ("Non-Collateral") refers to loans with (without) collateral. In Panel C, "Higher Risk" ("Lower Risk") refers to sectors with above (below) median percentages of delinquent loans (i.e., loans in arrears at least 90 days).



Figure 4 - Short-window Analysis around Implementation

The figure displays the coefficients β_q estimated from the following regression conducted at the loan-level (i.e., bank-firmquarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2):

$$y_{f,b,q} = \alpha + \sum \beta_q Quarter_q * Higher Treatment_f + \gamma_{f,b} + \gamma_{b,q} + \varepsilon_{f,b,q}$$

where $y_{f,b,q}$ is one of the following loan-level variables for firm *f*, bank *b*, and quarter *q*. *Provisions*_{f,b,q} is the fraction of provisions to loan value (Panel A), Loan Volume_{f,b,q} is the log of loan value (measured in pesos) (Panel B), *Interest Rate*_{f,b,q} is the loan interest rate (measured in percent) (Panel C), *Maturity*_{f,b,q} is the log of loan maturity (measured in years) (Panel D). *Quarter*_q is an indicator for quarter *q*. *Higher_Treatment*_f is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). $\gamma_{f,b}$, $\gamma_{b,q}$ are firm-bank and bank-quarter fixed effects, respectively. We exclude the quarter prior to the implementation of SARC—2007Q2—so that all coefficients of interest are estimated relative to that quarters around the implementation of SARC. Standard errors are double clustered at the firm-bank and quarter level. The vertical bars display the 95 percent confidence levels.



Table 1A – Descriptive Statistics

This table reports the summary statistics of the variables used in our tests. The variables are defined at four levels: "loan-level" (i.e., firm-bank-quarter), "firm-level" (i.e., firm-bank-quarter), "firm-level" (i.e., firm-bank-quarter), and "macro-level". The loan-level variables are obtained from the credit registry of the *Superintendencia Financiera de Colombia* (i.e., the Colombian Financial Supervisor). The firm-level variables are obtained from the *Superintendencia de Sociedades* (i.e., Colombian equivalent to the United States' SEC). The bank-level variables are obtained from the banks' regulatory filings. The macro-level variables are obtained from the Colombian central bank. Detailed variable definitions are provided in Table A1 in the Appendix.

	Observations	Average	p10	Median	p90	Standard Deviation
Loan-level:						
<i>Provisions</i> _{f,b,q}	17,324	1.4	0.71	1.4	4.2	7.6
Loan Volume _{f,b,q}	17,324	127	2.5	81	300	170
Interest Rate _{f,b,q}	15,739	18	9.2	18	27	6.9
$Collateral_{f,b,q}$	15,827	0.17	0	0	0.76	0.32
Maturity _{f,b,q}	17,016	1.9	0.12	0.97	3.8	3.3
$Arrears_{f,b,q}$	17,324	0.22	0	0	1	0.42
<i>Delinquency</i> _{<i>f,b,q</i>}	17,324	0.01	0	0	0	0.07
Days Arrears _{f,b,q}	17,324	4.5	0	0	12	21
Firm-level:						
Loan Volume _{f,y}	4,184	4.2	0.4	4.9	6.4	2.1
$Liabilities_{f,y}$	4,184	6.9	6	7	7.6	0.8
<i>Revenues</i> _{f,y}	4,184	7.8	6.5	8	8.9	1.1
$Assets_{f,y}$	4,184	7.6	7.3	7.6	8	0.3
Fixed Assets _{f,y}	4,184	5.5	3.5	5.7	7	1.4
Bank-level:						
$Tier I_{b,q}$	124	0.06	0.02	0.05	0.12	0.04
Herfindahl Firms _{b,q}	124	0.03	0.00	0.00	0.08	0.07
Herfindahl Sector _{b,q}	124	0.06	0.02	0.02	0.14	0.10
$Arrears_{b,q}$	124	0.18	0.03	0.14	0.38	0.13
$Delinquency_{b,q}$	124	0.01	0.00	0.01	0.01	0.00
Macro-level:						
CDS_m	78	0.24	0.099	0.15	0.57	0.21
$GDP_{d,y}$	912	0.034	-0.013	.033	0.084	0.044

Table 1B – Descriptive Statistics - Firms below/above the regulatory threshold

This table compares the summary statistics of firms in 2007Q2 (i.e., the quarter before the implementation of SARC). The sample is limited to firms with assets, in 2005, between COP 1.5 billion and COP 2.5 billion (i.e., roughly USD 0.75 million and 1.25 million). *Below (Above) the regulatory threshold* are firms that in 2007Q2 had a volume of assets below (above) COP 2 billion, which is the regulatory threshold defining a higher (lower) level of provisions (treatment). The variables are defined at three levels: "loan-level" (i.e., firm-bank-quarter), "firm-level" (i.e., firm-year), and "bank-level" (i.e., bank-quarter). The results in the last column—*NormDiff*— are the normalized differences (based on Imbens and Wooldridge, 2009) and all differences are insignificant (except for assets, by construction). Detailed variable definitions are provided in Table A1 in the Appendix.

	Little below regulatory threshold		Little above re	gulatory threshold	Ca	
	(Higi	ter treatment)	(Lower	treatment)		nparison
	Mean	Std. Deviation	Mean	Std. Deviation	Diff	NormDiff
Loan-Level:						
ProvisionS _{f,b,2007Q2}	1.3	4.1	1.4	5.7	0.0	0.04
Loan Volume _{f,b,2007Q2}	57.8	68.4	56.0	80.5	1.8	0.01
Interest Ratef,b,2007Q2	18.3	3.6	18.7	3.5	-0.4	-0.01
Maturity _{f,b,2007Q2}	1.8	2.8	2.0	4.0	-0.2	0.02
Arrears f,b,2007Q2	0.2	0.4	0.2	0.4	0.0	-0.04
Delinquency _{f,b,2007Q2}	5.4	1.5	5.5	1.4	-0.1	-0.02
Days Arrears _{f,b,q}	2.4	7.9	2.9	8.7	-0.5	-0.04
Firm-Level:						
Loan Volume _{f,2006}	118.8	136.8	141.1	217.2	-22.3	-0.09
Liabilities _{f,2006}	561.2	382.1	744.6	675.8	-225.9	-0.24
Revenues _{f,2006}	1748.9	1853.2	2364.8	2784.2	-615.9	-0.18
Assets _{f,2006}	914.8	463.1	1282.4	948.9	-367.6	-0.35
Fixed Assets _{f,2006}	370.4	381.1	449.2	451.2	-78.8	-0.13
Bank-Level:						
<i>Tier1</i> _{<i>b</i>,2007O2}	0.059	0.035	0.055	0.038	0.004	0.08
Herfindahl Firms _{b,q}	0.026	0.082	0.037	0.122	-0.011	-0.08
Herfindahl Sector _{b,q}	0.057	0.097	0.069	0.129	-0.013	-0.08
$Arrears_{b,q}$	0.190	0.143	0.175	0.125	0.015	0.08
$Delinquency_{b,q}$	0.006	0.006	0.006	0.005	0.001	0.07

Table 2 – Short Window around Implementation: Bank Provisions

This table reports the results of the determinants of bank provisions. The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). For comparison purposes, the sample is limited to firms with assets, in 2005, between COP 1.5 billion and COP 2.5 billion (i.e., roughly USD 0.75 million and 1.25 million). The dependent variable in columns (1)-(3), *Provisions_{f,b,q}*, is defined as the rate of provisions of the loan(s) given to firm *f* by bank *b* in quarter *q* (percent). Its value is obtained directly from the credit registry. The dependent variable in columns (4)-(5), *Delinquency_{f,b,q}* is an indicator variable that equals one if a loan to firm *f* from bank *b* at quarter *q* is more than 90 days late, and zero otherwise. Columns (1) and (2) include observations from 2006Q2 to 2007Q2 and 2007Q3 to 2008Q2, respectively. Columns (3)-(5) pools observations from 2006Q2 to 2008Q2. *Post_q* is an indicator that the observation is after the implementation of the new provisioning scheme. *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). *Collateral_{f,b,q}* is the percentage of loan volume (to firm *f* from bank *b* at quarter *q*) is late, and zero otherwise. Standard errors (in parentheses) are clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

		Provision _{f,b,q} Delinq			ıency _{f,b,q}
	Pre-Reform	Post-Reform	Both periods	Both periods	Both periods
	(1)	(2)	(3)	(4)	(5)
$Post_q$			2.29***	0.00	0.00
			(0.14)	(0.00)	(0.00)
Higher_Treatment _f	0.23	1.65***	0.23	0.01	0.01
	(0.19)	(0.36)	(0.19)	(0.01)	(0.01)
Higher Treatment _f *Post _q			1.42***	-0.00	-0.00
			(0.30)	(0.00)	(0.00)
$Collateral_{f,b,q}$	-0.09	-1.42***	-0.09		0.00
	(0.21)	(0.31)	(0.21)		(0.00)
$Collateral_{f,b,a}$ *Post _a			-1.33***		0.00
			(0.34)		(0.00)
$Arrears_{f,b,q}$	0.38**	0.52**	0.38**		
	(0.19)	(0.25)	(0.19)		
Arrears _{f.b.a} *Post _a			0.14		
J~~1 1			(0.27)		
Observations	9,469	7,855	17,324	17,324	17,324
R-squared	0.00	0.02	0.06	0.00	0.00
Average(DepVariable)	1.4	3.7	2.8	0.01	0.01

Table 3 – Short Window around Implementation: Credit Supply

This table reports the results of an analysis of loan conditions around the implementation of SARC. The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). To validate our identification technique, we divide the sample of borrowers three times. In the first division—*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). The second division—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. The third division—*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Loan Volume_f_b.q* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q. Post_q* is an indicator that the observation is after the implementation of the new provisioning scheme. Standard errors (in parentheses) are clustered the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

				Loa	n Volume _{f,l}	p,q				
	F	Real Thresho	old	Placebo	Threshold	Below	Placeb	Placebo Threshold Above		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
$Post_q$	0.07***			0.02			-0.02			
	(0.03)			(0.03)			(0.03)			
$Higher_Treatment_f*Post_q$	-0.24***	-0.24***	-0.31***	0.02	0.02	0.02	0.03	0.03	0.02	
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.05)	
Observations	17,324	17,320	16,964	30,035	30,034	29,597	19,526	19,524	19,195	
R-squared	0.79	0.79	0.81	0.79	0.80	0.81	0.79	0.80	0.82	
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bank-Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	
Region-Sector-Quarter FE	No	No	Yes	No	No	Yes	No	No	Yes	

Table 4 – Short Window around Implementation: Loan Interest Rate

This table reports the results of an analysis of loan conditions around the implementation of SARC. The analysis is conducted at the loan-level (i.e., firm-bankquarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns —*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). The second set of columns —*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. The third set of columns —*Placebo Threshold Above* includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Interest Rate_{f,b,q}* is the loan interest rate (measured in percent) of loan extended to firm *f* by bank *b* in quarter *q*. *Post_q* is an indicator that the observation is after the implementation of the new provisioning scheme. Standard errors (in parentheses) are clustered the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

	_			Inter	est Rate _{f,b}	<i>,q</i>					
	Re	al Threshol	ld	Placebo	Threshold	d Below	Placebo	Placebo Threshold Above			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Post _q	2.02***			2.41***			2.10***				
	(0.45)			(0.12)			(0.15)				
$Higher_Treatment_f^*Post_q$	0.83***	0.82***	0.74***	0.19	0.15	0.18	0.02	-0.03	-0.01		
	(0.14)	(0.12)	(0.14)	(0.16)	(0.15)	(0.16)	(0.19)	(0.18)	(0.19)		
Observations	15,739	15,735	15,342	27,211	27,210	26,743	17,638	17,635	17,275		
R-squared	0.68	0.73	0.76	0.68	0.72	0.75	0.68	0.73	0.76		
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Bank-Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes		
Region-Sector-Quarter FE	No	No	Yes	No	No	Yes	No	No	Yes		
Average(Interest Rate _{f,b,q})	18.5	18.5	18.5	19.2	19.2	19.2	17.5	17.5	17.5		

Table 5 – Short Window around Implementation: Loan Maturity

This table reports the results of an analysis of loan conditions around the implementation of SARC. The analysis is conducted at the loan-level (i.e., firm-bankquarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns —*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). The second set of columns —*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. The third set of columns —*Placebo Threshold Above* includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Maturity*_{*fb.q*} is the loan maturity (in logs) in quarter *q* of loan extended to firm *f* by bank *b. Post*_q is an indicator that the observation is after the implementation of the new provisioning scheme. Standard errors (in parentheses) are clustered the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

				M	aturity _{f,b,q}					
	Real Threshold			Placebo	Placebo Threshold Below			Placebo Threshold Above		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
$Post_q$	0.04***			0.02			0.04***			
	(0.01)			(0.01)			(0.01)			
Higher_Treatment _f *Post _q	-0.05***	-0.04***	-0.04**	-0.01	-0.00	0.00	-0.01	-0.01	-0.00	
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	
Observations	15,827	15,823	15,445	27,234	27,233	26,766	17,906	17,904	17,535	
R-squared	0.77	0.77	0.80	0.75	0.75	0.77	0.77	0.78	0.80	
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bank-Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	
Region-Sector-Quarter FE	No	No	Yes	No	No	Yes	No	No	Yes	

Table 6 – Short Window around Implementation: Real Effects

This table reports the results of an analysis of firm outcomes around the implementation of SARC. The analysis is conducted at the firm-year level including observations from 2006 to 2008 using firm *f* level outcomes in year *y*. For comparison purposes, the sample is limited to firms with assets, in 2005, between COP 1.5 billion and COP 2.5 billion (i.e., roughly USD 0.75 million and 1.25 million). *Loan Volume_{f,y}* is the value of total outstanding loans (in logs) of firm *f* in year *y*. *Liabilities_{f,y}*, *Revenue_{f,y}*, *Assets_{f,y}* and *FixedAssets_{f,y}* are, respectively, the logarithm of the total liabilities (including bank loans), revenues, assets, and fixed assets of firm *f* in year *y*. *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the year prior to the implementation of the reform (i.e. 2006). *Post_y* is an indicator variable that equals one if the borrower's yearly balance sheet value is in 2007, and zero otherwise. In the fixed effect's structure, "Mainbank" refers to the bank that holds the highest percentage of the aggregated value of the firm's loans. Standard errors (in parentheses) are clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

	Loan V	olume _{f,y}	<i>Liabilities</i> _{f,y}		Reve	<i>Revenue</i> _{f,y}		$ets_{f,y}$	FixedA	<i>FixedAssets</i> _{f,y}	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Higher_Treatment _f *Post _y	-0.45*** (0.08)	-0.48*** (0.11)	-0.41*** (0.02)	-0.39*** (0.03)	-0.19*** (0.03)	-0.20*** (0.04)	-0.30*** (0.02)	-0.30*** (0.02)	-0.21*** (0.04)	-0.16*** (0.05)	
Observations	4,184	3,042	4,184	3,042	4,184	3,042	4,184	3,042	4,184	3,042	
R-squared	0.80	0.85	0.86	0.89	0.92	0.94	0.71	0.78	0.91	0.93	
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Mainbank-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
State-Sector-Year	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	

Table 7 – Varying Financial Conditions and Credit Supply

This table presents the coefficients of a test of impact of firm size and bank capitalization on credit supply and loan performance during varying financial conditions (proxied by sovereign CDS spreads). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns —*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions). The second set of columns—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Loan Volume_f_b_q* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q. CDSq-1* is the average value of 5-year CDS spreads on sovereign debt (thousands of basis points) in quarter *q-1. Post* is an indicator of whether observation is after 2007Q2. Observations are at the firm-bank-quarter. The sample spans from 2001Q1 to 2012Q4. Detailed variable definitions are provided in Table A1 in the Appendix.

	_		1	Loan V	olume _{f,b,q}		
	Real Th	reshold	Placel	oo Thre	eshold Below	Placebo Thre	shold Above
	(1)	(2)	(3)	(4)	(5)	(6)
Higher_Treatment _f *Post _q	-0.27***	-0.24***	-0	.04	-0.04	0.04	0.07
	(0.02)	(0.03)	(0.	02)	(0.02)	(0.05)	(0.06)
<i>Higher Treatment</i> [*] <i>CDS</i> _{<i>q-1</i>}	0.01	-0.01	0.23	8***	0.33***	0.26	0.26
	(0.11)	(0.12)	(0.	07)	(0.08)	(0.20)	(0.18)
Higher Treatment _f *CDS _{q-1} *Post _q	-1.02***	-1.00***	0.	16	0.17	0.05	0.02
	(0.18)	(0.19)	(0.	15)	(0.14)	(0.28)	(0.21)
Observations	70,967	70,883	140	,299	140,153	48,393	48,266
R-squared	0.64	0.65	0.	65	0.66	0.66	0.68
Firm-Bank FE	Yes	Yes	Y	es	Yes	Yes	Yes
Bank-Quarter FE	Yes	Yes	Y	es	Yes	Yes	Yes
State-Sector-Quarter FE	No	Yes	Ν	Jo	Yes	No	Yes
$SD(CDS_{q-1})$	0.11	0.11	0.	10	0.10	0.12	0.12

Table 8 – Varying Financial Conditions and Real Outcomes

This table presents the coefficients of a test of impact of firm size and bank capitalization on real outcomes of borrowers' performance during varying financial conditions (proxied by sovereign CDS spreads). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns—*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions). The second set of columns —*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. The third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets valued between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Loan Volume_fy* is the value of bank loans (in logs) of firm *f* in year *y. Liabilities_fy* is the value of liabilities (in logs) of firm *f* in year *y. Assets_fy* is the value of total assets (in logs) of firm *f* in year *y. Survival_f* is an indicator of whether the firm *f* observed in 2008 is observed in 2012. *CDSy* is the average value of 5-year CDS spreads on sovereign debt (thousands of basis points) in year *y*. In the fixed effect's structure, "Mainbank" refers to the bank that holds the highest percentage of the aggregated value of the firm's loans. Observations at firm-year level from columns 1-8, and at the firm level in columns 9 and 10. The sample spans from 2001 to 2012. Detailed variable definitions are provided in Table A1 in the Appendix.

		Real Thre	shold		P	lacebo Thresł	nold Below		P	lacebo Thresł	nold Above	
	<i>Liabilities</i> _{f,y}	<i>Revenue</i> _{f,y}	$Assets_{f,y}$	Survival _f	<i>Liabilities</i> _{f,y}	<i>Revenue</i> _{f,y}	Assets _{f,y}	Survival _f	<i>Liabilities</i> _{f,y}	<i>Revenue</i> _{f,y}	Assets _{f,y}	Survival _f
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Higher_Treatment _f *Post _y	-0.35***	-0.27***	-0.15*		0.00	0.00	0.00		0.02	-0.01	0.13	
	(0.04)	(0.03)	(0.08)		(0.03)	(0.02)	(0.05)		(0.05)	(0.03)	(0.09)	
Higher Treatment _f *CDSy	-0.17	0.02	0.31		-0.02	0.03	0.30		0.34	-0.07	-0.04	
	(0.24)	(0.15)	(0.49)		(0.15)	(0.09)	(0.26)		(0.27)	(0.15)	(0.61)	
Higher Treatmentf*CDSy*Posty	-1.69***	-1.40*	-1.02*		0.29	0.12	0.67		0.20	-0.02	-0.84	
8 _ , , , ,	(0.37)	(0.73)	(0.22)		(0.26)	(0.16)	(0.46)		(0.40)	(0.25)	(0.93)	
Higher Treatment _f	()	()	(-)	-0.07*	()	()	()	-0.03		()	()	-0.03
0 _ ,				(0.03)				(0.02)				(0.04)
Observations	7.865	6.482	7865	646	17.737	15.194	17.744	1.759	4.860	3.965	4.862	414
R-squared	0.80	0.74	0.71	0.29	0.77	0.79	0.70	0.21	0.79	0.71	0.72	0.30
Firm-Bank FE	Yes	Yes	Yes	No	Ves	Yes	Yes	No	Yes	Yes	Yes	No
Bank-Year FE	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No
State-Sector-Vear FE	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves	Ves
$SD(CDS_y)$	0.13	0.13	0.13	0.13	0.11	0.11	0.11	0.11	0.16	0.16	0.16	0.16

Table 9 – Variation by Bank Capitalization: Short Window around Implementation

This table reports the results of an analysis of loan conditions around the implementation of SARC based on the risk of the borrower's sector and the Tier1 capital of the bank. The analysis is conducted at the loan-level (i.e., bank-firm-quarter) from 2006Q2 to 2008Q2. *Loan Volume*_{*f*,*b*,*q*} is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q*. *Higher_Treatment*_{*f*} is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). *Post*_{*q*} is an indicator variable that equals one if the observation is after the implementation of the new provisioning scheme in 2007Q2, and zero otherwise. *Tier1*_{*b*,07Q2} is defined as the Tier1 capital ratio of the bank in 2007Q2 (i.e., the quarter prior to the implementation scheme). Standard errors (in parentheses) are double clustered at the firmbank and quarter level. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

	Loan Volume _{f,b,q}						
	(1)	(2)	(3)				
$Higher_Treatment_f^*Post_q$	-0.89***	-0.94***					
	(0.19)	(0.24)					
<i>Higher Treatment</i> [*] <i>Post</i> ^{<i>a</i>} * <i>Tier</i> 1 _{<i>b</i>,0702}	5.68***	5.52***	3.17**				
	(1.61)	(2.05)	(1.34)				
Observations	17 220	16 064	12 169				
Observations	17,320	10,904	12,108				
R-squared	0.79	0.81	0.88				
Firm-Bank FE	Yes	Yes	Yes				
Bank-Quarter FE	Yes	Yes	Yes				
State-Sector-Quarter FE	No	Yes	_				
Firm-Quarter FE	No	No	Yes				
Average($Tier1_{b,07Q2}$)	0.12	0.12	0.12				
$SD(Tier I_{b,07Q2})$	0.02	0.02	0.02				

Table 10 - Variation by Bank Capitalization: "Search for Yield"

This table reports the results of an analysis of loan conditions around the implementation of SARC based on the yield of the borrower and the capitalization of the bank. The analysis is conducted at the loan-level from 2006Q2 to 2008Q2. For comparison purposes, the sample is limited to firms with assets, in 2005, between COP 1.5 billion and COP 2.5 billion (i.e., roughly USD 0.75 million and 1.25 million). The subsample Lower-(Higher-) Capital Banks includes observations of banks with a tier1 capital ratio below (above) the median in 2007Q2. *Loan Volume_f.b.q* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q*. *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions) in the quarter prior to the implementation of the reform (i.e., 2007Q2). *Post_q* is an indicator variable that equals one if the observation is after the implementation of the new provisioning scheme in 2007Q2, and zero otherwise. *HighYield_f.b.07Q2* is an indicator that the interest rate charged to firm *f* by bank *b* in 2007Q2 is above the median. Standard errors (in parentheses) are clustered at bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

	Loan Volume _{f,b,q}							
	Lower	Capital	Higher	Capital				
	(1)	(2)	(3)	(4)				
$Higher_Treatment_f^*Post_q$	-0.33***		-0.13**					
	(0.07)		(0.06)					
<i>Higher_Treatment_f*HighYield</i> _{5,b,07Q2}	0.13***	0.01	0.16***	0.04				
	(0.05)	(0.09)	(0.05)	(0.08)				
<i>Higher_Treatment</i> _f *Post _q *HighYield _{f,b,07Q2}	0.21**	0.29*	-0.06	-0.17				
	(0.10)	(0.17)	(0.08)	(0.13)				
Observations	5,683	2,834	7,854	4,966				
R-squared	0.80	0.89	0.84	0.91				
Firm-Bank FE	Yes	Yes	Yes	Yes				
Bank-Quarter FE	Yes	Yes	Yes	Yes				
State-Sector-Quarter FE	Yes	-	Yes	-				
Firm-Quarter FE	No	Yes	No	Yes				

Table 11 - Variation by Bank Capitalization: Portfolio Composition

This table reports the results of an analysis of bank loan portfolio composition around SARC based on the capitalization of a bank. The analysis is conducted at the bank-level (i.e., bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). *Herfindahl Firms*_{*b*,*q*} is the Herfindahl index computed at the level of the borrowers in a bank's lending portfolio. *Herfindahl Sectors*_{*b*,*q*} is the Herfindahl index computed at the level of the sectors of the borrowers in a bank's lending portfolio. *Arrears*_{*b*,*q*} is the average fraction of loans extended by bank *b* that are late in quarter *q*. *Delinquency*_{*b*,*q*} is the average fraction of loans extended by bank *b* that are more than 90 days late in quarter *q*. *Post*_{*q*} is an indicator variable that equals one if the observation is after the implementation of new provisioning scheme in 2007Q2, and zero otherwise. *Tier1*_{*b*,07Q2} is defined as the Tier1 capital ratio of the bank in 2007Q2 (i.e., the quarter prior to the implementation of new provision scheme). Standard errors (in parentheses) are clustered at the bank and quarter level. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1 in the Appendix.

	Herfindahl Firms _{b,q}		Herfindah	el Sectors _{b,q}	Arre	$ars_{b,q}$	Delinqı	ıency _{b,q}
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Post_q$	0.01**		0.02**		0.10*		0.00	
	(0.01)		(0.01)		(0.05)		(0.00)	
$Post_{q}$ *Tier $I_{b,07O2}$	-0.45**	-0.45**	-0.64***	-0.64***	-1.36*	-1.36*	-0.02*	-0.02*
1 2	(0.19)	(0.18)	(0.23)	(0.23)	(0.79)	(0.77)	(0.01)	(0.01)
Observations	124	124	124	124	124	124	124	124
R-squared	0.91	0.91	0.90	0.90	0.68	0.70	0.52	0.59
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes
$SD(Tier I_{b,07O2})$	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Average(Dependent Variable)	0.04	0.04	0.07	0.07	0.18	0.18	0.01	0.01

Table 12 – Variation by Bank Capitalization: Benign vs Adverse Economic Conditions

This table presents the coefficients of a test of impact of firm size and bank capitalization on credit supply and loan performance during varying financial conditions (proxied by sovereign CDS spreads). Furthermore, we also split the borrowers depending on the capital ratio of their lender. *Loan Volume*_{*f*,*b*,*q*} is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q*. The observation is placed in the sample of *Banks Low* (*High*) *Capital* if bank *b* bank has a tier 1 capital ratio below (above) the median. *Higher_Treatment*_{*f*} is an indicator that equals one if the firm was classified as "small" in the quarter prior to the implementation of the reform (i.e., 2007Q2). CDS_{q-1} is the average value of 5-year CDS spreads on sovereign debt (thousands of basis points) in quarter *q*-1. *Post* is an indicator of whether observation is after 2007Q2. Observations at firm-bank-quarter. Sample from 2001Q1-2012Q4. Detailed variable definitions are provided in Table A1 in the Appendix.

	Loan Ve	olume _{f,b,q}
	(1)	(2)
$Higher_Treatment_f^*Post_q$	-0.26***	-0.22***
	(0.03)	(0.04)
Higher Treatment _f *CDS _{q-1}	-0.18	-0.22
	(0.13)	(0.16)
Higher Treatment _f *Post _q *Tier1 _{b,07Q2}	-0.83	0.03
	(1.23)	(1.84)
Higher Treatment _f *CDS _{q-1} *Post _q	-1.54***	-1.48***
	(0.26)	(0.30)
<i>Higher Treatment</i> _f *CDS _{<i>q-1</i>} *Tier1 _{<i>b,0702</i>}	-18.65***	-20.69***
	(4.13)	(3.93)
Higher Treatment _f *CDS _{q-1} *Post _q *Tier1 _{b,07Q2}	21.37*	21.96*
	(11.33)	(13.11)
Observations	38,722	38,586
R-squared	0.63	0.65
Firm-Quarter FE	Yes	Yes
Bank-Quarter FE	Yes	Yes
State-Sector-Quarter FE	No	Yes
$SD(Tier1_{b,07Q2})$	0.02	0.02

Forward Looking Loan Provisions: Credit Supply and Risk-Taking

Appendix

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Table IA1. Weak GDP Growth and Credit Supply

This panel displays the annual growth rate of the value of corporate credit outstanding extended by banks operating in Colombia.



Loan-Level Variables	
<i>Provisions</i> _{f,b,q}	Fraction of provisions over outstanding loans extended by bank b to firm f measured
5 1	in quarter q, weighted by loan volume (percent).
Higher Treatment _f	Indicator of whether firm f is below a size threshold set by the Superintendencia
0 = ,	Financiera de Colombia, prior to the announcement of the reform. The threshold set
	for 2007 was 2 billion Colombian pesos (almost 1 million dollars) in assets.
Loan Volume _{tha}	Value of the outstanding loans that firm f holds from bank b in quarter a (thousands
,,,,,,	of Colombian pesos) (in Logs).
Interest Rate _{fba}	Average annualized loan rate of the outstanding loans that firm <i>f</i> holds from bank <i>b</i>
<i>J</i> , <i>v</i> , v	in quarter q, weighted by loan volume (percent).
<i>Maturity</i> _{fha}	Average maturity in years of the outstanding loans that firm f holds from bank b in
<i>, , , , , , , , , ,</i>	quarter q, weighted by loan volume (in Logs).
$Collateral_{fha}$	Percentage of loan value to firm f from bank b at quarter a covered by guarantees.
Arrearstha	Indicator that loan extended to firm f from bank h at quarter q is late.
Delinquency _{ch}	Indicator that loan extended to f from bank b in quarter a is more than 90 days late
Davs Arrears	Number of days (in logs) a loan extended to firm f by bank b is late in quarter q .
Low- (High-)	A borrower-bank-quarter observation is low (high) yield if its average interest rate—
Yield Borrowersharo	weighted by loan volume—prior to the reform in 2007 (i.e., second quarter of 2007)
	is below (above) the median.
Firm-Level Variables	
Loan Volume _{fy}	Value of bank loans of firm f in a year v (thousands of Colombian pesos) (in Logs).
Liabilities _{fv}	Total liabilities of firm f in a year v (thousands of Colombian pesos) (in Logs).
Revenue _{fy}	Operational revenue of firm f in a year v (thousands of Colombian pesos) (in Logs).
$Assets_{f,v}$	Value of assets of firm f in a year y (thousands of Colombian pesos) (in Logs).
Fixed Assets _{fy}	Value of fixed assets of firm f in a year y (thousands of Colombian pesos) (in Logs).
Survivalf	Indicator of whether firm f is still operating in 2012.
Bank-Level Variables	
Tier I _{b,q}	Tier 1 capital ratio of bank b in quarter q.
Herfindahl Firms _{b,q}	Herfindahl index of the borrowers of bank b in quarter q . The index is computed as
	the sum of the squares of the shares of the borrowers in the portfolio of loans (share
	is computed as the value of the loans to over the aggregated value of the loans).
Herfindahl Sector _{b,q}	Herfindahl index of the sectors of the borrowers of a bank b quarter q . The index is
	computed as the sum of the squares of the shares of the sectors in the portfolio of
	loans (the share is computed as the value of the loans to borrowers in that sector over
	the aggregated value of the loans in the portfolio).
$Arrears_{b,q}$	Is the share of loans of bank b that are late in quarter q.
Delinquency _{b,q}	Is the share of loans of bank b that are more than 90 days late in quarter q.
Other Variables	
CDS_q	Value of the credit default swaps in quarter q of Colombian 5-year sovereign debt in
-	foreign currency (thousands of basis points).
$GDP_{d,y}$	GDP growth of <i>departamento d</i> in year y. A <i>departamento</i> is akin to a state.
Tangible Sectors	Tangibility ratio of sector s is measured as the average ratio of fixed assets to total
	assets.

Table A1 – Variable Definitions

Table A2 – Illustration of the Rule Change on the Calculation of Provisions

This table displays the regulatory guidance to estimate the parameters defining the level of provisions. Provisions under incurred losses ("old methodology") were set under *Circular Externa 39* of 1999. Provisions under expected losses ("new methodology") were set under *Circular Externa 20 de 2005* and implemented since July of 2007. The rate of provisions is computed based on the formula *Expected Loss = PD*EAD*LGD. Expected Loss* is the provision amount expressed in monetary units. *PD* is the probability of default. *EAD* is the exposure at default. *LGD* is the expected loss given default, computed as 1-*Recovery Rate*.

Old Met (Based on Inc	hodology curred Losses)		New Methodology (Based on Expected Lo	/ osses)		
Probability	Probability of Default:			lt: ^a		
Days Arrears	All Borrowers	Days Arrears	Assets < COP 2 billion	Assets > COP 2 billion		
0-30	0	0-30	1.56	1.11		
31 - 90	1	31 - 60	2.50	2.04		
91 - 180	20	61 - 90	7.52	7.35		
181 - 365	50	91 - 120	10.70	9.65		
>365	100	121 - 150	22.72	17.36		
		>150	100	100		
Recover	ry Rate:	Recovery Rate: ^b				
Days Arrears	All Borrowers	Days Arrears	All Bo	rrowers		
0-30	100	0 - 150	25	- 100		
30 - 90	99	0 - 360	10 -	- 100		
91 - 180	80	0 - 1080	0 -	- 100		
181 - 365	50					
>365	0					

^a The regulation defines two PD matrices: A and B, depending on the economic conditions. Here we report the PD of matrix A, which was the one stated by the regulation for periods of high economic growth and that has higher PDs.

^b Expressed in percentage. The specific value of the recovery rate depends on the type of collateral. See Table A1 in the Appendix for details.

Example: Provision for a loan of COP 10,000 without collateral at origination (i.e., days arrears = 0).

- Under the **old methodology** the provision is zero (since PD = 0).
- Under the **new methodology** the provision is as follows (the recovery rate is set to 45 percent based on the Table A3 in the Appendix): For a firm with assets of COP 1.9 billion (PD = 1.56%) For a firm with assets of COP 2.1 billion (PD = 1.11%) Expected Loss= PD*EAD*LGD=0.0156*10,000*(1-0.45) = 85.8Expected Loss= PD*EAD*LGD=0.0111*10,000*(1-0.45) = 61.1

	Days	Recovery	Days	Recovery	Days	Recovery
Type of Collateral	Arrears	Rate	Arrears	Rate	Arrears	Rate
Government debt	0-150	88 - 100	151-540	88 - 100	>540	88 - 100
Goods given in property leasing	0-150	65	151-540	30	>540	0
Real estate	0-150	60	151-540	30	>540	0
Goods given in leasing and collection rights	0-150	55	151-360	20	>360	0
Other collateral	0-150	50	151-360	20	>360	0
Not eligible	0-150	45	151-270	30	>270	0
No collateral	0-150	45	151-210	20	>210	0
Subordinated loan	0-150	25	151-270	10	>270	0

Table A3 – Recovery Rate by Type of Collateral

This table displays the recovery rate of the collateral given the type of collateral along the number of days the loan has been in arrears.

Table A4 – Tangibility of Assets per Sector

This table displays the description of the top- and bottom-10 four-digit ISIC Rev3 sectors ordered by tangibility. *Tangibility* is defined as the ratio of tangible assets to total assets.

	Lowest		Highest				
Sector	Description	Tangibility	Sector	Description	Tangibility		
7491	Labor recruitment and provision of personnel	8.3	8021	General secondary education	83.9		
6599	Financial intermediation	13.3	5251	Retail sale via mail order houses	78.1		
6719	Activities auxiliary to financial intermediation	13.4	5252	Retail sale via stalls and markets	70.0		
7240	Online distribution of electronic content	14.4	2924	Machinery for mining, and construction	64.1		
6411	National post activities	15.4	9302	Hairdressing and other beauty treatment	63.7		
2213	Publishing of music	17.2	8532	Social work activities	60.9		
7413	Market research and public opinion polling	17.2	3512	Building and repairing of boats	58.2		
4010	Production, and distribution of electricity	17.3	7111	Renting of land transport equipment	58.1		
7414	Management consultancy activities	20.3	3692	Manufacture of musical instruments	57.9		
7493	Building- and industrial-cleaning activities	20.6	122	Other animal farming	57.6		

Table A5A – Short Window around Implementation: Credit Supply (Placebo Date of Reform)

This table reports the results of loan conditions around a placebo date of reform 2006Q2 (i.e., one year prior to the implementation of SARC). The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2005Q2 to 2007Q2). *Loan Volume_{f,b,q}* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q*. *Maturity_{f,b,q}* is the loan maturity (in logs) in quarter *q* of loan extended to firm *f* by bank *b*. *Interest Rate_{f,b,q}* is the loan interest rate (measured in percent) of loan extended to firm *f* by bank *b* in quarter *q*. *Post_q* is an indicator that the observation is after the implementation of the new provisioning scheme. Standard errors (in parentheses) are clustered the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1.

	L	oan Volume	f,b,q	Interest Rate _{f,b,q}				Maturity _{f,b,q}	,
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Post_q$	0.02			3.41***			0.02		
	(0.03)			(0.14)			(0.01)		
Higher_Treatment _f *Post _q	0.02	0.02	0.02	0.22	0.13	0.09	-0.01	-0.00	0.00
	(0.03)	(0.03)	(0.04)	(0.18)	(0.17)	(0.18)	(0.01)	(0.01)	(0.02)
Observations	30,035	30,034	29,597	28,818	28,817	28,365	27,234	27,233	26,766
R-squared	0.79	0.80	0.81	0.58	0.67	0.70	0.75	0.75	0.77
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank-Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Region-Sector-Quarter FE	No	No	Yes	No	No	Yes	No	No	Yes

Table A5B – Credit Supply and Asset Tangibility

This table reports the results of an analysis of loan conditions around the implementation of SARC based on the tangibility of assets in the borrower's sector. The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). Loan Volume_{f,b,q} is the value (in logs) of the outstanding loan given to firm f by bank b in quarter q. Interest Rate_{f,b,q} is the loan interest rate (measured in percent) of loan extended to firm f by bank b in quarter q. Maturity_{f,b,q} is the loan maturity (in logs) in quarter q of loan extended to firm f by bank b. TangibleSector_f is an in indicator that the tangibility ratio of the sector of firm f, measured as the average ratio of total tangible assets to total assets, is above the median. Post_q is an indicator that the observation is after the implementation of the new provisioning scheme in 2007Q2. Standard errors (in parentheses) are clustered at the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1.

	Le	oan Volume _{f,}	b,q	Interest Rate _{f,b,q} Maturity			Maturity _{f,b,q}	rity _{f,b,q}		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Post	-0.02			2 62***			0 02***			
1 05 <i>tq</i>	(0.01)			(0.05)			(0.00)			
$TangibleSector_f^*Post_q$	0.03*	0.03*	0.03*	-0.23***	-0.18***	-0.17***	0.01*	0.01*	0.01*	
	(0.01)	(0.01)	(0.01)	(0.07)	(0.07)	(0.07)	(0.01)	(0.01)	(0.01)	
Observations	146,099	146,099	146,099	132,166	132,166	132,166	132,412	132,412	132,411	
R-squared	0.83	0.83	0.83	0.71	0.75	0.75	0.77	0.78	0.78	
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Bank-Quarter FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	
Region-Quarter FE	No	No	Yes	No	No	Yes	No	No	Yes	

Table A5C – GDP Growth and Credit Supply

This table presents the coefficients of a test of impact of firm size and bank capitalization on credit supply and loan performance during varying financial conditions (proxied by sovereign CDS spreads). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns —*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions). The second set of columns—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets below 3 billion pesos. *Loan Volume_f.b.q* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q. GDP_d.y* is the yearly GDP growth of at constant prices of *departamento d* in year *y*-1. *Post* is an indicator of whether observation is after 2007Q2. Observations are at the firm-bank-quarter. The sample spans from 2001Q1 to 2012Q4.

		Loan Volume _{f,b,q}							
	Real Th	nreshold	Placebo Thre	shold Below	Placebo Three	shold Above			
	(1)	(2)	(3)	(4)	(5)	(6)			
$Higher_Treatment_f^*Post_q$	-0.38***	-0.35***	-0.05*	-0.06**	0.01	0.02			
	(0.05)	(0.05)	(0.03)	(0.03)	(0.09)	(0.08)			
$Higher_Treatment_f^*GDP_{d,y-1}$	-1.11	-1.16**	-0.39	-0.40	-0.23	-0.16			
	(0.71)	(0.55)	(0.40)	(0.42)	(1.05)	(1.19)			
$Higher_Treatment_f^*GDP_{d,y-1}^*Post_q$	4.35***	4.06***	-0.87	-0.81	-0.85	-0.07			
	(1.53)	(1.26)	(0.93)	(1.03)	(1.63)	(1.85)			
Observations	74,139	74,008	142,011	141,851	51,711	51,559			
R-squared	0.64	0.65	0.65	0.66	0.66	0.67			
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes			
Bank-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes			
State-Sector-Quarter FE	No	Yes	No	Yes	No	Yes			
$SD(CDS_{q-1})$	0.11	0.11	0.10	0.10	0.12	0.12			

Table A5D – Credit Supply and Bank Capitalization - Placebo Thresholds

This table reports the results of an analysis of loan conditions around the implementation of SARC (from 2006Q2 to 2008Q2) based on the risk of the borrower's sector and the Tierl capital of the bank. To validate our identification technique, we divide the sample of borrowers twice. The first division—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the second division—*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the second division—*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. The analysis is conducted at the loan-level (i.e., bank-firm-quarter). *Loan Volume_f,b,q* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q. Post_q* is an indicator variable that equals one if the observation is after the implementation of the new provisioning scheme in 2007Q2, and zero otherwise. *Tier1_{b,07Q2}* is defined as the Tier1 capital ratio of the bank in 2007Q2 (i.e., the quarter prior to the implementation of new provision scheme). Standard errors (in parentheses) are double clustered at the firm-bank and quarter level. *** p<0.01, ** p<0.05, *_p<0.1. Detailed variable definitions are provided in Table A1.

	Loan Volume _{f,b,q}							
	Placeb	o Threshold	Below	Placebo	Above			
	(1)	(2)	(3)	(7)	(8)	(9)		
Higher_Treatmentf*Postq	-0.05*	-0.07**		0.06*	0.07			
	(0.03)	(0.03)		(0.04)	(0.05)			
Higher Treatment _f *Post _g *Tier1 _{b,0702}	0.06	0.05	0.04	0.07	-0.00	-0.03		
	(0.04)	(0.04)	(0.06)	(0.07)	(0.08)	(0.08)		
Observations	32,087	31,563	24,625	11,255	10,970	9,439		
R-squared	0.80	0.82	0.89	0.80	0.83	0.88		
Firm-Quarter FE	Yes	Yes	Yes	Yes	No	Yes		
Bank-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes		
State-Sector-Quarter FE	No	Yes	-	No	Yes	-		
Firm-Quarter FE	No	No	Yes	No	Yes	Yes		

Table A5E – Credit Supply and "Search-for-Yield"

This table reports the results of an analysis of loan conditions around the implementation of SARC based on borrower delinquency. The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). To validate our identification technique, we divide the sample of borrowers three times. In the first division—*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos) and defines *Higher_Treatment*_f those classified as *small*. The second division—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment*_f those with assets below 1 billion pesos. Finally, the third division—*Placebo Threshold Above*—includes firms with 2005 assets between (in logs) of the loan extended to firm *f* by bank *b* in quarter *q*. *Post*_q is an indicator that the observation is after the implementation of the new provisioning scheme. *HighYield*_{f,b,07Q2} is an indicator that the observation is after the implementation of the new provisioning scheme. *HighYield*_{f,b,07Q2} is an indicator that the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1.

	Loan Volume _{f,b,q}							
	Real Threshold		Placebo Thre	shold Below	Placebo Thr	Placebo Threshold Above		
	(1)	(2)	(3)	(4)	(5)	(6)		
Higher Treatment [*] Post _a	-0.28***	-0.34***	-0.03*	-0.03	0.09**	0.06		
Higher Treatment & High Yield (1907)	(0.04) 0.14***	(0.05) 0 14***	(0.02) 0.04	(0.03) 0.04	(0.05) 0.01	(0.05) 0.09*		
	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.05)		
Higher_Ireatment _f *Post _q *HighYield _{f,b,07Q2}	0.12** (0.05)	0.11* (0.06)	(0.04)	(0.01)	-0.02 (0.06)	-0.01 (0.06)		
Observations	18,594	18,258	31,342	31,025	11,596	11,313		
R-squared	0.79	0.81	0.80	0.82	0.80	0.83		
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes		
Bank-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes		
Region-Sector-Quarter FE	No	Yes	No	Yes	No	Yes		

Table A5F - Credit Supply and "Search-for-Yield" given Bank Capitalization - Placebo Thresholds

This table reports the results of an analysis of loan conditions around the implementation of SARC based on borrower delinquency. The analysis is conducted at the loan-level (i.e., firm-bank-quarter) including four quarters immediately before and after the implementation of the new provisioning scheme (i.e., from 2006Q2 to 2008Q2). To validate our identification technique, we divide the sample of borrowers twice. The first division—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the second division—*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Loan Volume_f.b.q* is the value (in logs) of the loan extended to firm *f* by bank *b* in quarter *q*. *Higher_Treatment_f* is an indicator that equals one if the firm was classified as "small" in the quarter prior to the implementation of the reform (i.e., 2007Q2). *Postq* is an indicator that the observation is placed in the sample of banks with *Lower (Higher) Capital* if bank *b* bank has a tier 1 capital ratio below (above) the median. Sample period from 2006Q2 to 2008Q2. Standard errors (in parentheses) are clustered at the bank and quarter levels. *** p<0.01, ** p<0.05, * p<0.1. Detailed variable definitions are provided in Table A1.

				Loan Volun	$ne_{f,b,q}$				
		Placebo Thre	shold Below		Placebo Threshold Above				
	Lower Capital		Higher	Higher Capital		Lower Capital		Capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
$Higher_Treatment_f^*Post_q$	-0.06	-0.11**	-0.06*	-0.01	0.11*	0.06	0.08	0.02	
	(0.04)	(0.04)	(0.03)	(0.04)	(0.06)	(0.06)	(0.07)	(0.09)	
Higher Treatment _f *HighYield _{f,b,07Q2}	0.07	0.06	0.01	0.03	-0.01	0.05	0.04	0.15*	
	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.07)	(0.06)	(0.07)	
Higher Treatment _f *Post _a *HighYield _{f,b,0702}	-0.01	0.02	0.10	0.01	-0.07	0.01	0.05	0.09	
	(0.05)	(0.05)	(0.06)	(0.07)	(0.08)	(0.07)	(0.08)	(0.11)	
Observations	17,040	16,372	15,876	15,142	6,507	6,149	5,089	4,709	
R-squared	0.80	0.82	0.81	0.83	0.80	0.83	0.81	0.85	
Firm-Quarter FE	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	
Bank-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
State-Sector-Quarter FE	Yes	-	Yes	-	Yes	-	Yes	-	
Firm-Quarter FE	No	Yes	No	Yes	No	Yes	No	Yes	

Table IA1 - Weak GDP Growth and Credit Supply

This table presents the coefficients of a test of impact of firm size and bank capitalization on credit supply and loan performance during varying financial conditions (proxied by sovereign CDS spreads). To validate our identification technique, we divide the sample of borrowers three times. In the first set of columns —*Real Threshold*—we limit the sample to firms with 2005 assets between 1.5 billion and 2.5 billion (i.e., around the real threshold set of around 2 billion Colombian pesos). *Higher_Treatment_f* is an indicator that equals one if the firm's volume of assets is below COP 2 billion (i.e., the regulatory threshold defining the level of provisions). The second set of columns—*Placebo Threshold Below*—includes firms with 2005 assets valued between COP 0.5 billion and COP 1.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and COP 3.5 billion and defines *Higher_Treatment_f* those with assets below 1 billion pesos. In the third set of columns —*Placebo Threshold Above*—includes firms with 2005 assets between COP 2.5 billion and defines *Higher_Treatment_f* those with assets below 3 billion pesos. *Loan Volume_{f,b,q}* is the value (in logs) of the outstanding loan given to firm *f* by bank *b* in quarter *q. LowGDP_{d,y}* is an indicator that the yearly GDP growth of at constant prices of *departamento d* in year *y*-1 was in the bottom quartile. *Post* is an indicator of whether observation is after 2007Q2. Observations are at the firm-bank-quarter. The sample spans from 2001Q1 to 2012Q4.

	_		Loan V	olume _{f,b,q}				
	Real Th	reshold	Placebo Thre	shold Below	Placebo Thres	Placebo Threshold Above		
	(1)	(2)	(3)	(4)	(5)	(6)		
Higher_Treatment _f *Post _q	-0.33***	-0.28***	-0.07**	-0.08***	0.01	0.01		
	(0.05)	(0.05)	(0.03)	(0.02)	(0.08)	(0.07)		
$Higher_Treatment_f$ *LowGDP _{d,y-1}	-0.01	-0.02	0.07**	0.07***	0.07*	0.07		
	(0.04)	(0.03)	(0.03)	(0.02)	(0.04)	(0.04)		
Higher Treatment _f *LowGDP _{d,v-1} *Post _g	-0.15*	-0.11*	0.03	0.03	0.16	0.08		
	(0.08)	(0.06)	(0.05)	(0.05)	(0.10)	(0.12)		
Observations	74,139	74,008	142,011	141,851	51,711	51,559		
R-squared	0.64	0.65	0.65	0.66	0.66	0.67		
Firm-Bank FE	Yes	Yes	Yes	Yes	Yes	Yes		
Bank-Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes		
State-Sector-Quarter FE	No	Yes	No	Yes	No	Yes		
$SD(CDS_{q-1})$	0.11	0.11	0.10	0.10	0.12	0.12		