Conditional Accounting Conservatism and Bank Risk Taking*

Manuel Illueca[a] , Lars Norden[b], Gregory F. Udell[c]

[a] *Universitat Jaume I, Spain*

[b] *Rotterdam School of Management, Erasmus University, the Netherlands*

[c] *Kelley School of Business, Indiana University, USA*

Abstract

We investigate the effect of an exogenous change in loan loss provisioning rules on bank risk taking. To identify the effect we exploit that only banks that revealed a high conditional accounting conservatism (CAC) in the pre-adoption period should respond to the change. We conduct a difference-in-differences analysis using a large sample of matched bank-firm data around the introduction of the dynamic loan loss provisions in Spain in 2000. The main result is that banks with a high CAC in the pre-adoption period significantly increased their risk taking in the post-adoption period. These banks lend significantly more to ex ante riskier borrowers, accept more borrowers with lower accounting quality, and they display a higher loan growth. Our findings on bank risk taking are consistent with reduced screening and monitoring incentives and highlight unintended side effects of the change in the loan loss provisioning rules for banks.

This version: May 9, 2014

*Key words***:** Banks, loan loss provisions, bank regulation, bank lending

JEL classification: G21, G28, G32, M41

*. Corresponding author: Lars Norden, Department of Finance, Rotterdam School of Management, Erasmus University, Burgemeester Oudlaan 50, 3000 DR Rotterdam, the Netherlands; telephone: +31 10 4082807; fax: +31 10 4089017; E-mail address: lnorden@rsm.nl.

An earlier version circulated under the title "Do changes in the timeliness of loan loss recognition affect bank risk taking?" The authors are grateful to Viral Acharya, Steven Ongena, and participants of American Finance Association Meetings 2013 in San Diego.

1. Introduction

Recent bubble-driven financial crises have generated acute interest in countercyclical macroprudential policy tools that are designed to limit the build-up of systemic risk in the banking system during the bubble period and to dampen price increases that lead to this risk accumulation. Some of these macroprudential tools focus directly on the loan underwriting process itself such as caps on loan-to-value (LTV) ratios and debt-to-income (DTI) ratios. Others focus on key bank accounting rules and ratios including bank capital adequacy ratios and loan loss provisioning rules. Both of these types of accounting macroprudential policy tools are designed to generate buffers during good times in order to help banks weather the bad times after the bubble bursts. The inclusion of a countercyclical capital buffer in Basel III is the most prominent example of the former. The most prominent example of the latter was the highly-visible pre-crisis implementation in Spain of dynamic loan loss provisioning. This Spanish experiment with dynamic provisioning is the subject of our paper. There is no doubt that the implementation of this policy led to an accumulation of loan loss reserves beyond what they otherwise would have been. We focus, however, on an unexplored aspect of dynamic provisioning: its effect on bank risk-taking.

The Spanish implementation of dynamic provisioning in 2000 was widely viewed as an important regulatory innovation in macroprudential supervision. As recently as 2011 the IMF concluded that "dynamic provisioning – setting aside loan-loss provisions at the beginning of the risk-taking cycle to be drawn when the cycle takes a downturn – has worked to reduce the procyclicality of both credit and leverage."[1] A new study offers more specific support for dynamic provisioning finding that during the financial crisis it helped mitigate the contraction in the supply credit and its impact on real activity in the Spain economy (Jimenez et al., 2013). However, given the magnitude of the problems in the Spanish banking sector – particularly the implosion of the cajas banks that comprised half of the domestic banking system (e.g., Illueca, Norden and Udell, 2013) – it is clear that dynamic provisioning by itself was not powerful enough to stem the financial tsunami that hit Spain. Our paper explores another potential problem with dynamic provisioning: the possibility that dynamic

[1] International Monetary Fund (2011), p. 125.

provisioning may have had the unintended consequence of systematically encouraging some banks to pursue more risk-taking in their loan underwriting.

In designing loan loss provisioning standards there is a tension between the objectives of bank regulators with respect to systemic risk and the objectives driving domestic and international fair value-driven accounting standards, e.g., IFRS and U.S. GAAP. Bank regulators desire an accounting system that helps minimize the build-up of systemic risk. In contrast, fair value accounting standards are designed to provide the users of financial statements with an accurate portrayal of the current financial condition of individual banks. Specifically, fair value accounting seeks to structure loan loss provisioning standards that reflect timely recognition of bank loan losses. More generally, fair value accounting seeks to present a realistic contemporaneous snapshot of bank assets, liabilities, liquidity, profitability and solvency, and to minimize discretion that might deviate from this snapshot. Nevertheless, policymakers and bank regulators argue that – in practice -- under fair value accounting banks do not build up sufficient reserves in the good times to cover loan losses incurred during economic downturns (Laeven and Majnoni, 2003). In part, this is due to the contemporaneous nature of fair value accounting. In addition, it is driven by the fact that, in practice, the implementation of fair value accounting permits bank management a considerable amount of discretion (Laux and Leuz, 2010).[2]

Recently, the FASB and the IASB have agreed to shift from an incurred-loss to an expected-loss provisioning method. By forcing banks to recognize losses before they occur, accounting standard setters aim at mitigating the pro-cyclical features of the current provisioning system. Support for this policy can be found in recent empirical evidence for the U.S. banking industry suggesting that early recognition of loan losses is associated with a lower decrease in lending during recessionary periods relative to expansionary periods (Beatty and Liao, 2011). Dynamic provisioning can be viewed as going much further in the same direction – so much so, that it completely decouples a component of loan loss provisioning from contemporaneous (borrower) risk. That is, dynamic provisioning requires

[2]A related issue is the extent to which fair value accounting and the SEC may have amplified the financial crisis by, for example, forcing excessive write-downs of U.S. bank assets in highly illiquid markets (e.g., Wallison 2008). The balance of the evidence suggests that this is unlikely in great part because fair value accounting as practiced in the banking industry still permitted a considerable amount of discretion allowing banks to deviate considerably from the objectives of fair value accounting in their loan write-downs (Laux and Leuz, 2010).

banks to create loan loss provisions that are unrelated to (borrower) risk. This decoupling, in turn, could create unintended consequences in the form of an increased bank appetite for risk-taking.

To flesh this argument out, we note that the adoption of dynamic loan loss provisioning by the Bank of Spain represented an exogenous change in the timeliness of loan loss recognition. Because these dynamic loan loss provisions were decoupled from the current credit quality of borrowers, this policy change imposed upon the banking system an increase in unconditional accounting conservatism (accounting conservatism unrelated to current market values) and a decrease in conditional accounting conservatism (accounting conservatism linked to current market values). In this paper we hypothesize that the decrease in conditional accounting conservatism created incentives for certain banks to increase their *ex ante* risk-taking in lending. Specifically, we argue that these incentives should only affect banks with a relatively high conditional accounting conservatism in the pre-adoption period because the new system is not in line by construction with their revealed preferences for timely and information-based loan loss recognition. By assuming more loan risk, these banks can re-link their provisioning to expected losses. These banks might also pursue increased *ex ante* loan risk because dynamic provisioning has forced them off of their preferred habitat in risk-return space by forcing them to have more capital (i.e., stockholders equity plus loan loss reserves), i.e., less leverage. In this case, the re-linking of provisioning to expected losses is by-product of increased bank risk-taking. This perverse incentive should not affect banks with relatively low conditional accounting conservatism because the new system is in line with their revealed preferences. That is, these banks have revealed themselves as willing to smooth their accounting performance through the cycle and to use discretion to achieve their optimal location in risk-return space. The goal of our paper is to empirically test this hypothesis and explore what happens as a result of this decoupling in terms of *ex ante* risking-taking, lending standards and lending volume across banks that differ in terms of their accounting conservatism.

Because dynamic provisioning is relatively new regulatory innovation it is not surprising that there are no prior studies on the link between dynamic provision and bank risk-taking, much less empirical evidence on the effect of accounting conservatism on this association. However, our hypothesis is informed by the extant literature that finds a link between early accounting recognition of economic

losses – conditional accounting conservatism -- and corporate investment behavior in the nonfinancial sector of the economy. Stronger conditional accounting conservatism reduces firms' over-investment by decreasing managers' incentives to invest in negative NPV projects. Francis and Martin (2010) examine acquisition investment decisions and find that firms with stronger accounting conservatism (as measured by Basu, 1997) exhibit higher post-acquisition operating performance. Bushman, Piotroski and Smith (2011) show that relationship between the timeliness of loss recognition and corporate investment behavior is stronger when managers face a decline in investment opportunities. Finally, Biddle, Ma and Song (2013) provide evidence suggesting that both conditional and unconditional accounting conservatism reduce bankruptcy risks. More broadly our hypothesis is related to stream of research that focuses on the effects of accounting quality and transparency on investment behavior (Biddle and Hillary, 2006; Francis, Khurana, Pereira and Huang, 2009; Biddle, Hillary and Verdi, 2009). This literature is related to our paper because underwriting standards (i.e., bank risk-taking in lending) is a major, if not the most important, component of bank investment behavior.

In the literature on financial institutions there is one paper that is related to ours in the sense that it examined the link between the timeliness of loss recognition and the procyclicality in the lending volume during recessions versus expansions (Beatty and Liao, 2011). However, this paper did not examine link between loss recognition and bank risk-taking. That is, unlike this paper we focus in our paper on the risk taking of banks in commercial lending after an exogenous change of the provisioning system at all banks. Specifically, our identification strategy relies on a large-scale exogenous regulatory change in Spain in the form of the introduction of dynamic provisioning by the Bank of Spain in 2000.

Our hypothesis is also informed by the literature on the effect of bank capital regulation on bank risk (see Allen, Fulghieri and Mehran, 2011 for an overview). This literature suggests that banks might offset the risk-reducing effects of increased capital requirements by increasing their risk on other dimensions (Koehn and Santomero, 1980; Kim and Santomero, 1988; Berger and Bouwman, 2013). By extension this literature implies that banks might have an incentive to offset the effects of new

accounting standards such as dynamic provisioning that force larger economic buffers by shifting their portfolio allocation to riskier borrowers.

Finally, our paper is also related to the emerging literature on countercyclical macroprudential policy tools. The introduction of dynamic provisioning in 2000 occurred during a period when a consensus was building among policymakers about the importance of adopting a macroprudential policy whose goal is to ensure the stability of the financial system (e.g., Kashyap and Stein, 2004). While it is challenging to delineate the specific boundaries of macroprudential policy there is agreement that it should be implemented in conjunction with microprudential policies and with monetary and fiscal policies (International Monetary Fund, 2011b). The macroprudential policy "toolkit" includes, for example (in addition to dynamic provisioning), countercyclical capital buffers, time-varying systemic liquidity surcharges, LTV caps, and stressed VaRs (International Monetary Fund, 2011b). The most commonly deployed tool is LTV caps IMF. A 2010 survey by the IMF indicated that 20 out of 49 countries surveyed used LTV caps (Lim et al., 2011, Crowe et al., 2013). The issue of the efficacy of LTV ratios, and for that matter macroprudential policy tools in general can still be best described as unsettled (e.g., Ono et al. 2013; International Monetary Fund, 2011b). While fewer countries have adopted dynamic provisioning than have adopted LTV caps, there are several examples beyond Spain including Columbia and Peru. More importantly dynamic provisioning has garnered considerable attention in policy circles including its prominent treatment in the October 27, 2011 Joint Progress Report to the G20 by the Financial Stability Board, the International Monetary Fund and the Bank for International Settlements on "Macroprudential Policy tools and Frameworks."[3]

By way of preview we find that banks that exhibited a high conditional accounting conservatism in the pre-adoption period ("affected banks") took significantly more risks in the post-adoption period than other banks. Specifically, we find that affected banks lend significantly more to borrowers with a higher ex ante observable default risk, measured by the Altman Z-Score. We also find that affected banks loosened their lending standards by lending significantly more to borrowers who decreased the quality of accounting their information, i.e., firms who switched from "Big four"- auditors to

[3] For a more detailed discussion of the attention given by policymakers and academics to dynamic provisioning, see footnote 6 in Jimenez et al. 2013.

local auditors. And, finally, we find that affected banks display a significantly higher loan growth in the post adoption period than other banks. This last finding is consistent with studies on the growth-risk nexus in banking that document that loan growth beyond a certain point is inevitably accompanied by an increase in risk taking. In additional analyses we show that these effects are significantly more pronounced for the large listed Spanish commercial banks (compared to the non-listed state-controlled savings banks, also known as Cajas), indicating their risk taking behavior and performance is more sensitive to the shock.

The rest of the paper is organized as follows. In Section 2 we describe the institutional background and present our hypotheses. In Section 3 we describe the data and our empirical strategy. In Section 4 we report our main results. Section 5 concludes.

2. Institutional background and hypotheses

2.1 Institutional background: The dynamic loan loss provisioning system

Until the second quarter of 2000 banks in Spain had to create general loss provisions for latent losses and specific loan loss provisions for recognizable loan losses. From the third quarter of 2000 onwards all banks in Spain had to create the dynamic loan loss provisions (also known as "statistical provisions") in addition to the general and specific LLPs. The new component of LLPs, the quarterly dynamic LLPs, are calculated as shown in formula (1):

$$Dynamic \quad LLP_t = \frac{1}{4}\sum_{i=1}^{6} \beta_i C_{it} - Specific \quad LLP_t \tag{1}$$

where C_{it} is the stock of loans in risk category i in period t. The parameter β_i can take values from 0%, 0.1%, 0.4%, 0.6%, 1%, and 1.5% for i={1, …, 6}. The values for β_i were estimated by the Bank of Spain using historical credit volume and loss data since 1987 for the six risk categories. These six risk categories i are: (1) Negligible risk: Cash, public-sector exposures,

and interbank exposures; (2) Low risk: Mortgages with LTV below 80% and exposures to corporations with a rating A or higher; (3) Medium-low risk: Mortgages with LTV above 80% and other secured loans not previously mentioned; (4) Medium risk: Other loans, including unrated or below-A rated corporate exposures and SME exposures; (5) Medium risk: Consumer loans; (6) High risk: Credit card exposures and overdrafts.

The dynamic LLP is positive (negative) in booms (recessions), i.e., banks have to create an additional provision (deplete the risk reserves by using previously created dynamic provisions) because specific LLPs will be below (above) the through-the-cycle average reflected in the parameters β_i. The Bank of Spain had to modify the provisioning system in 2005 to make it compatible with the new IFRS requirements.[4] This change consisted of a minor adjustment of the risk parameters β and the merge of general LLPs and dynamic LLPs to one framework. Most important, the logic behind the dynamic provisioning component remained the same.

We plot the evolution of banks' non-performing loans, total LLPs (without general LLPs, yearly flow), and specific LLPs around the year 2000 in Figure 1. The volumes of LLPs are scaled by total loans. We calculate the specific LLPs by subtracting the dynamic loan loss provisions from the total LLPs (without general LLPs). Prior to 1999 the total LLPs and the specific LLPs are identical since there were no dynamic LLPs. In 1999 a small number of savings banks already voluntarily introduced the new dynamic LLPs. All banks were required to adopt the new provisioning rules in 2000.

(Insert Figure 1 here)

[4] After 2005 the formula to calculate the general LLPs consisted of a component related to loan growth (formerly known as the general LLPs) and the dynamic LLPs which was introduced in 2000 (for details see Trucharte and Saurina, 2013, p. 12):

$$General\ \ LLP_t = \sum_{i=1}^{6} \alpha_i \Delta C_{it} + \sum_{i=1}^{6} \left(\beta_i C_{it} - Specific\ \ LLP_t \right)$$

where ΔC_{it} is the loan growth for loan category i in period t, C_{it} is the stock of loans in category i in period t, and $Specific\ LLP_t$ are the total specific loan loss provisions in period t. The parameter α can take values from 0%, 0.6%, 1.5%, 1.8%, 2% and 2.5% and β can take values from 0%, 0.11%, 0.44%, 0.65%, 1.1% and 1.64%.

Figure 1 shows three main patterns. First, during the period 1995-2005, non-performing loans continuously decreased from approximately 5% to below 1% of total loans (specific loan loss provisions decreased in a similar way). Second, after the introduction of the new dynamic LLP system (in 1999 for early adopters and 2000 for all banks), a substantial increase in total LLPs took place: loan loss provisions more than doubled from 1999 to 2001, stabilizing at a relatively high level from 2001 onwards because the dynamic LLPs were subject to a cap.[5] Third, in the post-adoption period banks' LLPs became increasingly decoupled from the non-performing loans, i.e., unrelated from the actual credit quality of borrowers. We repeat the same analysis for the Spanish commercial banks and the savings banks separately and find that the increase in total LLPs is similar across bank types but the provisioning behavior of savings banks tends to be smoother than the one of commercial banks.

2.2 Hypotheses

The introduction of the dynamic loan loss provisioning system in the Spanish banking system represented an exogenous change in the timeliness of loan loss recognition. Because the dynamic loan loss provisions were decoupled from the current credit quality of borrowers their additional creation increased the unconditional accounting conservatism of banks but decreased their conditional accounting conservatism. In this paper we hypothesize that the decrease in conditional accounting conservatism has created incentives for certain banks to increase their ex ante risk taking in lending. We argue that these incentives should arise only for banks with a relatively high conditional accounting conservatism in the pre-adoption period because the new system is by construction not in line with their revealed preferences

[5] The upper limit for the dynamic LLPs was defined as: $3 \times \sum_{i=1}^{6} \left(\beta_i C_{it} - Specific\ \ LLP_t \right)$.

for timely and information-based loan loss recognition. These incentives should not arise for banks with a relatively low conditional accounting conservatism because the new system is in line with their revealed preferences. The latter banks might prefer to report a smooth performance through the cycle.

Several features of the specific design of the dynamic LLP system in Spain contribute to the effect described above. First, the main goal of the dynamic LLP system was to create a countercyclical component in loan loss provisioning so that banks increasingly provision in good times to build up a buffer that can be used for loss absorption in bad times. By construction such system reduces the conditional accounting conservatism of a bank since the dynamic LLP are tied to the stage of the economic cycle and not to the quality of individual borrowers.

Second, the dynamic LLP system was based on collective impairment rules using aggregate data from the previous crisis in the Spanish banking system. This approach has two drawbacks. The system does not consider the individual borrower quality but requires banks to assign loans to six different risk categories. All loans within the same category require the same dynamic loan loss provision. It is known from the Basel I capital adequacy framework that constant risk parameters per risk category create moral hazard incentives for banks to lend more to the riskiest borrowers per category (and to sell loans to the least risky borrowers) to maximize the return-risk relation. In addition, the definition of the risk categories and the respective coefficients to determine the size of the dynamic provisions are based on aggregate historical data on credit losses in Spain since 1987 (Saurina, 2009). The drawback is that this period covers only one economic cycle, which means that the definition of the risk categories and their coefficients might not adequately reflect current economic conditions, especially not the actual risk of different credit exposure types. For example, loans to real estate and construction companies were historically very safe but very risky during the global financial crisis of 2007-2009.

Third, the dynamic LLPs were implemented as an additional charge that all banks had to recognize in their income statement. After the introduction of the new rules banks faced higher cost pressure, making it harder to break even or to reach profitability targets. The latter has a direct impact on banks' executive incentives and compensation. Following the standard assumption in finance that there is a positive ex ante relation between risk and return it is plausible that the compulsory additional charge increases the risk taking incentives of bank managers. This is particularly true for risks that are not reflected in the dynamic LLP system.

We take into account that an increase in risk taking might occur in various dimensions and propose the following three hypotheses. We first investigate changes in bank risk taking during the post-adoption period using the Altman Z-Score, which is a well-established direct measure of observable ex ante default risk of borrowers. We use the modified Z-Score for private firms as proposed by Altman (2001, 1968). It has also been shown that the Z-Score has kept is predictive power for corporate defaults over time and across countries (e.g., Agarwal and Taffler, 2007). As discussed in Section 2.1 banks have incentives to increasingly lend to borrowers with the lowest Z-Score in each of the six risk categories that were created to calculate the dynamic LLPs.

Hypothesis 1 (Ex ante borrower risk): Banks with a high conditional accounting conservatism in the pre-adoption period lend significantly more to borrowers with higher ex ante default risk in the post-adoption period than other banks.

We also consider potential changes in banks' lending standards. Given that the latter are not directly observable we carry out an indirect test that is based on the quality of accounting information disclosed by these firms. The latter plays a key role in the screening and monitoring function in bank lending (e.g., Botosan et al., 2006; Allen and Yohn, 2009; Minnis and Sutherland, 2013). We expect the demand for accounting quality of banks with a high conditional accounting conservatism in the pre-adoption period to decrease compared to that of other banks. As opposed to the US, all firms in Europe have to disclose accrual-based

financial statements, which are subject to mandatory auditing above a certain size threshold. In such an environment, a change in the demand for accounting quality is likely to affect the nature and extent of the auditing process, rather than the availability of financial statements. Hence, in this paper, we evaluate two characteristics of auditing, which according to previous literature, are directly related to accounting quality: auditor size and auditor change.

Firms with Big4 Auditors have lower discretionary accruals (Becker, DeFond, Jiambalvo, and Subramanyam, 1998; Francis, Maydew, and Sparks, 1999; Kim, Chung, and Firth, 2003), higher timeliness in loss recognition (Francis and Wang, 2008; Cano, 2010), higher earnings response coefficients (Teoh and Wang, 1993), and lower likelihood of being subject of accounting and auditing enforcement releases from the SEC (Farber, 2005). It is well established in the literature that the Big four international auditors enjoy a high reputation and, therefore, hold strong incentives to protect it (Lennox, 1999). They tend to receive higher fees than small local auditors (Simunic and Stein, 1987), and indeed, companies than engage in IPOs are charged lower banking fees when hiring big auditors, suggesting that they do contribute to reduce information asymmetries (Beatty, 1988; Willemborg, 1999). However, empirical evidence on auditor change is rather mixed. On the one hand, auditor tenure might positively affect audit quality because auditors need time to acquire knowledge of their clients (Myers et al, 2003; Carcello and Nagy, 2004; Chen et al., 2008). Because of its effects on the auditor learning process, auditor change should lead to a decrease in accounting quality, at least during the first years of the client-auditor relationship. On the other hand, some studies claim that auditor tenure might have a negative impact on audit quality because of a loss of auditor independence. Davis et al. (2009) provide empirical evidence suggesting that long auditor tenures increase the propensity of firms to use discretionary accruals to meet analysts' earnings forecasts. Carey and Simnet (2006) find similar results for Australian firms.

Regardless its effects on actual accounting quality, the previous literature documents that auditor changes have significant negative effects on the *perceived* accounting quality. Maxi,

Maxwell and Miller (2004) show that the cost of corporate bonds is decreasing with extended auditor client tenure, and Ghosh and Moon (2005) find that firms with long-tenured auditors exhibit higher earnings response coefficients. Indeed, in the context of distressed firms, auditor changes might be a strong signal of the willingness of the firm to hide unfavorable information, so as to prevent the lender from taking actions to reduce credit availability (Kluger and Shields, 1989).

Hypothesis 2 (Lending standards): Banks with a high conditional accounting conservatism in the pre-adoption period lend significantly more to borrowers with lower accounting quality, measured by unfavorable auditor switches, in the post-adoption period than other banks.

Another channel through which banks with an initially high conditional accounting conservatism might increase their risk taking in the post-adoption period could be loan growth. The latter can comprise loans to new borrowers or additional loans to existing borrowers. New borrowers might be firms that were rejected by other banks, that switch relationships, that were newly established (start-ups), and firms that were discouraged from borrowing from banks. All have in common that there default risk tends to be higher than that of the average borrower in the economy. The banking and finance literature has indeed shown that loan growth beyond a critical level goes along with an increase in risk taking (e.g., Keeton 1999; Dell'Ariccia and Marquez 2006; Ogura 2006; Foos et al. 2010; Ogura 2006). We note that banks can assume higher ex ante observable risks but also assume higher unobservable risks.

Hypothesis 3 (Loan growth): Banks with a high conditional accounting conservatism in the pre-adoption period exhibit a significantly higher loan growth in the post-adoption period than other banks.

3. Data and empirical strategy

3.1 Data

Our sample includes all savings banks, commercial banks, credit cooperatives, and foreign banks in Spain, as well as non-financial firms. The bank data set comprises the financial statements of all deposit institutions, and some corporate governance and ownership variables from 1992 to 2010[6]. The firm data set comes from the SABI database (from Informal D&B - Bureau Van Dijk) which is based on the public commercial registry in Spain. It includes detailed accounting information (balance sheets and income statements), the number of employees, name and type of the auditors, province, and information on the number and identity of bank relationships (Bank of Spain Code) for 33,122 firms during 1997-2007 (176,197 firm-year observations). The information on the firms' bank relationships allows us to match the firm data with the extensive bank data over a period of eleven calendar years.

In this study, we examine banks' marginal risk-taking behavior from an ex ante perspective by using the financial statements of bank borrowers from the year before they start borrowing from banks. This approach has several advantages. One the one hand, it provides a direct measure of the changes in the riskiness of the commercial loan portfolio of banks after the introduction of the new provisioning rules. On the other hand, our risk measure is not based on banks' financial statements; so that it is unlikely that our result will suffer from a potential endogeneity problem or that they will be driven by a spurious correlation between our dependent and independent variables. Panel A of Table 1 reports summary statistics of the bank variables, and Panel B summary statistics of firm variables.

(Insert Table 1 here)

[6] The Spanish Association of Private Banks (AEB) provides the data on commercial banks, whereas information on savings banks was collected from the Spanish Confederation of Savings Banks (CECA).

3.2 Empirical strategy

Our empirical strategy consists of two main steps. First, we identify banks that are likely to be affected by the exogenous change in bank loan loss provisioning rules. Our identification strategy is based on empirical measures of banks' degree of conditional accounting conservatism in the pre-adoption period, which we which explain below in more detail. We note that there were substantial differences across banks with regard to their conditional accounting conservatism in the pre-adoption period, which we can exploit to identify banks' sensitivity to the change in accounting rules. Based on these measures we distinguish between affected banks (treatment group) and other banks (control group). Second, we carry out a standard difference-in-differences analysis, in which we study whether and how the risk taking of affected banks in the post-adoption period differs from that of other banks. We test our three hypotheses on bank risk taking with various advanced econometric methods.

As argued beforehand, banks with a high conditional accounting conservatism should be affected by the introduction of the dynamic LLP system but not banks with a low conditional accounting conservatism. To differentiate between banks with a high and low conditional accounting conservatism, we examine how their specific LLPs relate to non-performing loans at different points in time during the pre-adoption period. It is important to measure banks' CAC in the pre-adoption period because the dynamic LLP system might have affected their CAC in the post-adoption period, as we hypothesized beforehand. We estimate the following regression models for each of the 43 banks in our sample:

$$Specific\ \ LLP_t = \gamma_0 + \gamma_1 \Delta NPL_{t-1} + \theta_t \tag{2}$$

$$Specific\ \ LLP_t = \beta_0 + \beta_1 \Delta NPL_{t-1} + \beta_2 \Delta NPL_t + \beta_3 \Delta NPL_{t+1} + \varepsilon_t \tag{3}$$

Table 2 reports the results. Panel A shows regression results of banks' loan loss provisions (LLP) on lagged changes in nonperforming loans (NPL) and lagged, current and future changes in nonperforming loans (NPL), using quarterly bank data from the pre-adoption period. Following the model proposed by Nichols et al (2009) we measure Conditional Accounting Conservatism as the difference in the adjusted R^2 for both regressions. Because of the specific characteristics of the Spanish accounting standards in the pre-adoption period we define lagged changes in non-performing loans as the average increase in NPL from quarter -4 to quarter -7. For current and future changes in non-performing loans, we consider the average increase in NPL from quarter 0 to -3, and +1 to +4, respectively. We estimate regressions for each bank with at least 20 bank-quarter observations for the pre-adoption period. Panel A of Table 2 reports the average coefficients of these regressions for the whole sample. We calculate the difference in the Adjusted R^2 of the model shown in equation (3) minus the Adjusted R^2 of the model shown in equation (2) for each bank (AVG_DIFF). Similar to Nichols et al. (2009) the variable CAC equals one if the difference in the adjusted R^2s is above the sample median, and zero otherwise. Alternatively, we use the continuous difference of the R^2s in a robustness test that confirms all main results. We also report the results for the low (high) CAC group banks with CAC below (above) median from December 1996 to June 2000.

In Panel B of Table 2 we analyze the changes in the level of Conditional Accounting Conservatism of banks before and after the adoption of the new dynamic provisioning system in Spain. This is important because we argue that banks with high CAC in the pre-adoption period are affected by the new provisioning rules, resulting in a decrease in Conditional Accounting conservatism and an increase in risk taking, as hypothesized above. We report the mean and average of CAC in the pre and the post-adoption period, for the whole sample and two subsamples of banks that exhibit low and high Conditional Accounting Conservatism in the pre-adoption period. The standard t-test and the Wilcoxon z-test are used for testing the

equality of the means and the medians of CAC, before vs after the adoption of the new provisioning system, for the whole sample and for the banks which exhibit low and high CAC in the pre-adoption period. We find that there is no significant change for banks with low CAC when comparing the pre- and post-adoption period but do we find a highly significant crease in CAC for banks with high CAC in the pre-adoption period, which is consistent with our hypotheses on bank risk taking.

(Insert Table 2 here)

In the second step, we investigate the effects of the exogenous decrease in conditional accounting conservatism on bank risk taking using a standard difference-in-differences analysis. The treatment (control) group comprises banks with high (low) conditional accounting conservatism in the pre-adoption period, for which the effect of the new dynamic loan loss provisioning system is expected to be stronger (weaker). We consider three alternative dimensions of risk taking. First, we focus on borrowers' Z-score as a direct and well-accepted indicator of observable ex-ante borrower default risk. Second, we consider bank lending standards, which have a direct impact on bank loan supply by affecting screening and monitoring activities. And third, we consider banks' loan growth, measured by the change in bank debt of individual firms, as an indirect indicator of risk taking, which reflects non-observable firm characteristics related to the likelihood of default.

4. Results

4.1 Effects on ex ante risk in bank lending

Table 3 reports regression results of borrowers' Z-Score on the exogenous change in conditional accounting conservatism after the adoption of the new dynamic provisioning system in Spain. Since the vast majority of bank borrowers are unlisted firms, the original

version of Z-score (Altman, 1968) is not available. Hence, in this paper we consider an alternative version of the Z-score, aimed at private firms (Altman, 2001)[7]:

$$ZScore = 0.71\frac{Working\ Capital}{Total\ Assets} + 0.85\frac{Retained\ Earnings}{Total\ Assets} + 3.10\frac{EBIT}{Total\ Assets} + 0.42\frac{Total\ Assets}{Total\ Liabilitites} + \frac{Sales}{Total\ Assets} \quad (4)$$

As explanatory variables, we use a dummy variable –CAC-, which has value one if the level of conditional accounting conservatism of banks before the inception of the new accounting regime is above median and zero otherwise, a dummy variable –EVENT-, which equals one in the post adoption period and zero otherwise, the interaction of both dummy variables –CAC x EVENT-, and a set of control variables[8]. In particular, borrower specific variables –namely, firm age and size-, and bank specific variables -namely, ROA, the capital ratio, the ratio of deposits to total assets, and the ratio of total loans to total assets-, are included in our regressions as control variables. Three alternative specifications are considered. Column (1) reports pooled regression results with industry fixed effects. Column (2) focuses on new clients, by restricting the sample to the year in which borrowers start a new relationship with a bank. And finally, column (3) reports regression results with bank-firm fixed effects and the lagged Z-score as an additional explanatory variable[9]. All regressions cover the period 1997-2007 and the standard errors are robust to heteroskedasticity and bank-firm clustering effects.

(Insert Table 3 here)

The results for model 1 suggest that borrowers of banks with a higher level of CAC in the pre-adoption period exhibit significantly higher Z-Score. Indeed, the coefficient of variable

[7] These variables are winsorized at 1% and 99% level before computing Z-score.
[8] The results reported in tables 4 to 6 are robust when using the levels of CAC instead of a dichotomous variable.
[9] To avoid multicollinearity, this specification omits the dummy variable CAC.

CAC is positive and statistically significant at conventional levels. However, in the post-adoption period, the creditworthiness of these borrowers decreases significantly faster than those of the less conservative banks. The coefficient for EVENT is negative and significant, suggesting that there is a general decrease in borrowers' Zscore after the adoption of the new accounting standard. Furthermore, the interaction term between EVENT and CAC is negative and significant, which indicates that the dynamic provisioning system led to a higher decrease in borrowers' Zscore for the more conservative banks than for the less conservative ones. According to our expectations, the coefficients for control variables show that borrowers Z-score is increasing with the firm age and bank profitability, and decreasing with firm size and the bank loan to total assets ratio.

Models 2 and 3 are consistent with these results. Results for model 2, which focuses on new clients, the coefficients for variables EVENT and the interaction term between EVENT and CAC are again negative and significant, suggesting that the creditworthiness of new lenders decreases in the post adoption period, and that the decrease is significantly stronger for banks with higher conditional conservatism in the pre-adoption period. Model 3 controls for unobservable time invariant bank-firm characteristics and includes lagged Z-score as an additional explanatory variable. To deal with the endogeneity of the lagged dependent variable, we use the first difference GMM estimator, based on the "orthogonal deviations" transformation (Arellano and Bover, 1995). Our results confirm that the borrowers of the more conservative banks in the pre-adoption period exhibit a more pronounced decrease in creditworthiness than those of the less conservative ones.

In sum, these results suggest that the adoption of the dynamic provisioning system had a stronger impact on the more conservative banks, which either started lending to more risky clients or weakened the monitoring of their existing borrowers.

4.2 Effects on borrower accounting quality

Table 4 reports the results of different conditional logistic regressions of auditor change on the dummy variable EVENT, the interaction of this variable with CAC, and a set of control variables[10]. In particular, four different types of auditor switches are considered: switches from Big4 auditors to small auditors –DOWNGRADING-, switches within local auditors –WITHIN LOCAL-, switches within international auditors –WITHIN BIG-, and switches from small to Big4 auditors –UPGRADING-. In our regressions, all these categories are compared to the reference category, which consists of firms that do not switch from an auditor to another. As control variables, we include a set of borrower specific variables -the ratio of total non-current assets to total assets, which is a proxy for the ability of borrowers to pledge collateral, Z-score, and sales growth-, the set of lender specific variables we used in the previous section, and bank-firm fixed effects[11]. Standard errors are robust to heteroskedasticity and bank-firm clustering effects.

(Insert Table 4 here)

Interestingly, our results show that the likelihood of unfavorable auditor switches; i.e., DOWNGRADING and WITHIN LOCAL, exhibit a higher increase (or lower decrease) in the post-adoption period for banks that had a higher level of conditional accounting conservatism before the setup of the new dynamic provisioning system in 2000. Indeed, the coefficients of the interaction term EVENT x CAC in models (1) and (2) are positive and significant at least at 5% level, which is consistent with the idea that a negative shock in conditional accounting conservatism leads banks to loosen their credit standards, ultimately reducing the demand for borrower accounting quality. By the same token, favorable switches of auditors, particularly

[10] CAC is not included in the model to circumvent multicollinearity with bank firm fixed effects.
[11] For the sake of brevity, table 5 does not report the results of simple logistic regressions with industry fixed effects instead of bank-firm fixed effects. These results remained qualitatively unchanged vis-a-vis of those included in table 5.

the upgrading from a local to an international auditor, are negatively associated with the level of conditional accounting conservatism in the pre-adoption period. The coefficient of the interaction term between CAC and EVENT is negative and significant at the 5% level, which indicates that switching from a small auditor to a Big4 auditor in the post-adoption period is less likely for the borrowers of the affected banks.

As to the control variables, our results clearly indicate that collateral is positively correlated to auditor downgrading, but becomes insignificant for the other (more favorable) auditor switches. This result is consistent with the banks placing less effort in screening and monitoring projects when protected by valuable collateral (Manove, Padilla and Pagano, 2001). As long as collateral is high enough, the likelihood that a borrower switches to a local auditor significantly increases. As opposed to collateral, the significance of Z-Score is higher in the favorable switches. Firms with higher Z-Score exhibit a lower likelihood to switch to an international auditor, whereas we find no significant differences in Z-Score between firms that keep their auditors and those that move to a local one. This result brings support to the idea that, compared to more risky firms, less risky firms are monitored less intensively, because the (high) value of their reputation effectively constrains their behavior (Diamond, 1991, Minnis and Sutherland, 2013).

In sum, the empirical evidence of table 5 is line of our expectations. Banks facing a strong exogenous decline in conditional accounting conservatism loosen credit standards, leading to a significant decrease in the demand for borrower accounting quality.

4.3 Loan growth

For investigate this possibility, we regress firms' change in bank debt on a dummy that is one if the measure of banks' conditional accounting conservatism is above the sample median (CAC), a dummy that marks the post event period (EVENT) and the interaction of both

variables. We further add a set of firm- and bank-specific control variables. Table 5 reports the findings for industry dummies (Model 1) and bank-firm dummies (Model 2).

(Insert Table 5 here)

The result is very clear and consistent across Model 1 and 2. Most important, the coefficient of the interaction term EVENT x CAC is significant and positive. This result indicates that banks with a higher conditional accounting conservatism in the pre-adoption period exhibit a significantly higher loan growth after the introduction of the dynamic LLP system. In addition, we obtain a significantly negative coefficient of CAC, which is in line with our expectations. Banks with a higher conditional accounting conservatism exhibit a lower loan growth. Furthermore, loan growth in the post-adoption period is lower, as reflected by the significantly negative coefficient of EVENT, which is in line with findings of Jimenez et al. (2013).

4.4 Further empirical checks

In the remainder we examine potential effects of corporate governance on the relationship between banks' conditional accounting conservatism and risk taking. This analysis is motivated by the well-documented corporate governance differences and their implications for bank behavior in the Spanish financial system (see Illueca, Norden and Udell, 2013). We expect that privately-owned and listed banks are more likely to be exhibit higher conditional accounting conservatism in the pre-adoption period than state-owned and non-listed banks.

To examine potential interaction effects with bank governance we augment our baseline model as follows. We add four additional regressors to our baseline regression model: SB, which is a dummy variable that equals one if the lender is a savings bank and zero otherwise, and the interaction terms SBxCAC, SBxEVENT, and SBxEVENTxCAC. Regression model

(1) and (2) are pooled regressions for the Z-Scores of all clients and new clients including industry dummies, whereas model (3) is a regression examining within bank-firm estimates. Specifically, in model (3) the first-difference GMM estimator, based on the "orthogonal deviations" transformation (Arellano and Bover, 1995), is used to deal with the endogeneity of the lagged dependent variable. With the exception of lagged Z-score, all regressors are considered as strictly exogenous. Table 6 reports the results.

(Insert Table 6 here)

Model (1) confirms our previous results but we do not find any significant effects of bank governance on risk taking when we consider all borrowers. Interestingly, we do find such effects in Model (2) where we consider the risk of new borrowers that banks add to their credit portfolios. On the one hand we find that savings banks that exhibit a higher CAC in the pre-adoption period lend to less risky borrowers on average, as indicated by the significant coefficient of CACxSB (0.3105). On the other hand we find that savings banks that exhibit a higher CAC in the pre-adoption period lend to riskier borrowers in the post-adoption period, as indicated by the significantly negative coefficient of the triple interaction term CACxEVENTxSB (-0.3651). However, Model (3), which includes the strictest controls (matched bank-firm pair fixed effects, shows that this effect is not robust. It basically confirms that the overall effect of conditional accounting conservatism dominates any potential additional effects related to bank governance. We conclude that there are no significant differences between Spanish commercial banks and savings banks per. What primarily matters for the risk taking behavior is the bank's conditional accounting conservatism in the pre-adoption period.

5. Conclusion

In this paper we investigate the effects of an exogenous change in loan loss provisioning rules on bank risk taking. We take advantage of large-scale regulatory change that took place in Spain at the beginning of the last decade. In the year 2000, the Bank of Spain, which is responsible for the accounting standards for the Spanish banking industry, undertook a deep overhaul of the loan loss provisioning system, which entailed the creation of the dynamic loan loss provisions. The dynamic provisioning system was conceived as a complement to the specific and general loan loss provisions, and aimed at introducing a countercyclical provisioning component in the whole banking industry.

In our analysis, we exploit the cross-sectional variation in accounting conservatism in the pre-adoption period to examine the effect of the new loan loss provisioning rules. We find that banks with a high CAC in the pre-adoption period significantly increased their risk taking after adoption of the dynamic loss provisioning system in the year 2000. These banks lend significantly more to ex ante riskier borrowers, accept more borrowers with lower accounting quality, and they display a higher loan growth. Our findings on bank risk taking are consistent with reduced screening and monitoring incentives and highlight unintended side effects of the change in the loan loss provisioning rules for banks. Accounting standard setters and bank regulators should consider these effects when designing rules and regulations for countercyclical risk buffers.

References

Agarwal, V., R. Taffler. 2007. Twenty-five years of the Taffler z-score model: Does it really have predictive ability? *Accounting and Business Research* 37, 285-300.

Allen, F., Fulghieri, P., Mehran, H., 2011. The Value of Bank Capital and the Structure of the Banking Industry. *Review of Financial Studies* 24, 971-982.

Ball, R., Shivakumar, L., 2005. Earnings quality in UK private firms: Comparative loss recognition timeliness. *Journal of Accounting and Economics* 39, 83-128.

Basel Committee on Banking Supervision, 2011. Basel III: A global regulatory framework for more resilient banks and banking systems. Revised version June 2011.

Basu, S., 1997. The conservatism principle and the asymmetric timeliness of earnings. *Journal of Accounting and Economics* 24, 3-37.

Beatty A., Liao, S., 2011. Do delays in expected loss recognition affect banks' willingness to lend? *Journal of Accounting and Economics* 52, 1-20.

Berger, A., Bouwman, C., 2013. How Does Capital Affect Bank Performance During Financial Crises? *Journal of Financial Economics* 109, 146-176.

Berger, A., Udell, G., 2004. The institutional memory hypothesis and the procyclicality of bank lending behavior. *Journal of Financial Intermediation* 13, 458-495.

Biddle, G., Hilary, G., 2006. Accounting Quality and Firm-level Capital Investment. *The Accounting Review* 81, 963-982.

Biddle, G., Hilary, G., Verdi, R., 2009. How does financial reporting quality relate to investment efficiency? *Journal of Accounting and Economics* 48, 112-131.

Biddle, G., Ma, M., Song, F., 2013. Accounting Conservatism and Bankruptcy Risk. Working Paper, October 2013.

Bushman, R., Piotroski, J., Smith, A., 2011. Capital Allocation and Timely Accounting Recognition of Economic Losses. *Journal of Business Finance and Accounting* 38, 1-33.

Crowe, C., Dell'Ariccia, G., Igan, D., Rabanal, P., 2013. How to deal with real estate booms: Lessons from country experiences. *Journal of Financial Stability* 9, 300-319.

Dell'Ariccia, G., Marquez, R., 2006. Lending booms and lending standards. *Journal of Finance* 61, 2511-2546.

FASB, 2011. Financial Instruments: Impairment, *Supplementary Document*, 2011-150.

Financial Stability Board, the International Monetary Fund and the Bank for International Settlements, 2011. Joint Progress Report to the G20 on Macroprudential Policy tools and Frameworks.

Foos, D., Norden, L., Weber, M., 2010. Loan growth and riskiness of banks. *Journal of Banking and Finance* 34, 2929-2940.

Francis, J., Huang, S., Khurana, I., Pereira, R., 2009. Does Corporate Transparency Contribute to Efficient Resource Allocation? *Journal of Accounting Research* 47, 943-989.

Francis, J., Martin, X., 2010. Acquisition profitability and timely loss recognition. *Journal of Accounting and Economics* 49, 161-178.

García-Lara, J., García-Osma, B., Penalva, F., 2009. Accounting Conservatism and Corporate Governance. *Review of Accounting Studies* 14, 161-201.

Guay, W., Verrecchia, R., 2006. Discussion of an economic framework for conservative accounting and Bushman and Piotroski. *Journal of Accounting and Economics* 42, 149-165.

Illueca, M., Norden, L., Udell, G., 2013. Liberalization and Risk-Taking: Evidence from Government-Controlled Banks, *Review of Finance*, advanced access published on July 25, 2013, doi:10.1093/rof/rft023.

International Monetary Fund, 2011a. *Global Financial Stability Report: Grappling with Crisis Legacies,* IMF, Ch. 3, "Toward Operationalizing Macroprudential policies: When to Act", Ch 3, September.

International Monetary Fund, 2011b. Macroprudential Policy: An Organizing Framework.

Jimenez, J., Ongena, S., Peydro, J., Saurina, J., 2013. Macroprudential Policy, Countercyclical Bank Capital Buffers and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments, Working Paper, February 2013.

Keeton, W., 1999. Does faster loan growth lead to higher loan losses? Federal Reserve Bank of Kansas City Economic Review, 2nd quarter 1999, 57-75.

Kim, D., Santomero, A., 1988. Risk in Banking and Capital Regulation. *Journal of Finance* 43, 1219-33

Koehn, M., Santomero, A., 1980. Regulation of Bank Capital and Portfolio Risk. *Journal of Finance* 35, 1235-50.

Manove, M., Padilla, A., Pagano, M., 2001. Collateral versus project screening: A model of lazy banks. *RAND Journal of Economics* 32, 726-744.

Laeven, L., Majnoni, G., 2003. Loan loss provisioning and economic slowdowns: too much, too late? *Journal of Financial Intermediation* 12, 178-197.

Laux, C., Leuz, C., 2010. Did Fair-Value Accounting Contribute to the Financial Crisis? *Journal of Economic Perspectives* 24, 93-118.

Lim, C., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyad, M., Wezel, T., X. Wu, X., 2011. Macroprudential Policy: What Instruments and How to Use Them? IMF Working Paper 11/238, October.

Nichols, D., Wahlen, J., Wieland, M., 2009. Publicly traded versus privately-held: implications for bank profitability, growth risk, and accounting conservatism. *Review of Accounting Studies* 14, 88-122.

Ogura, Y., 2006. Learning from a rival bank and lending boom. *Journal of Financial Intermediation* 15, 535-555.

Ono, A., Uchida, H., Udell, G., Uesugi, I., 2013. Lending Pro-cyclicality and Macro-Prudential Policy: Evidence from Japanese LTV Ratios, Working Paper.

Saurina, J., 2009. Dynamic provisioning. The Experience of Spain. Crisis Response. Ed. The World Bank. Note nº 9, July 2009.

Stiglitz, J., Weiss, A., 1981. Credit Rationing in Markets with Imperfect Information. *American Economic Review*, 71, 393-410.

Trucharte, C., Saurina, J., 2013. Spanish dynamic provisions: main numerical features. Estabildad Financiera, No. 25, 11/2013, Banco de Espana, 9-47.

Vyas, D., 2011. The Timeliness of Accounting Write-Downs by U.S. Financial Institutions During the Financial Crisis of 2007-2008. *Journal of Accounting Research* 49, 823-860.

Wallison, P.J., 2008. Fair Value Accounting: A Critique. American Enterprise Institute for Public Policy research Outlook Series, July.

Table 1: Summary statistics

Panel A reports accounting and banking information for 35,162 firms (165.767 firm-year observations) during the period 1997-2007. Panel B reports key variables for 113 banks in Spain (466 bank-year observations).

Panel A: Firm characteristics

Variables	Description	Q1	Median	Mean	Q3	N
Size and opacity						
TA	Total assets ('000 EUR)	4,299	7,874	227,335	17,565	165,767
SALES	Total sales ('000 EUR)	5,835	10,208	193,767	21,608	165,767
GROWTH	[Total sales (t) / Total sales (t-1)]-1	-0.0264	0.0663	0.1340	0.1792	152,280
AGE	Age of the firm (years)	11	18	20.79	27	165,765
BIGAUDIT	1 if firm has big auditor	0	0	0.2262	0	144,682
Capital structure						
EQTA	Equity-to-total assets (%)	19.00%	33.72%	36.24%	52.37%	165,767
BDTA	Bank debt-to-total assets (%)	0.00%	10.06%	16.85%	29.99%	165,767
STDEBT	Short-term bank debt-to-total bank debt	0.4283085	0.7710502	0.6786355	99.42%	117,143
Liquidity						
CASH	Cash-to-total assets	0.0087	0.0296	0.0612	0.0758	165,767
CURR	Current ratio (%)	101.8%	125.5%	166.1%	175.5%	165,728
LTASSETS	Long-term assets-to-total assets	0.1328	0.2842	0.3273	0.4767	165,767
Profitability						
PROF	Net profit ('000 EUR)	45	226	10,891.2	732	165,767
ROA	Return on assets (%)	2.35%	5.49%	6.60%	10.75%	165,767
ROE	Return on equity (%)	3.36%	10.49%	12.11%	20.59%	165,756
Default risk						
INTCOV	Interest coverage	1.5121	3.8529	24.7626	12.5890	158,253
ZSCORE	Altman (1968)-Z-Score	1.994743	2.712716	2.883071	3.610678	165,760
Bank-firm relationships						
NREL	Nb. of bank relationships	1	2	2.5844	3	165,756

Panel B: Banks characteristics

Bank variables	All bank-year observations N=466				Commercial banks N=128	Savings banks N=338
	Q1	Median	Mean	Q3	Mean	Mean
Size						
TA (mill. EUR)	4,209	9,516	35,900	23,500	83,503	17,861
LOANS (mill. EUR)	2,624	6,433	21,900	15,800	48,611	11,848
LOAN GROWTH (%)	0.133	0.179	0.189	0.225	18.96	18.92
Profitability						
ROA (%)	0.640	0.810	0.777	9.907	0.863	0.748
ROE (%)	9.520	11.65	11.88	14.38	11.52	12.02
Interest income / TA (%)	4.183	5.145	5.223	5.925	5.455	5.141
Asset and liability structure						
Equity / TA (%)	5.92%	6.82%	7.10%	8.00%	6.723	7.246
Deposits / TA (%)	46.41%	57.64%	57.53%	68.31 %	48.80	60.84
Loans / TA (%)	56.96%	67.66%	65.92%	75.20 %	67.06	62.90
Risk						
Δ Loan Loss Prov/TA (%)	0.299	0.440	0.446	0.563	0.505	0.423
NPL / Total Loans	0.684	0.979	1.264	1.560	1.336	1.237

Table 2: Conditional and Accounting Conservatism

Panel A shows regression results of banks' loan loss provisions (LLP) on two different sets of variables; i.e., a) lagged changes in nonperforming loans (NPL); and b) lagged, current and future changes in nonperforming loans (NPL). Following Nichols et al (2009), Conditional Accounting Conservatism (CAC) is measured as the difference in the adjusted R^2 for both regressions. Because of the specific characteristics of the Spanish accounting standards in the pre-adoption period, we define lagged changes in non-performing loans as the average increase in NPL from quarter -4 to quarter -7. For current and future changes in non-performing loans, we consider the average increase in NPL from quarter 0 to -3, and +1 to +4, respectively. We run individual regressions for banks with at least 20 bank-quarter observations for the pre-adoption period. Panel A reports the average coefficients of these regressions for the whole sample and two subsamples of banks that exhibit low and high Conditional Accounting Conservatism in the pre-adoption period. In particular, the low (high) CAC group comprises banks with CAC below (above) median from December 1996 to June 2000. P-values are in parentheses. ***, **, and * denote statistical significance at 1%, 5% and 10% level respectively. In Panel B we analyze the changes in the level of Conditional Accounting Conservatism of banks before and after the adoption of the new dynamic provisioning system in Spain. Panel B shows the mean and average of CAC in the pre and the post-adoption period, for the whole sample and two subsamples of banks that exhibit low and high Conditional Accounting Conservatism in the pre-adoption period. The standard t-test and the Wilcoxon z-test are used for testing the equality of the means and the medians of CAC, before vs after the adoption of the new provisioning system, for the whole sample and for the banks which exhibit low and high CAC in the pre-adoption period. Panel B also reports within period comparisons across bank types. P-values are in parentheses. ***, **, and * denote statistical significance at 1%, 5% and 10% level respectively.

Panel A: Measuring Conditional Accounting Conservatism in the pre-adoption period

	Whole Sample		Low CAC		High CAC	
	Specification		Specification		Specification	
	Restricted	Complete	Restricted	Complete	Restricted	Complete
CONSTANT	0.00082***	0.00068***	0.00066***	0.00040***	0.00098***	0.00096***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)	(<0.001)
LAGGED_INC_NPL	-0.01133***	-0.01735	0.00110	-0.01032*	-0.02435***	-0.02472
	(<0.001)	(0.121)	(0.854)	(0.095)	(<0.001)	(0.448)
CURRENT_INC_NPL		0.05097***		-0.02756*		0.13325***
		(<0.001)		(0.073)		(<0.001)
FUTURE_INC_NPL		-0.04156**		0.01203		-0.09769
		(0.043)		(0.249)		(0.109)
FIRMS	43	43	22	22	22	21
AVG_ADJ_R2	0.087	0.228	0.112	0.049	0.059	0.416
AVG_DIFF_ADJ_R2		0.1417		-0.064		0.357

Panel B: Comparing Conditional Accounting Conservatism in the pre- and post-adoption period

			PRE-ADOPTION DEC96 – JUN00 (A)	POST-ADOPTION SEP00 – DEC003 (B)	Difference (A) vs (B)	
Whole Sample		Mean	0.1417	0.0352	t-test	1.817* (0.077)
		Median	0.0680	-0.0185	Wilcoxon z-test	1.617 (0.106)
Split by CAC	(I) LOW CAC in pre-adoption period	Mean	-0.0637	0.0088	t-test	-1.428 (0.169)
		Median	-0.0731	-0.0872	Wilcoxon z-test	-1.045 (0.296)
	(II) HIGH CAC in pre-adoption period	Mean	0.3569	0.0646	t-test	3.654*** (0.002)
		Median	0.2681	0.0375	Wilcoxon z-test	2.853*** (0.004)
	Difference (I) vs (II)	t-test	-8.84*** (<0.001)	-0.83 (0.413)		
		Wilcoxon z-test (I) vs (II)	-5.612*** (<0.001)	-1.052 (0.293)		

Table 3: Effects of the dynamic LLP system on ex ante borrower risk

This table reports regression results on relationship between the banks' conditional accounting conservatism (CAC) during the pre-adoption period and the ex-ante risk taking behavior of banks. In particular, we regress the borrowers' z-score, as measure of ex ante default risk, CAC from the pre-adoption period, a dummy reflecting the setup of the new provisioning system in 2000, the interaction between both variables, and a group of control variables aimed at capturing relevant idiosyncratic characteristics of lenders and borrowers. Variables are winsorized at the 1% and the 99% levels. The data come from 428,391 bank-firm combinations during the period of 1997-2007. Model (1) consists of a simple pooled regression based on the whole sample of bank-firm-year observations. Model (2) focuses on new clients, so that the sample is restricted to the year in which firms start borrowing from a new bank. Finally, model (3) shows within-bank-firm estimates using the whole sample of bank-firm-year observations. To deal with the endogeneity of the lagged dependent variable, we use the first-difference GMM estimator, based on the "orthogonal deviations" transformation (Arellano and Bover, 1995). With the exception of lagged Z-score, all regressors are considered as strictly exogenous. P-values are robust to heteroskedasticity and bank clustering effects. ***, **, * indicate statistical significance at the 1%, 5%, and 10%-level.

Dependent variable		Model 1 FIRM_ZSCORE Whole sample	Model 2 FIRM_ZSCORE New clients	Model 3 FIRM_ZSCORE Whole sample
LAG_.FIRM_ZSCORE				0.4707*** (0.000)
CAC	(+)	0.0691*** (0.000)	0.1094** (0.027)	
EVENT		-0.0552*** (0.000)	-0.0706* (0.055)	-0.0276*** (0.000)
EVENT×CAC	(-)	-0.0478*** (0.000)	-0.0854* (0.094)	-0.0585*** (0.000)
FIRM_SIZE		-0.1962*** (0.000)	-0.2059*** (0.000)	
FIRM_AGE		0.1782*** (0.000)	0.1871*** (0.000)	
BANK_LOANTA		-0.2570*** (0.000)	-0.1768*** (0.003)	-0.3739*** (0.000)
BANK_DEPTA		-0.0330 (0.397)	-0.1090 (0.138)	-0.2814*** (0.000)
BANK_EQTA		0.1854 (0.460)	0.1353 (0.777)	4.3617*** (0.000)
BANK_ROA		4.9812*** (0.000)	1.6771 (0.470)	19.8715*** (0.000)
CONSTANT		4.0415*** (0.000)	4.1778*** (0.000)	
INDUSTRY DUMMIES		YES	YES	NO
BANK-FIRM DUMMIES		NO	NO	YES
Number of Observations		428,391	31,032	296,034
R^2		0.160	0.165	
Adjusted R^2		0.160	0.164	
Number of instruments				13
Hansen test (p-value)				2.13 (0.908)

Table 4: Effects of the dynamic LLP system on banks' lending standards

This table reports regression results on relationship between the banks' demand for borrowers' accounting quality in the post adoption period and banks' conditional accounting conservatism (CAC) in the pre-adoption period. Further independent variables: DOWNGRADING is a dummy variable which equals one if the borrower switches from a Big to a NonBig auditor, and zero if the borrower does not switch to a new auditor during the last year. SWITCHING_NONBIG is a dummy variable which equals one if the borrower switches from a NonBig to another NonBig auditor, and zero if the borrower does not switch to a new auditor during the last year. SWITCHING_BIG is a dummy variable which equals one if the borrower switches from a Big to another Big auditor, and zero if the borrower does not switch to a new auditor during the last year. UPGRADING is a dummy variable which equals one if the borrower switches from a NonBig to a Big auditor, and zero if the borrower does not switch to a new auditor during the last year. EVENT is a dummy variable reflecting the setup of the new provisioning system in 2000, which equals to 1 after 1999 and zero otherwise. FIRM_Z-SCORE refers to the borrower's Z-Score. FIRM_COL is the borrower's ratio of non-current assets to total assets. FIRM_GROWTH is the borrower's annual percentage increase in total sales. BANK_LOANTA is the bank's ratio of loans to total assets. BANK_EQTA, BANK_DEPTA and BANK_ROA are the ratios of equity to total assets, deposits to total assets, and return on assets, respectively. To control for time constant unobserved heterogeneity in our sample, all models are conditional logistic regressions with bank-firm fixed effects. Variables are winsorized at the 1% and the 99% levels. The data come from 102,011 bank-firm combinations corresponding to firms that engaged in at least one auditor switch during the period 1997-2007. P-values are robust to heteroskedasticity and bank-firm clustering effects. ***, **, * indicate statistical significance at the 1%, 5%, and 10%-level.

Dependent variable	MODEL 1 DOWNGRADING	MODEL 2 SWITCHING_ NONBIG	MODEL 3 SWITCHING_BIG	MODEL 4 UPGRADING
EVENT	0.4618***	-0.1617***	0.6069***	0.0749
	(0.008)	(0.003)	(0.000)	(0.507)
EVENT×CAC	0.4651**	0.1349**	-0.1136	-0.2871**
	(0.047)	(0.040)	(0.545)	(0.034)
FIRM_NREL	-0.0050	0.0287**	0.0553*	0.0581**
	(0.890)	(0.013)	(0.067)	(0.038)
FIRM_Z_SCORE	-0.0144	-0.0484**	-0.0740*	-0.1613***
	(0.754)	(0.015)	(0.056)	(0.000)
FIRM_COL	1.1341***	0.1900	-0.1176	0.0238
	(0.001)	(0.160)	(0.649)	(0.928)
FIRM_GROWTH	0.0507	-0.0046	-0.0317	0.1275***
	(0.336)	(0.868)	(0.468)	(0.001)
BANK_LOANTA	1.6018***	2.6318***	4.7632***	0.3997
	(0.007)	(0.000)	(0.000)	(0.406)
BANK_DEPTA	-2.1627***	-1.0332***	-2.9797***	1.1470**
	(0.000)	(0.000)	(0.000)	(0.012)
BANK_EQTA	-2.1438	0.0482	1.2942	6.2903**
	(0.575)	(0.970)	(0.681)	(0.021)
BANK_ROA	-23.9247	7.9287	25.8856**	39.0043***
	(0.112)	(0.107)	(0.016)	(0.000)
BANK-FIRM DUMMIES	YES	YES	YES	YES
Observations	9,153	69,929	14,894	16,158
Pseudo R^2	0.026	0.006	0.043	0.008

Table 5: Effect of the dynamic LLP system on loan growth

This table reports regression results on the effects of the dynamic LLP system on banks' loan growth in the post adoption period. The dependent variable is the change in the borrower bank debt over total assets (FIRM_ΔBDEBT). Explanatory variables are: FIRM_Z-SCORE refers to the borrower's Z-Score. FIRM_NREL is the borrower's number of bank relationships. FIRM_GROWTH is the increase in the borrower total sales, EVENT is a dummy variable that equals one after 1999 and zero otherwise, and CAC is a dummy variable that equals one if the bank exhibits an above-median conditional accounting conservatism in the pre-adoption period. BANK_LOANTA is the bank's ratio of loans to total assets. BANK_EQTA, BANK_DEPTA and BANK_ROA are the ratios of equity to total assets, deposits to total assets, and return on assets, respectively. The variables are winsorized at the 1% and the 99% levels. The data come from 334,958 bank-firm observations during the period of 1997-2007. Model (1) is a pooled regression based on the whole sample of bank-firm-year observations and Model (2) shows within-bank-firm estimates. P-values are robust to heteroskedasticity and bank clustering effects. ***, **, * indicate statistical significance at the 1%, 5%, and 10%-level.

Dependent variable	MODEL 1 FIRM_ΔBDEBT	MODEL 2 FIRM_ΔBDEBT
CAC	-0.0087*** (0.000)	
EVENT	-0.0723*** (0.000)	-0.0724*** (0.000)
EVENT×CAC	0.0083*** (0.000)	0.0115*** (0.000)
LAG_FIRM_ZSCORE	0.0004** (0.046)	0.0363*** (0.000)
LAG_FIRM_GROWTH	0.0152*** (0.000)	0.0006 (0.435)
LAG_FIRM_NREL	0.0011*** (0.000)	-0.0034*** (0.000)
BANK_LOANTA	0.0137*** (0.000)	-0.0687*** (0.000)
BANK_DEPTA	0.0163*** (0.000)	0.0139** (0.013)
BANK_EQTA	-0.2086*** (0.000)	-0.4338*** (0.000)
BANK_ROA	0.5031*** (0.000)	0.2574* (0.074)
CONSTANT	0.0894*** (0.000)	0.0650*** (0.000)
INDUSTRY DUM	YES	NO
BANK FIRM DUM	NO	YES
Number of observations	334958	334958
R^2	0.034	0.052
Adjusted R^2	0.034	0.052

Table 6: Risk taking and bank governance: savings banks vs. commercial banks

This table shows the effects of corporate governance on the relationship between accounting conservatism and bank risk taking. We consider four additional regressors in our baseline regression model; i.e. SB, a dummy variable which equals one if the lender is a savings bank and zero otherwise, and the interaction of SB with CAC, EVENT and EVENT×CAC. The data come from 428,437 bank-firm combinations during the period of 1997-2007. Model (1) and (2) report pooled regressions results with industry dummies, whereas model (3) shows results from within bank-firm estimates. Specifically, in model (3) the first-difference GMM estimator, based on the "orthogonal deviations" transformation (Arellano and Bover, 1995), is used to deal with the endogeneity of the lagged dependent variable. With the exception of lagged Z-score, all regressors are considered as strictly exogenous. P-values are robust to heteroskedasticity and bank-firm clustering effects. ***, **, * indicate statistical significance at the 1%, 5%, and 10%-level.

Dependent variable	MODEL 1 FIRM_ZSCORE Whole Sample	MODEL 2 FIRM_ZSCORE New clients	MODEL 3 FIRM_ZSCORE Whole Sample
CAC	0.0721***	0.0059	
	(0.000)	(0.925)	
SB	-0.0443*	-0.1734**	
	(0.053)	(0.011)	
CAC×SB	-0.0176	0.3105**	
	(0.641)	(0.012)	
EVENT	-0.0872***	-0.1546***	-0.0066
	(0.000)	(0.002)	(0.345)
EVENT×CAC	-0.0459***	0.0425	-0.0811***
	(0.003)	(0.507)	(0.000)
EVENT×SB	0.0068	0.1635**	-0.0533***
	(0.738)	(0.021)	(0.000)
EVENT×SB×CAC	-0.0349	-0.3651***	0.0637***
	(0.282)	(0.004)	(0.000)
LAG_FIRM_ZSCORE			0.4699***
			(0.000)
BANK_LOANTA	-0.1468***	-0.1655**	-0.3718***
	(0.000)	(0.016)	(0.000)
BANK_DEPTA	0.0819**	-0.0265	-0.2724***
	(0.044)	(0.736)	(0.000)
BANK_EQTA	0.7344***	0.4021	4.4573***
	(0.005)	(0.452)	(0.000)
BANK_ROA	2.8542**	0.7698	19.9661***
	(0.010)	(0.755)	(0.000)
CONSTANT	2.6784***	2.8933***	
	(0.000)	(0.000)	
INDUSTRY DUMMIES	YES	YES	NO
BANK-FIRM DUMMIES	NO	NO	YES
Number of observations	428,437	31,032	296,034
Adjusted R^2	0.118	0.119	
Number of instruments			15
Hansen test (p-value)			2.11 (0.909)

Figure 1: Loan loss provisioning and non-performing loans of Spanish banks

This figure provides information about risk taking and loan loss provisioning of commercial banks and savings banks in Spain during the period from 1995 to 2004. We plot the yearly cross-sectional average of non-performing loans as a fraction of total loans (solid black line), the change in loan loss provisions (broken dark gray line), and change in specific loan loss provisions (dotted light gray line; calculated as the total loan loss provisions minus statistical loan loss provisions). Statistical loan loss provisioning became compulsory for all Spanish banks in the year 2000 (prior to 1999 the dotted and broken line are identical since there were no statistical loan loss provisions; however, a small number of savings banks voluntarily adopted the new statistical loan loss provisioning rules in 1999).