

# **The Impact of Information Assymetry Shocks on European Banks' Loan Maturity**

**Abstract.** This paper analyzes the impact that changes in information asymmetry have on the maturity of European banks' lending. We use the 2005 IFRS adoption and the 2008 financial crisis outburst as two exogenous shocks that had opposing effects on overall information asymmetry. Previous literature considers long-term loans to be awarded by banks to more transparent borrowers. As information asymmetry between banks and borrowers decreased(increased) subsequent to the adoption of IFRS(the financial crisis), we analyze if the maturity of loans was adjusted accordingly. We expect that IFRS enables banks to award more long-term loans relative to the pre-IFRS adoption period. Further, as the financial crisis created a reporting environment which is characterized by increased information asymmetry, we expect to find a decrease in long-term lending in the post-crisis period. We find evidence consistent with our expectations. Our findings highlight the importance of financial reporting quality in influencing the maturity of banks' lending and consequently overall financial stability. This study has also important policy implications for banking regulators trying to determine what are the optimal tools in influencing banks' short term and long term lending decisions.

**Key words:** European banks, Loan maturity, IFRS, Financial crisis

## 1. Introduction

In this paper we analyze the impact that shocks in information asymmetry have for EU banks' maturity of lending. Specifically, we use the 2005 IFRS mandatory adoption and the financial crisis that affected EU in 2008 as events with opposing effects on information asymmetry.

On the one hand, previous literature has documented that *IFRS decreases information asymmetry* (Armstrong et al., 2010; Latridis, 2010; Brochet et al., 2013). Leuz and Verrecchia (2000) document that firms adopting IAS have lower information asymmetry relative to the firms reporting under Local GAAPs. Li (2010) and Barth et al. (2005) find that the IFRS adoption has decreased the adopters cost of capital. Comparing German IFRS adopters to Local GAAP adopters, Daske (2006) finds that the former have lower levels of information asymmetry and consequently a lower cost of capital. Gassen and Sellhorn (2006) document a higher quality of reporting for IFRS firms. In same vein, Daske and Gebhardt (2006) find that firms reporting under IFRS are perceived to be of higher quality.

On the other hand, periods of financial crisis are associated with *high information asymmetry* (Miskin, 1991) with huge reductions in global trade (Jackson, 2010). Moreover, Schuknecht (2010) and von Hagen et al. (2011) document a higher general risk aversion after the crisis. In consequence, we use the 2005 IFRS adoption (2008 financial crisis) as a shock which decreases (increases) information asymmetry. Further, we analyze the impact of the successive shocks on the lending maturity of banks. In constructing our hypotheses, we build on current literature that analyzes the association between information asymmetry and loan maturity (Ortiz-Molina and Penas, 2008; Custodio et al., 2013).

Awarding short-term loans is perceived to bear a smaller risk relative to awarding long-term loans (Diamond, 1992; Kirschenmann and Norden, 2012), as banks require more information from the borrowers in the latter case. Freixas and Rochet, (1997) state that the riskiest firms are limited to receiving only short-term loans due to the increased information asymmetry perceived by the bank. The literature on the maturity of lending documents that banks can control better the risk of credit by awarding short-term loans due to the frequent renegotiations of contract terms (Ortiz-Molina and Penase, 2008). Given this, our setting yields two interesting research questions:

1. Is the decrease in information asymmetry occasioned by the 2005 mandatory adoption of IFRS associated with an increase in European banks' lending maturity?
2. Is the increase in information asymmetry occasioned by the 2008 financial crisis associated with a decrease in European banks' lending maturity?

Our study focuses on the European financial industry, where banks had to adjust their lending in a relatively short period of time according to the changes in accounting regulations. Subsequently, banks had to assess the creditworthiness of firms that were affected by the financial crisis. This setting offers us the possibility to assess the impact of both an increase and a decrease in information asymmetry for the maturity of lending. We analyze the consequences of these adjustments for the structure of banks' lending maturity. The research setting allows an analysis of the 2005 change in accounting standards, from Local GAAPs to IFRS (that marks a decrease in information asymmetry) and of the 2008 financial crisis (that brings an increase in information asymmetry). We consequently analyze three periods, the pre-IFRS, post-IFRS pre-crisis and the

post-crisis period.<sup>1</sup> Our results suggest that, subsequent to the IFRS adoption, European banks increased the level of long term loans.<sup>2</sup> We attribute this to the decrease in information asymmetry in the post-IFRS adoption period. Further, we find that following the outburst of the financial crisis European banks have reduced their level of long-term lending. This change is due to the uncertainty regarding firms' financial health in the post-crisis period.

Our findings are relevant for several streams of literature. We contribute to the maturity of lending literature by empirically testing the connection between financial reporting and maturity of loans. We highlight the importance that the adoption of a high quality set of accounting standards in banks' decision to award long term loans. The assessment of borrower long term creditworthiness is influenced by increasingly transparent financial accounting reports. We also contribute to the accounting literature by exploring the essential role of accounting standard setters in influencing the maturity structure of financial institutions' loans. Specifically, higher quality accounting standards ease the access of firms to long term loans. Moreover, given that we analyze the impact of a crisis period on the maturity of lending, our research has important policy implications. Our findings could be considered from a financial stability perspective, given that the maturity of banks' lending is a very important for their financial resilience considering future potential periods of economic turmoil.

The rest of the paper is structured as follows: Section 2 presents the theoretical background on the impact of the IFRS adoption, Section 3 reviews related literature and describes the research hypotheses, Section 4 presents the sample, Section 5 discusses the

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<sup>1</sup> We build on Kilic et al. (2013) and analyze the impact of the IFRS adoption and financial crisis outburst using small windows of two years in the pre- and post-IFRS/crisis periods. We do this in order to better capture the effect of the shocks in information asymmetry and avoid having our results biased by confounding effects.

<sup>2</sup> This result is subject to a caveat. While we hand-collect the lending maturity information from banks' annual reports, we are unable to disentangle the short-term and long-term loans that are awarded *strictly* to IFRS-adopting firms. Therefore, we analyze the change in overall short-term and long-term loans and attribute our results to the impact that the IFRS adopting firms have in modifying the mean lending maturity of loans.

methodology, Section 6 presents the results and Section 7 concludes and summarizes the expected contributions of the study.

### **3. Theoretical background**

In 2002, the European Parliament requested that all firms listed on European stock exchanges prepare financial statements in accordance with IFRS starting from 1<sup>st</sup> January 2005 (Regulation EC No.1606/2002). The mandatory adoption of IFRS represented a major change for the financial reporting of European companies. It resulted in significant adjustments from the national-level accounting regulations (i.e. local GAAPs) which were previously in place. Controlling for changes in firms' incentives and the economic environment, Barth *et al.* (2008) finds that the application of IAS in 21 countries is associated with improved accounting quality.

O'Hanlon (2011) documents an increase in the timeliness of loan loss provisioning after the adoption of IAS 39. Moreover, when confronted with institutional pressure to increase their capital ratios when they approach the regulatory minimum, banks are found to increase their capital without reducing the level of their high risk assets Rime (2001). Nevertheless, additional research is needed to explore other environments, as the ensuing datasets could confirm or infirm the nature of the effects of heterogeneous legal regimes and regulations over the properties of earnings (Dechow *et al.* 2010).

The adoption of IFRS occasioned significant modifications to the European banks' financial reporting as a whole and to loan loss provisioning requirements in particular. The loan loss requirements of IFRS contrast the ones of Local GAAPs. IAS 39 Financial Instruments entail an incurred loss approach under which a loan requires an almost 100% probability of

default in order to have a recognized provision. In applying this approach, banks recognize specific provisions in their income statements only for loan losses that are certain at the balance sheet date. IAS 39 offers a detailed set of trigger events for the objective recognition of impairment<sup>3</sup>. The loan losses resulting from expected events subsequent to the balance sheet date are not recognized. Specifically, IAS 39 prohibits banks from recognizing GLLPs, which are provisions created “against the possibility of losses not yet identified” (Basel Committee on Banking Supervision<sup>4</sup>, 1988). This measure decreases the discretion allowed to bank managers in setting the level of LLP.

The accounting rules of loan loss provisioning rules of banks under Local GAAP were based on the EU Bank Accounting Directive (Council Directive 86/635/EEC). While practices varied across EU countries according to national specificities in the vast majority of countries<sup>5</sup>, the provisioning approaches were entirely different relative to the model of IFRS (Gebhardt and Novotny-Farkas, 2011).

For example, Spain and Portugal required dynamic loan loss provisioning. This means that banks recorded provisions for all loans, even for the ones with no evidence of impairment. The banks determine loan losses on the basis of historical loss information, a counter-cyclical method that, relative to other provisioning techniques, result in smoother earnings streams. The dynamic loan loss provisioning gave banks the opportunity to transparently smooth their

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<sup>3</sup> According to IAS 39.59 and IAS 39.61, the assets impairment trigger events are (1) Substantial financial difficulty of the issuer (2) Breach of contract, such as default or delinquency in interest or principal payments (3) Concessions granted from the lender to the borrower that the lender would not have considered normally (4) High probability of insolvency (5) Recognition of an impairment loss on that asset in a previous reporting period (6) Disappearance of an active market for the financial asset due to financial difficulties of the issuer (7) A decrease in the market value of an issuer’s debt securities significantly beyond factor explainable by changes in the market interest rates

<sup>4</sup> Paragraph 18.

<sup>5</sup> With the exception of UK GAAP.

earnings, increasing the quality of the accounting data (Perez *et al.* 2008). Czech GAAP required the creation of provisions for possible risks and expected losses. The provisions were set also for losses which were uncertain at the balance sheet date. A similar case is apparent in Italian GAAP which mandated the recognition of provisions which cover losses in a more extensive manner than IFRS.

In similar vein, The German GAAP stated that the provisioned amounts have to be based on sound business judgment and according to the prudence principle. The standard gave preparers extensive leeway in determining the size of the provisions. Similarly, Danish GAAP included in the LLP, incremental to the incurred losses, the foreseeable losses from anticipated events over the whole life of the loan (Bernard *et al.* 1995). Finally, Belgian GAAP dictate that provisions be recorded to cover clearly identified losses or charges that result from past events at the balance sheet date, and which are either likely or certain to occur, but not reliably quantifiable as to their amount. Moreover, the presence of a legal or constructive obligation is not required to justify the recording of a provision (unlike in the case of IFRS). Consequently, Belgian GAAP allows entities great discretion in exercising judgment about the need for provisions.

Gebhardt and Novotny-Farkas (2011) find that relative to the Local GAAP rules on provisioning, the requirements of IFRS (IAS 39) determine an understatement of expected losses and a general reduction in European bank managers' discretion for determining the level of LLP. They document that, as a consequence of the decrease in discretion, the IFRS adoption is associated with lower levels of income smoothing and less timely loan loss recognition. Nonetheless, as stated by the Financial Stability Forum (2009), IFRS still allows for a certain amount of managerial judgment. IAS 39 offers banks the possibility to recognize impairment

provisions on portfolio of loans if the deterioration from the initial recognition in the expected cash-flows of the loans is observed. Specifically, I refer to the collective provisions, a discretionary tool with similar characteristics to the GLLP but reduced in scope (PWC, 2004).

Collective provisions are set for groups of loans whose impairment is computed based on historical loss experience adjusted for changes in current market conditions (IAS 39.AG89). They can be recorded for groups of loans if there is observable data showing a decrease in the assets' cash-flows since their initial recognition.<sup>6</sup> Bank managers can record collective provisions for losses that are referred to as “incurred but not reported” (PWC, 2004). The collective provisions are based on historical data observed for assets with similar risk characteristics and have wide pool of elements taken into account at their recognition.<sup>7</sup> Thus, according to the Financial Stability Forum (2009), the IASB and FASB should acknowledge that the incurred loss approach allows managerial discretion in estimating the level of LLP. Nonetheless, bank managers cannot incorporate in their assessments events not presently incurred, limiting their ability to provision for all “expected but not yet incurred losses”.

Given the direct and potentially material affect of the change from local GAAP to IAS 39, the banking industry objected<sup>8</sup> to the adoption of IAS 39 in the EU (Armstrong *et al.* 2009). Ultimately, their objection would not stand and the banking industry was forced to change and address the requirements of IAS 39 concerning the recording of provisions with the 2005 adoption of IFRS.

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<sup>6</sup> Such as changes in overall economic conditions or changes in the borrowers' ability to repay the loans.

<sup>7</sup> Geographical location, industry, product classification, collateral and default status.

<sup>8</sup> In fact, the European Banking Federation opposed the adoption of IAS 39 throughout the 1990s.



The significant differences between former Local GAAPs and current IFRS practices concerning the recording of provisions suggest that the financial statements of European banks were materially affected by the 2005 IFRS adoption. The change suggests that, relative to the pre-adoption period, there was a general decline in managerial leeway for determining the level of LLP. This study explores the manner in which these changes influenced the European banks' lending maturity structure.

### **3. Related Literature and Hypotheses development**

Previous literature suggests that the effects of IFRS adoption are especially powerful in the European Union (EU). The 2005 mandatory adoption of IFRS represented a major change in the financial reporting of European companies, because the new requirements brought significant adjustments to the former local GAAPs. The accounting literature debated over the nature of the cross-country effects caused by IFRS adoption. For example, Barth *et al.* (2012) document an increase in comparability between US and non-US firms which adopt IFRS. In contrast, Kvaal and Nobes (2010) state that the mandatory adoption of IFRS doesn't necessarily lead to a change in companies accounting practice. Thus, the question if IFRS has similar consequences for all firms in the adopting countries needs to be addressed further. According to Christensen *et al.* (2012), IFRS had an impact only in countries that increased the level of enforcement additionally to the change in accounting standards. Therefore, regarding to our specific setting, we expect that the enforcement ability of national banking regulators to be positively associated to the level of banks' long term loans.

Examining the worldwide economic consequences of IFRS adoption, Daske *et al.* (2008) find that the effects on market liquidity, cost of capital, and Tobin's q are more powerful in EU countries than elsewhere. The IFRS mandatory adoption has been found to result in a *decrease in information asymmetry* (Armstrong *et al.*, 2010; Latridis, 2010; Brochet *et al.*, 2013). Moreover, the adoption has a significantly negative impact on the cost of capital (Li, 2010) and a significantly positive effect on liquidity (Christensen *et al.* 2012) among the adopters that make a serious commitment to transparency (Daske *et al.* 2009).

Due to the increased information asymmetry perceived by the bank it is the riskiest firms are limited to receiving only short-term loans (Freixas and Rochet, 1997). According to Diamond (1992) and Kirschenmann and Norden (2012), awarding short-term loans is perceived to bear a smaller risk relative to awarding long-term loans. This is caused by the fact that a bank requires more specific information from the borrowers when awarding a long term loan. In the presence of information asymmetries between the bank and the borrowers, the banks award short-term loans and control the credit risk due to the frequent renegotiations of contract terms (Ortiz-Molina and Penase, 2008). Given that in our setting the information asymmetry of IFRS adopters decreased after 2005, we expect that banks would award more long-term loans after that date. Consequently, we form the following related hypotheses:

***H1: After the adoption of IFRS banks do not change the level of short term loans.***

***H1a: After the adoption of IFRS banks are going to award more long term loans.***

Further, we analyze the impact of the 2008 financial crisis on the lending maturity of banks. We build on previous literature that identify periods of financial crisis to be associated with high information asymmetry. Miskin (1991) finds that particularly in periods of economic

turmoil the reduction in transparency is significant. Jackson (2010) documents huge reductions in global trade in the midst of the 2008 financial crisis. Moreover, Schuknecht (2010) and von Hagen et al. (2011) document a higher general risk aversion after the crisis. We consequently expect for banks to adjust their lending according to the increase in information asymmetry. If, as stated by Freixas and Rochet (1997) and Ortiz-Molina and Penase (2008), in case of high information asymmetry banks are reluctant to awarding long-term loans and prefer the lower riskiness of short term loans, we expect that banks to reduce their long-term lending subsequent to the 2008 financial crisis outburst. Moreover, given the high general economic turmoil, we expect that banks would not significantly modify the level of their short term loans to compensate for the reduction in long term loans. Consequently, we construct the following hypotheses:

*H2: After the 2008 financial crisis banks are not going to award more short term loans.*

*H2A: After the 2008 financial crisis banks are going to award more long term loans.*

#### **4. Sample**

We obtain financial data regarding European banks from the BVD Bankscope database. The panel data set we construct consists of listed banks in the EU member states. We restrict the sample to the period 2002-2011. We partition our sample into groups, for the pre-IFRS sample we consider 2002-2004 period, for the Post-IFRS/pre-Crisis sample we consider the 2005-2007 period and for the post-Crisis sample we consider the 2008-2011 period. We select the mentioned periods in order to study the dynamic of lending patterns both before and after the mandatory IFRS adoption/financial crisis.

Additionally, data regarding the unavailable or missing items in the databases, such as the beginning level and change in non-performing loans, tier 1 ratio and loan loss provisions are hand-collected from the banks' annual reports. Data on the *loan maturity of banks are hand-collected* from the annual reports. We collect loans with maturity of under 1 year (we code them short-term), loans with maturity of 1 to 5 years (we code them medium-term loans) and loans with maturity of over 5 years (we code them long-term). Because the disclosure of loans' maturity varies significantly throughout the European countries, we cannot faithfully identify the amount of specific loans (PME, corporate etc.) by maturity. Consequently, our measures of loan maturity are consolidated and are not disentangled by type of lender.

Given that IFRS is meant to decrease the information asymmetry between banks and customers, we consider in our sample the customer loans. We collect data on loans and advances towards banks, but we chose not to use it because an impact of IFRS on the information asymmetry between banks is less than obvious. Also, we compute change variables (yearly changes) when dealing with the maturity of loans, as we want to capture banks' *credit patterns* (how crediting maturity structure evolves from one year to the other). As we purport to study both the effect of accounting and financial crisis, we build separate tests that assess the impact of IFRS adoption and of financial crisis on EU banks' maturity of loans. Table 1 presents descriptive statistics on our full sample.

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Table 1 about here

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We have data on listed banks from 17 EU countries. We delete the data from countries where we have only 1 bank. Nonetheless, following Gebhardt and Novotny-Farkas (2011) we keep the data in countries where we have at least 2 banks.

## 5. Research design

### 5.1. The impact of IFRS on the maturity of EU banks' lending

In order to determine if the 2005 adoption of IFRS had an impact on the level of EU banks' lending, we build on Ortiz-Molina and Penase (2008) and Kanagaretnam et al. (2010) and use the following models:

$$\Delta\text{Short} = \alpha_0 + \alpha_1\text{LLP} + \alpha_2\text{IFRS} + \alpha_4\text{Loan} + \alpha_5\Delta\text{Loan} + \alpha_6\text{Size} + \alpha_7\text{NPL} + \alpha_8\Delta\text{NPL} + e \quad (1)$$

$$\Delta\text{Long} = \alpha_0 + \alpha_1\text{LLP} + \alpha_2\text{IFRS} + \alpha_4\text{Loan} + \alpha_5\Delta\text{Loan} + \alpha_6\text{Size} + \alpha_7\text{NPL} + \alpha_8\Delta\text{NPL} + e \quad (1a)$$

where:

$\Delta\text{Short}$  change in short term loans scaled by beginning total assets;

$\Delta\text{Long}$  change in long term loans scaled by beginning total assets;

LLP loan loss provisions scaled by beginning total assets;

IFRS dummy variable that equals 1 for the period after the bank adopted IFRS and 0 otherwise;

NPL beginning nonperforming loans scaled by beginning total assets;

$\Delta\text{NPL}$  change in nonperforming loans scaled by beginning total assets;

LOANS beginning total loans outstanding scaled by beginning total assets;

$\Delta$ LOANS change in total loans outstanding scaled by beginning total assets;

SIZE<sub>it</sub> natural logarithm of total assets.

We use LOANS,  $\Delta$ LOANS, NPL,  $\Delta$ NPL and SIZE to control for the non-discretionary part of loan maturity. The amount of loans held as assets by a bank is positively associated with higher LLP. Therefore, we expect a positive coefficient for LOAN. The change in total loans outstanding can be both positively and negatively related to the level of short/log-term loans. The positive or negative association depends on the risk attributed to the loans. Regarding the level of non-performing loans (NPL) and change in the level of non-performing loans ( $\Delta$ NPL), we expect a negative relation with short term and long term loans, because as more non-performing loans require lower lending.

### *5.12. The impact of the financial crisis on the maturity of EU banks' loans*

In order to determine if the 2008 financial crisis has an impact on the level of EU banks' lending, we build on Ortiz-Molina and Penase (2008) and Kanagaretnam et al. (2010) and use the following models:

$$\Delta\text{Short} = \alpha_0 + \alpha_1\text{Crisis} + \alpha_2\text{Size} + \alpha_3\Delta\text{LOANS} + \alpha_4\text{NPL} + \alpha_5\Delta\text{NPL} + \alpha_6\text{LLP} + \alpha_7\text{Tier1} + \alpha_8\text{EBPT} + e \quad (2)$$

$$\Delta\text{Long} = \alpha_0 + \alpha_1\text{Crisis} + \alpha_2\text{Size} + \alpha_3\Delta\text{LOANS} + \alpha_4\text{NPL} + \alpha_5\Delta\text{NPL} + \alpha_6\text{LLP} + \alpha_7\text{Tier1} + \alpha_8\text{EBPT} + e \quad (2a)$$

where

Crisis a dummy variable that takes the value 1 after 2008 and 0 otherwise.

EBPT earnings before provisions for loan losses and taxes scaled by beginning total assets

Tier1 ratio of Tier 1 capital on risk weighted assets

The rest of the variables were previously defined.

Following previous literature, in our second model we control for the normal determinants of loan changes. We use the level and volume change of non-performing loans (NPL and CH\_NPL), the level and change of outstanding loans (Loans and CH\_Loan) and control for the size of the banks in terms of total assets (Size). Regarding the impact of IFRS on the change in Short term loans, we build an IFRS dummy variable, that takes the value 1 for the period after the 2005 adoption and 0 before. All independent continuous variables are scaled by beginning total assets.

## 6. Results

### 6.1. *The impact of IFRS on the maturity of EU banks' loans*

In Equation 2 we analyze the impact of the IFRS adoption on the change in short term loans. As depicted in Table 4, our main variable of interest, IFRS, is *positive and not significant*, indicating *the lack of IFRS impact on the change in the level of short term loans*. This would indicate that even after the introduction of the set of high quality accounting standards banks did not change the provisioning for the short term loans. Given that this category of loans are characterized by higher information asymmetry even in the pre-IFRS era (Custodio et al., 2013),

banks are likely to have recognized LLPs in a strict manner even before 2005. Consequently, the new accounting regulation should not have impacted the incentives of banks with respect to these loans.

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Table 2 about here  
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In Equation 2A we analyze the impact of the IFRS adoption on the change in long term loans. As depicted in Table 3, our main variable of interest, *IFRS*, is *positive and significant* (at 5 percent level), indicating after the *IFRS adoption banks have increased the level of long term loans*. Given that banks are known to lend on a long term basis to firms with lower information asymmetry (Custodio et al., 2013) managers are likely to award more of this type of loans as IFRS decreases the overall information asymmetry. Consequently, our findings are consistent with new accounting impacting the incentives of banks with respect to these loans.

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Table 3 about here  
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## 6.2. *The impact of the financial crisis on the maturity of EU banks' loans*

In Equation 2 we analyze the impact of the 2008 financial crisis on the change in short term loans. As depicted in Table 4, our main variable of interest, *Crisis*, is *negative and not*



*significant*, indicating *the lack of financial crisis impact on the change in the level of short term loans*. This would indicate that after the increase in information asymmetry banks kept a constant level of short term loans. Consequently, financial crisis should have not impacted the incentives of banks with respect to these loans.

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Table 4 about here

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In Equation 2A we analyze the impact of the 2008 financial crisis on the change in banks' long term loans. As depicted in Table 5, our main variable of interest, *Crisis*, is *negative and significant* (at 5 percent level), indicating after the *IFRS adoption banks have decreased the level of long term loans*. Given that banks are known to lend on a long term basis to firms with lower information asymmetry (Custodio et al., 2013) managers are likely to award less of this type of loans as the financial crisis increases the overall information asymmetry. Consequently, our findings are consistent with the financial crisis impacting the incentives of banks with respect to these loans.

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Table 5 about here

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### 6.3. Sensitivity checks

To test the robustness of our findings and to further explore the impact of the information asymmetry shocks on banks' maturity of loans, we analyze if our results are robust to modifications in the structure of the sample and in model specifications. We refine our analysis

and we measure long-term maturity by the sum of loans with maturities between 1 to 3 years and the loans with maturities of over 5 years. We expect that, in line with our previous results, the level of long-term lending to increase after the adoption of IFRS, as the new accounting standard reduces the information asymmetry between banks and borrowing firms (Armstrong et al., 2010). Our results are qualitatively similar with the ones in our main tests.

Further, we expect that, in line with our previous results, the level of long-term lending to decrease after the beginning of the financial crisis, given the increased information asymmetry between banks and borrowing firms. We find that even when using this alternative measurement for maturity our main variable of interest is negative and significant, indicating that subsequent to the outbreak of the financial crisis the level of medium and long term loans granted by European banks has decreased.

We also test the sensitivity of our findings to the non-inclusion of the years 2007 and 2008. We want to test if our results are robust to eliminating the years of high economic turmoil that might have had an impact on banks' lending pattern. The sign and significance of our main coefficients of interests remain unchanged after the elimination of 2007 and 2008.<sup>9</sup>

## **7. Conclusions**

In this paper we analyze the impact of two information asymmetry shocks on banks' lending maturity. We use the 2005 IFRS adoption as an event decreasing information asymmetry and the 2008 financial crisis as an event increasing overall information asymmetry. Further, we test if European banks adjust the maturity of their awarded loans according to the

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<sup>9</sup> We obtain weaker but qualitatively similar results (they are available upon request).

aforementioned changes in information asymmetry. Our results suggest that European banks increase (decrease) the level of long term loans after the 2005 IFRS adoption (the 2008 financial crisis outburst). We also find that banks did not make significant adjustments in short term lending.

Our paper contributes to the literature by empirically testing the connection between financial reporting and maturity of loans. We highlight the importance that the adoption of a high quality set of accounting standards in banks' decision to award long term loans. The assessment of borrower long term creditworthiness is influenced by increasingly transparent financial accounting reports.

We also contribute to the accounting literature by exploring the essential role of accounting standard setters in influencing the maturity structure of financial institutions' loans. Specifically, higher quality accounting standards ease the access of firms to long term loans. Moreover, given that we analyze the impact of a crisis period on the maturity of lending, our research has important policy implications. Our findings could be considered from a financial stability perspective, given that the maturity of banks' lending is a very important for their financial resilience considering future potential periods of economic turmoil.

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**Table 1: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
ST	482	.00	226.21	3.7638	15.27479
NPLC	495	.00	41.39	.7355	3.86107
LOAN	495	.00	803.13	16.4465	76.16323
Tier1	491	.00	.10	.0022	.00799
EBPT	495	-2.83	21.63	.2534	1.50888
CHLong	325	-136.90	49.13	-1.0130	14.74591
CHShort	467	-226.21	226.21	.0038	22.44392
CHNPL	493	-41.39	41.39	-.0006	5.56330
LLPC	496	-.01	7.44	.1377	.58597
Valid N (listwise)	324				

**where** LLP is loan loss provisions scaled by beginning total assets, IFRS is a dummy variable that equals 1 for the period after the bank adopted IFRS and 0 otherwise, EBPT represents earnings before taxes and provisions scaled by beginning total assets,  $\Delta$ Short is the change in short term loans scaled by beginning total assets;  $\Delta$ GDP is the change in national GDP, NPL is the beginning nonperforming loans scaled by beginning total assets;  $\Delta$ NPL represents the change in nonperforming loans scaled by beginning total assets, LOANS is the beginning total loans outstanding scaled by beginning total assets and  $\Delta$ LOANS is the change in total loans outstanding.

**Table 2: The impact of the IFRS adoption on EU banks' change in short term lending**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	7.829	4.992		1.568	.118
	<b>IFRS</b>	<b>.749</b>	<b>1.134</b>	<b>.004</b>	<b>.661</b>	<b>.509</b>
	Size	-.978	.995	-.006	-.983	.326
	$\Delta$ NPL	-4.052	.550	-.179	-7.365	.000
	LOANS	.534	.017	.926	31.832	.000
	$\Delta$ GDP	-1.174	.549	-.012	-2.138	.033
	NPL	.000	.000	.005	1.014	.311
	$\Delta$ Loans	2.356E-5	.000	.028	4.870	.000
	LLP	-6.964	.875	-.119	-7.954	.000

The regression model is:

$$\Delta\text{Short} = \alpha_0 + \alpha_1\text{EBPT} + \alpha_2\text{IFRS} + \alpha_3\text{Size} + \alpha_4\text{LOANS} + \alpha_5\Delta\text{LOANS} + \alpha_6\text{LLP} + \alpha_7\text{NPL} + \alpha_8\Delta\text{NPL} + e$$

**where** LLP is loan loss provisions scaled by beginning total assets, IFRS is a dummy variable that equals 1 for the period after the bank adopted IFRS and 0 otherwise, EBPT represents earnings before taxes and provisions scaled by beginning total assets,  $\Delta$ Short is the change in short term loans scaled by beginning total assets;  $\Delta$ GDP is the change in national GDP, NPL is the beginning nonperforming loans scaled by beginning total assets;  $\Delta$ NPL represents the change in nonperforming loans scaled by beginning total assets, LOANS is the beginning total loans outstanding scaled by beginning total assets and  $\Delta$ LOANS is the change in total loans outstanding.



**Table 3: The impact of the IFRS adoption on EU banks' change in long term lending**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	131.949	55.813		2.364	.019
	<b>IFRS</b>	<b>49.809</b>	<b>19.703</b>	<b>.117</b>	<b>2.528</b>	<b>.012</b>
	Size	-29.097	11.112	-.129	-2.618	.009
	ΔNPL	3.015	5.068	.119	.595	.553
	LOANS	.500	.130	.773	3.845	.000
	ΔGDP	-6.478	6.419	-.046	-1.009	.314
	NPL	-.016	.003	-.229	-5.312	.000
	ΔLoans	.000	.000	.276	5.531	.000

**The regression model is:**

$$\Delta\text{Long} = \alpha_0 + \alpha_1\text{IFRS} + \alpha_2\text{Size} + \alpha_3\text{LOANS} + \alpha_4\Delta\text{LOANS} + \alpha_5\Delta\text{GDP} + \alpha_6\text{NPL} + \alpha_7\Delta\text{NPL} + e$$

**where** IFRS is a dummy variable that equals 1 for the period after the bank adopted IFRS and 0 otherwise, Size is the natural logarithm of total assets, ΔLong is the change in long term loans scaled by beginning total assets; NPL is the beginning nonperforming loans scaled by beginning total assets; ΔNPL represents the change in nonperforming loans scaled by beginning total assets, ΔGDP is the change in national GDP, LOANS is the beginning total loans outstanding scaled by beginning total assets and ΔLOANS is the change in total loans outstanding.

**Table 4: The impact of the Crisis on EU banks' change in short term lending**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.008	.623		-.013	.989
	<b>Crisis</b>	<b>.071</b>	<b>.775</b>	<b>.002</b>	<b>.092</b>	<b>.927</b>
	Size	-7.856E-8	.000	-.002	-.090	.929
	NPL	.468	.492	.036	.952	.342
	Tier1	53.861	47.559	.019	1.133	.258
	EBPT	-.416	.645	-.020	-.644	.520
	LLP	-2.666	1.382	-.043	-1.929	.054
	$\Delta$ LOANS	.171	.021	.503	8.147	.000
	$\Delta$ NPL	4.060	.577	.449	7.040	.000

Dependent Variable:  $\Delta$ Short

**The regression model is:**

$$\Delta\text{Short} = \alpha_0 + \alpha_1\text{Crisis} + \alpha_2\text{Size} + \alpha_3\Delta\text{LOANS} + \alpha_4\Delta\text{GDP} + \alpha_5\text{NPL} + \alpha_6\Delta\text{NPL} + \alpha_7\text{LLP} + \alpha_8\text{Tier1} + \alpha_9\text{EBPT} + e$$

where Crisis is a dummy variable that equals 1 for the period after 2008 and 0 otherwise,  $\Delta$ Short is the change in short term loans scaled by beginning total assets; NPL is the beginning nonperforming loans scaled by beginning total assets; Tier1 is the ratio of Tier 1 capital scaled by total risk weighted assets,  $\Delta$ NPL represents the change in nonperforming loans scaled by beginning total assets,  $\Delta$ GDP is the change in national GDP, LOANS is the beginning total loans outstanding scaled by beginning total assets and  $\Delta$ LOANS is the change in total loans outstanding.

**Table 5: The impact of the Crisis on EU banks' change in long term lending**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-.235	.399		-.589	.556
<b>Crisis</b>	<b>-.996</b>	<b>.505</b>	<b>-.033</b>	<b>-1.973</b>	<b>.049</b>
Size	-3.645E-7	.000	-.011	-.676	.500
NPL	2.110	.688	.113	3.065	.002
Tier1	-77.224	26.080	-.050	-2.961	.003
EBPT	1.970	.756	.054	2.606	.010
LLP	6.603	2.184	.100	3.023	.003
ΔLOANS	.297	.016	1.107	18.179	.000
ΔNPL	-1.751	.426	-.256	-4.111	.000

**The regression model is:**

$$\Delta\text{Long} = \alpha_0 + \alpha_1\text{Crisis} + \alpha_2\text{Size} + \alpha_3\Delta\text{LOANS} + \alpha_4\text{NPL} + \alpha_5\Delta\text{NPL} + \alpha_6\text{LLP} + \alpha_7\text{Tier1} + \alpha_8\text{EBPT} + e$$

**where** Crisis is a dummy variable that equals 1 for the period after 2008 and 0 otherwise, Size is the natural logarithm of total assets, ΔLong is the change in long term loans scaled by beginning total assets; Tier1 is the ratio of Tier 1 capital scaled by total risk weighted assets, NPL is the beginning nonperforming loans scaled by beginning total assets; ΔNPL represents the change in nonperforming loans scaled by beginning total assets, ΔGDP is the change in national GDP, LOANS is the beginning total loans outstanding scaled by beginning total assets and ΔLOANS is the change in total loans outstanding.