Judgment in accounting: The case of credit losses in banks

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Abstract

Principles-based accounting standards require the application of professional judgment in the production of financial statements. In recent years, the benefits of such judgment has been debated, for example in relation to fair value measurement. An accounting area where estimates are of particular signficance is that of credit losses in the banking sector. In this paper, we evaluate the 'incurred loss model' under IFRS - an accounting area characterized by relatively *few* estimates compared to the 'expected loss model'. We find that only recognizing incurred losses decreases the validity of loan loss provisions and thus has a negative effect on the quality of accounting for credit losses in banks. This indicates that the expected loss model would work better to prevent or reduce negative effects of financial crises. There are consequently important implications for the IASB as it deliberates whether to adopt the more principles-based 'expected loss model'.

1 Introduction

The level of judgment that accounting standard-setters allow in the production of financial statements is a matter of discussion. In recent years, judgment in the use of fair value has been debated, for example (Laux and Leuz, 2009). There has also been a more general debate about the benefits of principles- versus rules-based standards (Schipper, 2003; Benston et al., 2006). Arguably, principles-based standards require the application of professional judgment to a higher extent than do rules-based standards (Benston et al., 2006; Nobes, 2005; Bennett et al., 2006; Schipper, 2003; Carmona and Trombetta, 2008).

The assumed benefit of allowing judgment is to enable management to convey internal information implied in the judgment (we can call this the "Information hypothesis"). The disadvantage with judgment is that it allows management to be non-neutral in using judgment, thereby biasing financial statements to their own benefit (this we call the "Incentive hypothesis"). Thus, there are two confounding effects in the application of judgment, and the extent to which, and in which situations, each dominate, is an unresolved issue (Barth and Clinch, 1998).

Whereas IFRS is claimed to be relatively more principles-based than e.g. US GAAP in many accounting areas, it is arguably less so than many local GAAP, not the least as regards loan loss accounting. IAS 39 (the current standard on financial instruments) requires an incurred loss model for estimating credit losses. Under this approach, an objectively verifiable so-called "loss event" must have occurred. This may be contrasted with [many] local standards in the pre-IFRS period which, in allowing the estimation of expected future losses, were much more forward-looking and allowed greater discretion (see Gebhardt and Novotny-Farkas, 2011).

The merits of giving more leeway for judgment is of particular interest relating to credit losses since credit losses in banking is an area characterized by high measurement uncertainty. It is also an item that has substantial economic significance in banking. As pointed out, for example, by Ahmed et al. (1999) and Gebhardt and Novotny-Farkas (2011), credit losses is often the primary reason behind bank failures. Therefore, the estimation of credit losses can be assumed to be an important piece of information. Furthermore, this is especially of relevance at a time when the IASB is in the process of introducing a more principles-based standard in accounting for credit losses. In the exposure draft for IFRS 9 (Exposure Draft ED/2009/12 Financial Instruments: Amortized Cost and Impairment), the IASB proposes an expected loss model, which is more based on management estimates.

Gebhardt and Novotny-Farkas (2011) show that accounting quality was lower in European banks after the introduction of the incurred loss model in 2005, based on evidence that earnings were less timely and income smoothing decreased. Exaggerated smoothing is often considered a sign of low accounting quality, but less income smoothing in banks may exacerbate procyclicality in performance. Because the incurred loss model requires the loss event to have already ocurred, provisions become higher in times of economic downturn, when earnings are already low. For this reason, from a socioeconomic perspective, and from bank regulators' perspective, it is more desirable to also recognize losses which are anticipated (Wall and Koch, 2000).

We extend the work of Gebhardt and Novotny-Farkas (2011) and study accounting quality effects of IFRS by examining the predictive power of loan loss estimates. Higher explanatory power indicates higher-quality accounting. We derive our model from Altamuro and Beatty (2010) in which gross charge-offs, i.e. actual loan losses, are explained by loan loss provisions. Hence, this is a more direct approach since the actual predictive ability of LLPs is studied.

Our sample consists of approximately 600 European listed and unlisted banks, some of which have adopted IFRS.

We hypothesize that the incurred loss model decreases the ability of loan loss provisions to predict actual losses, and that this effect is most pronounced for banks subject to stronger enforcement (for example listed banks). Findings support the prediction that the incurred loss approach under IFRS decreases the predictive ability of loan loss provisions. Weak support is found that the level of enforcement has an effect.

This study contributes to the literature comparing principles- and rules-based accounting standards by applying a test to a specific accounting item. This item (estimated credit losses) is material for affected firms (banks). In addition, the same

firm applies both a principles- and a rules-based approach, at different points in time. This gives a unique setting for comparing the effect of two types of accounting standards, while holding many other factors constant.

A more policy-oriented contribution is that the study can provide input into IASB deliberations on the development of the impairment section of IFRS 9.

2 Hypothesis development

Not only do loan losses play a central role when evaluating risks and stability in banks, the accounting of these through loan loss allowances (LLA) and loan loss provisions (LLP) allow for considerable discretion, which may in turn have large effects on amounts reported in financial statements (Ahmed et al., 1999).

There are several factors affecting the quality/predictive ability of provisions for loan losses. They can be roughly divided into unintentional errors and manipulation factors. The former are related to the effort or ability of those making credit loss judgments. Studies that have predicted manipulation of loan loss accounting items most frequently do so by referring to capital management, earnings management, and/or signaling hypotheses.

Unintentional errors are assumedly non-systematic, and are therefore no expected to be negatively biased against firm stakeholders. They can still be a problem, however. If the estimation of LLPs is so difficult that there are serious relibility issues in accounting numbers, the usefulness of financial statements decrease. Due to the non-systematic nature of unintentional errors we have no prediction about the direction of such errors. Our model does capture if there are problems with unintentional errors.

Below we discuss existing literature on manipulation of loan loss accounting, in terms of capital management and earnings management. We do not go through literature relating to signaling.

Strict regulatory capital requirements are meant as protection against risk for banks' stakeholders but have raised concerns of accounting manipulation. Due to the definition of capital-adequacy ratios, and the way loan loss reserves affect a firm's regulatory capital (particularly prior to the Basle Accord[1]), firms that are close to violating the restrictions, or suffer high costs from doing so, have been predicted to manipulate LLP. In particular, under the capital management hypothesis, LLP in banks are predicted to be high when capital ratios less LLA are low (Ahmed et al., 1999; Lobo and Yang, 2001). Because banks are believed to want to lower regulatory costs (Moyer, 1990) by avoiding violating capital requirements, and LLP used to have a considerable positive effect on the capital-adequacy ratio, discretionary LLP adjustments could be used to manage capital. Indeed, Moyer (1990) finds that capital-adequacy ratios are manipulated using LLP in order to reduce regulatory costs.[2] Collins et al. (1995), however, find opposite evidence. Several other studies (see references to Stinson, 1993, Beatty et al., 1995, and Bishop, 1996 in Kim

[1]Formally known as the International Convergence of Capital Measurement and Capital Standards by the Bank for International Settlements, Basle Committee on Banking Supervision, 1988

[2]The study also sets out to test the hypothesis that LLP adjustments are used to reduce political costs (induced by "unusually large" revenues), but finds no support of this.

and Kross, 1998) are similarly mixed with respect to their findings on capital ratio management.

Of course, management of regulatory capital is strongly dependent on the existing regulatory regime. Before the Basle Accord, LLP increases had a larger positive effect on regulatory capital. While loan loss reserves used to be part of core regulatory capital, regulatory capital was divided into two Tiers under the Basle Accord. Tier I, which was stricter than the old primary capital in, for example, the U.S., no longer contained loan loss reserves; they were instead shifted to Tier II, with restrictions that they may not exceed 1.25% of risk-weighted assets. (At the same time Tier II should never exceed Tier I, and Tier I and II added together should never fall below 8% of risk-weighted assets [the capital-adequacy ratio].) Whereas an increase in LLP would previously increase primary capital by the amount of the provision times the tax rate, this was no longer true under the new regulation. As predicted, Ahmed et al. (1999) find that loan loss provisions are used for capital management, but decreased after the Basle accord. Kim and Kross (1998) reach similar results. Anandarajan et al. (2007) find evidence of capital management in Australian banks, but observe no effect of Basle I. In summary, there is weak or non-existent support for the capital management hypothesis, especially after the introduction of the Basle accord. Still, we control for the level of capital ratio in our testing.

Meanwhile, the discretionary nature of loan loss provisions could make them susceptible not only to capital management but also to earnings management. Because variable income may be yet another indicator of high risk, banks will be particularly motivated to smooth income (Fonseca and González, 2008). As the cost of understating LLP became lower under the Basle Accord[3], and there is a clear benefit to Tier I capital of understatements of LLP (while only a potential disadvantage to Tier II capital - based on the 1.25% restriction), income smoothing was expected to increase under the Basle Accord (see e.g. Rivard et al., 2003). Stated differently, lowering LLP in the old regime had a positive effect on earnings but a negative effect on the capital-adequacy ratio, such that there was a trade-off to LLP manipulation; meanwhile, in the "new" regime, there were fewer incentives to overstate LLP. These predictions have been widely tested, again with some mixed results. Whereas findings in Anandarajan et al. (2007); Rivard et al. (2003) suggest the predictions are well-founded, Ahmed et al. (1999) finds no evidence of loan loss provisions being used to manage earnings. Basle II, implemented in Europe in 2007, which increases supervision and disclosure requirements, is seen as an improvement as far as market discipline and earnings management go. On the other hand, Basle II is more individual bank specific in risk measurement model, which could increase judgment in the regulation of capital requirements.

In an accounting context, management of either earnings or capital ratios using LLPs is, by definition, detrimental to financial reporting quality. Under the "private-control-benefits" hypothesis (Fonseca and González, 2008), insiders or managers subjectively manage earnings to their own needs, which means earnings smoothing is a sign of opportunistic behavior. While this is in general true in the relation between firms and their capital market investors, banks also have other stakeholders. As

[3]Recall that the exclusion of LLA from Tier I capital and restrictions of LLA from Tier II means lower provisions will not damage capital in low-income years as much.

states are in most cases explicitly (through investor protection schemes) or implicitly (through concern about the stability of financial systems) guarantors of banks, they are an important stakeholder. Therefore, it may be argued that earnings smoothing, as well as a reasonable level of capital management, in banks is good from a non-accounting perspective. Three primary reasons exist.

First, from a socioeconomic perspective, capital regulation tends to have a pro-cyclical effect on the economy, in that unfavorable economic climates lead to higher risk exposure and higher capital requirements, in turn limiting available credit. Laeven and Majnoni (2003) conclude that banks have "inadequate" provisioning policies and tend to make provisions too late, when in economic downturns, instead of when faced with favorable conditions. By making loan loss reserves regulation "an integral part" of capital regulation and encouraging a different use of the reserves, the authors suggest part of this pro-cyclicality could reasonably be eliminated.

Second, from a bank-regulator's perspective, income smoothing may be used to lower investors' perception of risk in a bank (see e.g. Fonseca and González, 2008). The risk management hypothesis suggests a positive relationship between earnings and LLP, as LLPs are used in good times to increase reserves that will cover losses in bad times.

Although the risk perspective may be favored by regulators, the use of provisions to cover as-yet non-incurred losses goes against some basic accounting principles which stipulate that although LLP are made for expected future losses, they should only exist where these losses are due to already occurred events. Wall and Koch (2000) question the meaning of an ocurred event, however, and suggest an alternative way of viewing the matter. This is related to the third reason for justifying [particularly] earnings smoothing. If by "event" an accountant means entrance into illiquidity or the advent of solvency problems, a provision should not be made until this is verified (a complex issue in itself). If "event" is instead taken to mean the time at which the bank is exposed to the risk that the debtor is unable to pay back the borrowed amount in full, a provision is logically to be made already at the moment a loan is given, i.e. the actual loan is the event. By not adhering to old perceptions, a model which is based on recognizing expected future losses may still appease the accountant's requirement that only occurred events are to be recorded in the books. Apparent smoothing activities need then not be classified as artificial smoothing (Wall and Koch, 2000) but rather as natural smoothing, which reflects the nature of a bank's operations. This is arguably the approach taken in the original exposure draft issued by the IASB in 2009 (ED/2009/12). There, the IASB proposed the use of expected losses to be included at the time of recognition of financial assets carried at amortized cost. Although theoretically defensible, there was substantial criticism of the proposal. The criticism suggested that the approach is difficult to carry out in practice, especially for open portfolios.

We now relate back to the disctinction between the incurred loss model and expected loss model. While the former is characterized by more objectivity (lessening the opportunity for manipulation), the latter generally leads to earlier recognition of losses (albeit such losses must be judgmentally estimated). This, in turn, will make earnings smoother. As noted above, this can be desirable from a non-accounting perspective, in addition to being an attribute of accounting quality. In other words,

the expected loss model allows for judgment to capture relevant events in a timely manner.

Management of earnings and capital have been widely studied in the past decades.The evidence for the average sample of banks is somewhat mixed. This could be because banks are in general subject to heavier enforcement than most other firms, which limits the ability for manipulation. The enforcement applies both to listed and non-listed banks, due to the fact that states are important stakeholders, as noted above. Therefore, we hypothesize that accounting judgment in banking is relativly neutral, at least where enforcement is strong. If this is correct, the information hypothesis dominates the incentive hypothesis, and the expected loss model gives loan loss provisions a higher predictive ability of actual losses than do the incurred loss model.

The main hypothesis is stated as:

> H_1 : The ability of LLPs to predict GCOs in the subsequent period decreases under the incurred loss approach (as required by IFRS).

The caveat to this hypothesis is that the expected loss model assumedly works best (i.e. leads to neutral judgment) when management is not affected by strong incentives for accounting manipulation. The risk of manipulation can be expected to be lower in banks subject to stronger enforcement. In addition, the implementation of IFRS, and the incurred loss model, is expected to be stricter with higher enforcement, leading to less timely loss recognition in those cases.

Here we use two proxies for enforcement level. First, listed firms are assumed to be subject to stricter enforcement than non-listed firms. Second, the enforcement of IFRS is assumed to be stricter after 2005 than before, for all types of banks. The 2000-2004 period we call the pre period, and the 2005-2010 we call the post period. Therefore, we have the following two additional hypotheses:

> H_{2a} : The ability of LLPs to predict GCOs in the subsequent period is lower for listed banks than for non-listed banks.

> H_{2b} : The ability of LLPs to predict GCOs is lower in the 2005-2010 period (post) than for the 2000-2004 period (pre).

3 Research Design

We compare the predictive power of loan loss provisions (LLP) on actual losses (gross charge-offs, GCO) under the incurred loss model and the expected loss model.

3.1 Validity of Loan Loss Provisions

The model used for testing the validity of loan loss provisions is obtained from Altamuro and Beatty (2010). It is based on the assumption that loan loss provisions are valid and of high quality if they predict actual losses in the following period. We examine actual losses one period after provisioning (i.e. $t + 1$) Although Altamuro and Beatty (2010) provide an intuitive model, they do not elaborate on the

economic reasoning that makes it a suitable instrument for evaluating provisioning quality. We lay this out in terms of smoothing and the related concept of timeliness. The incurred loss model is shown in Gebhardt and Novotny-Farkas (2011) to be associated with less smoothing and decreased earnings timeliness (i.e. charges to the income statement due to losses are delayed). We argue that low timeliness is evidence of the loss event being poorly defined (see Wall and Koch, 2000), and that the provision made under the incurred loss model is a poor reflection of actual underlying economic events. Such a situation should thus also be associated with a poor ability of LLP to predict actual losses in immediate future periods. Likewise, to the extent that the expected loss model involves natural smoothing which reflects underlying phenomena, the above reasoning may also be applied as regards smoothing.

In the previous section, unintentional errors was mentioned as a potential problem. The models presented below capture the effect of unintentional errors. If the estimation of LLPs is difficult (leading to a high level of unintentional error) the model will show a low predictive ability of LLPs on GCOs. Thus, both unintentional errors and manipulation are captured by the model.

To test H_1 we apply the following regression equation:

$$GCO_{it+1} = \alpha_0 + \alpha_1 LLP_{it} + \alpha_2 IFRS_{it} + \alpha_3 IFRS_{it} \times LLP_{it} + \varepsilon_i \tag{1}$$

with GCO indicating gross charge-offs, i.e. actual credit losses, while LLP is provisons for credit losses, as estimated in the financial statements. $IFRS$ is an indicator variable, taking the value of '1' for IFRS-firms, zero otherwise. We predict a negative coefficient for $IFRS \times LLP_{it}$.

To test H_{2a} we apply the following regression equation:

$$\begin{aligned} GCO_{it+1} = \alpha_0 + \alpha_1 LLP_{it} + \alpha_2 IFRS_{it} + \alpha_3 IFRS_{it} \times Listed_{it} + \alpha_4 Listed_{it} \\ + \alpha_5 Listed_{it} \times LLP_{it} + \alpha_6 IFRS_{it} \times Listed_{it} \times LLP_{it} + \varepsilon_i \end{aligned} \tag{2}$$

where $Listed$ is an indicator variable taking the value of '1' for firms with publicly listed shares. We predict a negative coefficient for $IFRS \times Listed \times LLP_{it}$.

To test H_{2b} we apply the following regression equation:

$$\begin{aligned} GCO_{it+1} = \alpha_0 + \alpha_1 LLP_{it} + \alpha_2 IFRS_{it} + \alpha_3 IFRS_{it} \times LLP_{it} \\ + \alpha_4 Post_{it} \times LLP_{it} + \alpha_5 Post_{it} \times IFRS_{it} \\ + \alpha_6 Post_{it} \times IFRS_{it} \times LLP_{it} + \varepsilon_i \end{aligned} \tag{3}$$

where $Post$ is an indicator variable taking the value of '1' for observations for the 2005-2010 period. We predict a negative coefficient for $Post \times IFRS \times LLP_{it}$.

As we have panel data (where several observations come from each bank), we use a fixed effects model for testing. In this case, the model has two implications. First, all variables that are constant for a certain bank throughout the tested period are controlled for. This applies to variables such as home country, type of bank, and (for this dataset) listing status. Second, when we test the effect of IFRS conversions, we

use a sample of banks with no such conversion as a control group. Using the fixed effects model, we control for constant differences between banks that move to IFRS and those that remain with local accounting standards.

3.2 Control Variables

Based on Perez et al. (2008) several controls are included in the tested models. They are variables that are known to affect the management of LLPs in banks. These are size (log of total assets), net operating income (OP), total capital ratio (TCR), GDP growth, total loans over total assets (a proxy for risk profile), and general stock index. TCR is related to management of capital, as discussed in Section 2.

The use of LLP to smooth earnings also depends on a number of higher-level factors (Fonseca and González, 2008), such as investor protection and legal enforcement (lowering incentives to smooth earnings), disclosure requirements, supervision and restrictions on bank activities (further lowering incentives), and financial structure and development of the financial system (raising incentives to smooth earnings). Such factors, as well as country (a proxy for many of the above factors), type of bank and listing status are indirectly controlled for by the use of a fixed effects model.

We also did some tests using data up to an including 2007. By excluding data from 2008 and later, we controlled for two events that affected European banks from 2008 and onwards. First, it is the introduction of Basle II as the basis for bank regulation. Second, it is the deep financial crisis affecting the banking sector in the 2008-2011 period.

3.3 Data Collection

For each bank-year included in the study we needed GCO, LLP, and total assets (as a control variable) from the financial statements. Initially, we obtained the data from Datastream for listed banks, and from Bankscope for non-listed banks. In the data collection process, however, we discovered that GCO was often missing in the databases. When it was included, it was often incorrect.[4] Therefore, much of the GCO data was hand collected from actual annual reports. When looking in annual reports we also collected LLP data, as a quality control on the database numbers.

When recording provisions and actual losses for each firm-year, all loans and advances are included, i.e. to customers as well as to banks.

Two main reporting formats are used by the studied banks, one which is based on movements in the balance sheet, and one which shows the impact on the income statement.

(1.) Balance sheet format The changes in loan loss reserves are shown, according to the generic formula:

$$LLA_t = LLA_{t-1} + LLP_t - NCO_t + Other_t.$$

[4]This is an important point for research based on Bankscope (and to some extent Datastream). The reliability of the data is sometimes questionable. An issue that is more easily handled, is the fact that GCO data is often in the databases.

which, alternatively, may be written as:

$$LLA_t = LLA_{t-1} + LLP_t - GCO_t + Recoveries_t + Other_t.$$

Although the banks vary in the amount of information they provide and in the level of item breakdown, the definition of each term is such that the following identity holds:

	Allowance for impairment losses on loans and advances			
	Balance at beginning of year			LLA_{t-1}
+	New additions			
−	Releases	=	+	LLP_t
−	Recoveries			
−	Write off/advances written off/charge-off (= GCO_t)	=	−	NCO_t
+	Recoveries (of advances written off in previous years)			
+	E.g. exchange and other adjustments	=	+	$Other_t$
=	Balance at end of year	=		LLA_t

LLP_t is usually expressed as variations of "increase/decrease in loan loss provisions", "impairment losses on loans and advances," or "charge for the year". Whether "write off" refers to gross charge-off or net charge-off must be deduced by the presence of "recoveries" (with a positive sign), and the meaning of loan loss provisions is similarly deduced by the presence (and sign) of "new additions", "releases" and "recoveries".

Direct charge-offs (where no provision has been made before the charge-off) are treated separately. In some countries they are already included in additions to loan loss provisions and again subtracted from write-offs (to give a net effect of zero). In other countries, they are shown separately, and are added to total charge-offs for the period.

Countries where the balance sheet format is used include Germany, Switzerland and the UK, for example.

(2.) Income statement format The effects on the income statement are shown [to be translated]:

	Credit losses			
+	This year's charge-off, confirmed credit losses			
−	Provisions for losses from previous years affecting this year's results*	=	−	GCO_t
	(= bortskrivningar som går direkt till resultaträkningen)			
+	This year's provision for credit losses			
−	Releases of provisions/impairments			
−	Recoveries of advances written off in previous years	=	+	LLP_t
=	Net provision for credit losses			

*i.e. the amount which has affected income previous years

The difference between LLP here and in (1.) is that new charge-offs (that do not go through the balance sheet) are separated out. When they are not separated out (see (1.)), they should reasonably increase and decrease LLP_t and GCO_t, respectively, causing a slight discrepancy between the above definitions.

The income statement format applies for example to Sweden.

Our definition of LLP is the net amount of the current period provision and reversals of provisions made in previous periods that are no longer needed. From a theoretical standpoint it may be more correct to include only new provisions made in the period. They are supposed to predict future actual losses. Reversals of provisions are indications of estimation errors in prior periods. We still use LLP

including reversals, however, since that is used in previous literature (Altamuro and Beatty, 2010), and since that is the amount included in Datastream and Bankscope. Further, current LLP's are not always possible to distinguish in annual reports in all countries.

4 Sample and data

The original population consists of all banks in the European Economic Area (EEA) and Switzerland that are found in Bankscope, with the restriction that they operate as commercial banks, savings banks, bank holding companies, real estate and mortgage banks, or cooperative banks. In most tests, we excluded banks from EU members that entered the union in 2004 and later. The reason is that banks in these countries tended to use IFRS for the entire 2000-2010 period, negating any effect of a change from local GAAP to IFRS. We collected data for the 2000-2010 period.

Subselections were made from the original population. First, all banks with total assets below 1 billion Euro in 2010 were dropped from the sample. Second, all listed banks were selected for inclusion. Third, a random sample of non-listed banks was selected.

The final sample is shown in table 2. The number of observations varies between countries, based on data availability. For example, Italy has good data availability, while it is lower in Germany. The number of observations per year is larger for the 2005-2009 than for the 2001-2004 period, because data is more readily available in the later period. It is especially GCO data that is difficult to find for some banks.

Variable descriptions are provided in table 3, and shown for the various sample groups. Both GCO and LLP are at low levels, since they are deflated by total assets.

This study is focused on a comparison between the expected loss model and the incurred loss model. In the sample, the IFRS variable is a proxy for the incurred loss model. That is, when IFRS = 1 (the bank follows IFRS), we assume that the incurred loss model is applied. This assumptions is reasonable, given that IAS 39 prescribes the incurred loss model. An additional assumption is that when IFRS = 0 (the bank does not follow IFRS), the expected loss model is applied. This is not entirely correct, as there was (and to some extent is) variation in local GAAP between European countries. However, in general local GAAP for credit losses was (is) more based on judgment, and involves earlier loss recognition, than IFRS (Gebhardt and Novotny-Farkas, 2011).

5 Results

Table 5 shows results for the basic models. In all model specifications there is a significant effect of LLP on GCO, as expected. There is a negative coeffcient on the $IFRS * LLP$, which supports hypothesis 1. The $IFRS * Listed * LLP$ interaction term is not significant, so hypothesis 2a is not supported. However, $IFRS * Post * LLP$ is negative, as predicted by hypothesis 2b. This last finding supports the idea that stronger enforcement gives a stronger negative effect of IFRS implementation. The period rather than listing status seems to be the better proxy for enforcement.

We did additional testing for each of the larger countries in the sample. Results based on testing of hypothesis 1 are reported in table 6. For most countries, the $IFRS * LLP$ term is in the expected direction, although not significant. There are two important exceptions: France and Sweden has a strongly significant effect in the opposite direction.

Based on country results, we did additional tests excluding France and Sweden, reported in Table 7. There we find stronger support for hypothesis 1, and still support for hypothesis 2b.

Commenting on the controls, we can note that OP (operating income) and $StockIndex$ are generally significant. TCR (total capital ratio) is not significant, suggesting that capital management is not an important factor. This is as expected, in the post-Basle era (cf. Section 2).

Robustness tests

Robustness tests were performed on different periods, geographic samples, and without controls. We did testing for the 2000-2007 period in addition to the 2000-2010 period for all stated hypotheses. This is done in order to control for both the effects of the introduction of Basle II in Europe, and for the financial crisis 2008-2010.

The hypotheses were also tested using a sample with the entire EEA, that is including banks from countries that joined the EU in 2004 and later. The reason for this test is to see whether results apply to Europe in general.

Finally, robustness tests were performed without the controls discussed in Section 3.2. The reason is that the controls could be correlated with bank characteristics that we are interested in capturing, thus weakening results.

The robustness tests are not tabulated. For all three types of tests, however, results are materially the same as in the primary tests reported in Tables 5-7.

6 Discussion

The incurred loss model for LLP (the model used under IFRS) is more objective than the alternative more subjective models. The cost of objectivity, however, is that bank management cannot adequately reflect credit losses in the period they judge as relevant.

We have hypothesized that the incurred loss model decreases the ability of loan loss provisions to predict actual losses, and that this effect is most pronounced with strong enforcement. As predicted, the incurred loss model performs worse than subjective models for listed banks. The effect is more proncounced with stronger enforcement, at least when enforcement is defined through time period. A proper application of highly judgmental accounting standards may require a high level of enforcement. This may not be a problem in the banking industry, since it tends to be subject to stricter enforcement than most other industries.

An effect of the inability to reflect credit losses in a timely manner, is that the incurred loss model may be pro-cyclical. This tends to worsen the effect of accounting on financial crises, such as the 2007-2009. This study supports this argument. Thus,

from a regulator perspective, IASB's plans to introduce the expected loss model is positive.

Relating to the debate about principles- versus rules-based standards, findings here indicate that principles-based standards work better, at least if there is a high level of enforcement (which is generally the case in the banking industry).

An additional finding is that there is variation between countries, where France and Sweden differ from other large countries in the sample. The reason for this is a matter for further research.

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[Table 1 omitted]

Table 2: Sample description

Panel A: Country breakdown

	All		IFRS		Post		Listed	
Country	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
AUSTRIA	57	3.40	53	3.62	44	2.86	46	7.10
BELGIUM	13	0.77	13	0.89	13	0.84	2	0.31
DENMARK	159	9.48	90	6.14	131	8.50	101	15.59
FINLAND	22	1.31	19	1.30	20	1.30	9	1.39
FRANCE	53	3.16	44	3.00	51	3.31	28	4.32
GERMANY	67	3.99	55	3.75	54	3.50	42	6.48
GREECE	57	3.40	52	3.55	52	3.37	48	7.41
IRELAND	35	2.09	35	2.39	35	2.27	18	2.78
ITALY	600	35.76	587	40.07	589	38.22	89	13.73
LUXEMBOURG	10	0.60	10	0.68	10	0.65	4	0.62
NETHERLANDS	38	2.26	35	2.39	37	2.40	6	0.93
NORWAY	113	6.73	92	6.28	99	6.42	73	11.27
PORTUGAL	35	2.09	33	2.25	33	2.14	23	3.55
SPAIN	147	8.76	139	9.49	138	8.96	59	9.10
SWEDEN	73	4.35	45	3.07	59	3.83	25	3.86
SWITZERLAND	44	2.62	29	1.98	30	1.95	36	5.56
UNITED KINGD.	155	9.24	134	9.15	146	9.47	39	6.02
Total	1,678	100.00	1,465	100.00	1,541	100.00	648	100.00

Panel B: Year breakdown

	All		IFRS		Listed	
Year	Freq.	Percent	Freq.	Percent	Freq.	Percent
2001	19	1	5	0	7	1
2002	20	1	5	0	5	1
2003	29	2	7	0	11	2
2004	69	4	16	1	48	7
2005	142	8	128	9	95	15
2006	302	18	284	19	105	16
2007	333	20	311	21	112	17
2008	367	22	343	23	114	18
2009	338	20	313	21	113	17
2010	59	4	53	4	38	6
Total	1,678	100	1,465	100	648	100

Table 3: Descriptive statistics of the variables

	Obs	Mean	Std. Dev.	Min	Max
GCO	1678	0.00	0.00	0.00	0.03
LLP	1678	0.00	0.01	0.00	0.04
Size	1678	9.41	2.07	5.60	15.47
OP	1678	376.41	877.95	-414.50	3558.00
TCR	1678	10.60	6.16	0.10	45.25
GDP	1678	0.05	0.09	-0.19	0.25
Loans_TA	1678	0.65	0.20	0.00	0.98
StockIndex	1678	333.50	228.71	84.32	1593.85

Table 4: Table definitions

Significance levels for the two-tailed level: [*] 10%, * 5%, **1%, ***0.1%.
LLP: Loan loss provisions during year *t* scaled by total assets year *t-1*.
IFRS: Indicator variable taking on the value of 1 for firms that have adopted IFRS, zero otherwise.
Listed: Indicator variable taking on the value of 1 for firms that are listed, zero otherwise.
Post: Indicator variable taking on the value of 1 for observations in the 2005-2010 period, zero otherwise.

Control variables
Size: Logarithm of total assets.
OP: Operating income.
TCR: Total capital ratio, the numerator excludes general LLP and the denominator is risk-weighted assets.
GDPgrowth: Growth of GDP.
Loans/TA: Total loans over total assets, which is a proxy for risk profile.
StockIndex: General stock index.

Table 5: IFRS adoption effect

	Base model	*H1*	*Listing effect*	*Post effect*	*H2a*	*H2b*
LLP	.4121281***	.5637852***	.4115790**	.4672175**	.5582803***	.4464443*
	(4.67)	(6.25)	(3.17)	(3.15)	(5.44)	(2.79)
Size	0.000	0.000	0.000	0.000	0.000	0.000
	(-1.73)	(-1.23)	(-1.49)	(-1.71)	(-0.94)	(-1.31)
OP	1.20e-07[*]	1.05e-07[*]	1.24e-07*	1.17e-07[*]	1.07e-07[*]	1.03e-07[*]
	(2.07)	(1.98)	(2.12)	(1.99)	(2.00)	(1.89)
TCR	1.30e-06	7.73e-06	-1.27e-06	5.75e-06	7.90e-06	9.11e-06
	(0.06)	(0.42)	(-0.06)	(0.28)	(0.47)	(0.49)
GDPgrowth	0.001	0.000	0.001	0.000	0.000	0.000
	(0.79)	(0.12)	(0.84)	(0.04)	(0.30)	(0.11)
Loans/TA	0.000	0.000	0.000	0.000	0.000	0.000
	(-0.25)	(0.43)	(-0.37)	(0.09)	(0.43)	(0.50)
StockIndex	2.95e-06*	2.52e-06*	3.04e-06*	3.11e-06**	2.49e-06*	2.51e-06*
	(2.91)	(2.75)	(2.72)	(3.20)	(2.28)	(2.84)
IFRS		-0.001			-0.001	-0.001
		(-0.71)			(-0.81)	(-0.94)
*IFRS*LLP*		-.1997846*			-.1911004	.1788582
		(-2.15)			(-1.38)	(1.25)
Listed			0.000		-0.001	
			(-0.45)		(-1.04)	
*Listed*LLP*			0.004		0.040	
			(0.04)		(0.27)	
Post				0.000		0.000
				(-1.11)		(-0.66)
*Post*LLP*				-0.061		0.156
				(-0.45)		(1.27)
*IFRS*Listed*					0.001	
					(1.00)	

*IFRS*Listed*LLP*					-0.046	
					(-0.23)	
*IFRS*Post*						0.000
						(0.52)
*IFRS*Post*LLP*						-.4170143*
						(-2.82)
Constant	0.001	0.001	0.001	0.002[*]	0.002	0.002
	(1.49)	(1.32)	(1.33)	(1.89)	(1.26)	(1.56)
R-square	0.275	0.296	0.275	0.279	0.298	0.298
N	1678	1678	1678	1678	1678	1678

Table 6: Test of Hypothesis 1, by country

	Denmark	France	Germany	Italy	Norway	Spain	Sweden	UK
LLP	.6990699***	.2755911*	.8699864***	0.241	0.276	.281521*	-.3450799*	.8887519***
	(7.22)	(2.74)	(7.34)	(0.60)	(1.09)	(2.40)	(-2.52)	(5.99)
Size	0.000	0.000	0.000	0.000	0.000	.000357*	0.000	-.0004744*
	(-0.13)	(-1.64)	(-0.56)	(0.70)	(-0.59)	(2.17)	(0.12)	(-2.45)
OP	0.000	0.000	0.000	-2.93e-07[*]	-8.52e-07[*]	3.06e-07***	0.000	1.44e-07*
	(-0.72)	(1.36)	(0.77)	(-1.67)	(-1.75)	(3.67)	(-0.01)	(2.03)
TCR	0.000	0.000	0.000	0.000	.0006209***	0.000	0.001	0.000
	(0.57)	(1.48)	(1.35)	(-0.03)	(4.87)	(-0.36)	(1.12)	(-0.39)
GDPgrow	.0133121[*]	0.004	.005264[*]	-0.002	-0.002	-0.002	0.011	0.000
	(1.85)	(1.63)	(1.93)	(-1.02)	(-1.17)	(-0.73)	(1.44)	(0.02)
Loans/TA	0.001	-0.001	0.001	.0018861**	-.0049497*	0.002	0.008	0.000
	(0.31)	(-1.08)	(0.22)	(2.74)	(-2.13)	(1.17)	(1.03)	(-0.19)
StockIndex	.0000108*	5.30e-06*	0.000	.000013**	0.000	0.000	0.000	0.000
	(2.58)	(2.15)	(0.74)	(2.76)	(0.62)	(-1.60)	(-1.34)	(0.49)
IFRS	0.000	0.001	0.001	-0.002	0.000	0.001	-0.005	.0019431[*]
	(-0.29)	(0.92)	(0.43)	(-1.04)	(-0.60)	(1.55)	(-1.00)	(1.69)
*IFRS*LLP*	-0.174	.3849777***	0.341	-0.093	-0.172	0.030	.7852177**	-0.265
	(-1.31)	(4.49)	(0.41)	(-0.23)	(-0.63)	(0.27)	(3.10)	(-1.38)
Constant	-0.007	0.003	-0.002	-0.001	.005434[*]	-0.003	0.000	0.003
	(-1.61)	(0.84)	(-0.55)	(-0.36)	(2.01)	(-1.36)	(-0.04)	(0.88)
R-square	0.544	0.941	0.334	0.065	0.582	0.440	0.234	0.616
N	159	53	67	600	113	147	73	155

Table 7: IFRS adoption effect, excluding France and Sweden

	Base model	*H1*	*Listing effect*	*Post effect*	*H2a*	*H2b*
LLP	.4079341***	.6333971***	.4066539*	.5478735**	.6508858***	.54292**
	(4.32)	(12.25)	(2.85)	(3.70)	(8.86)	(3.51)
Size	0.000	0.000	0.000	0.000	0.000	0.000
	(-1.21)	(-0.78)	(-1.12)	(-1.17)	(-0.66)	(-0.81)
OP	1.27e-07[*]	1.04e-07[*]	1.28e-07[*]	1.23e-07[*]	1.03e-07[*]	1.01e-07[*]
	(2.11)	(1.90)	(2.13)	(2.02)	(1.91)	(1.82)
TCR	0.000	0.000	0.000	0.000	0.000	0.000
	(0.07)	(0.36)	(0.02)	(0.12)	(0.30)	(0.37)
GDPgrowth	0.000	-0.001	0.000	0.000	0.000	0.000
	(0.30)	(-0.46)	(0.32)	(-0.15)	(-0.30)	(-0.22)
Loans/TA	-0.001	0.000	-0.001	-0.001	0.000	0.000
	(-1.13)	(-0.49)	(-1.17)	(-0.92)	(-0.49)	(-0.46)
StockIndex	2.79e-06*	2.41e-06*	2.83e-06*	2.86e-06*	2.37e-06[*]	2.33e-06*
	(2.44)	(2.21)	(2.23)	(2.55)	(1.83)	(2.22)
IFRS		0.000			0.000	0.000
		(1.66)			(0.96)	(-0.16)
*IFRS*LLP*		-.2972794***			-.3244242*	0.106
		(-4.24)			(-2.34)	(0.69)
Listed			0.000		0.000	
			(-0.15)		(-0.24)	
*Listed*LLP*			0.004		-0.047	
			(0.03)		(-0.28)	
Post				0.000		0.000
				(0.01)		(0.01)
*Post*LLP*				-0.150		0.117
				(-1.09)		(0.82)
*IFRS*Listed*					0.000	
					(-0.04)	

*IFRS*Listed*LLP*					0.074	
					(0.33)	
*IFRS*Post*						0.000
						(0.29)
*IFRS*Post*LLP*						-.4294202*
						(-2.73)
Constant	0.001	0.001	0.001	0.001	0.001	0.001
	(1.41)	(0.75)	(1.32)	(1.34)	(0.76)	(0.99)
R-square	0.294	0.325	0.294	0.297	0.325	0.326
N	1552	1552	1552	1552	1552	1552