What drives coverage ratios: evidence from Euro area banks

This version: 03 June 2019

Preliminary Draft: Please, do not quote

Abstract

We analyse the main micro and macro drivers of banks' coverage ratios in the euro area. We find that important bank specific factors associated to coverage ratios are asset quality and funding structure. The relationship between these variables is not linear. Specifically, banks accelerate the build up of large loan loss reserves only when asset quality is very poor. We also find that the creation of loss coverage is pro-cyclical, suggesting that banks are either unable or unwilling to offset the increase of NPLs when they need it most. Moreover, a more stringent supervisory and regulatory framework may serve the purpose of increasing coverage ratio, but not all interventions achieve the same result. We also find that banks adjust their coverage ratios to catch up to their peers and that fast growing markets for NPLs are associated to higher coverage ratios.

Keywords: Coverage ratio, non-performing loans, NPLs, asset quality, bank supervision.

JEL Classification G00 · G21 · G28 · E51 · E58

1 Introduction

One of the most recently debated issue in Europe deals with the accumulation of large stocks of non-performing loans (NPLs). Although legacy assets have decreased by one third over the last three years, they still amounted to over euro 700 billion in September 2018, with large variation across banks and countries (EBA 2018).

Addressing the risks related to high stocks of legacy assets is primarily the responsibility of individual banks and national authorities. However, as emphasized by policy makers, the NPL problem has become systemic because in a monetary union the economies of member countries are interlinked and can create spill-over effects (ESRB 2019; Draghi 2017). Indeed, there is a clear "European" interest in resolving high NPLs.

Several reports and analyses, mainly institutional and qualitative, have explored the NPL problem from multiple perspectives (see Bruno and Marino, 2019 and references therein). This paper aims to contribute to the current debate by focusing on coverage ratios, a key monitoring indicator to check banks' balance sheet strength (ECB 2017). The coverage ratio, i.e., the share of loan loss reserves (LLRs) in total NPLs, measures how much (in percentage terms) of the potential loss associated with a given loan has already been provisioned for. By construction, this indicator is complementary to the book value of the loan, as larger LLRs correspond to lower (net) book value of loans. It follows that the higher the coverage ratio, the lower the carrying amount of the loan and, thus, the credit risk faced by the bank. This offers support for the view that NPLs are no longer a risk if they are adequately provisioned for (Constâncio 2017) and explains why European supervisors and legislative authorities have promoted measures to enhance loss coverage for problem loans through the build up of sufficiently high coverage ratios.[1]

The average coverage ratio in Europe is nearly 46%, but similarly to NPLs, discrepancies emerge across banks and countries. As an example of the dispersion at the country level, the average coverage ratio by country ranges from 24% in Finland to nearly 70% in Hungary (EBA 2018). We aim to exploit this variation by investigating the determinants of coverage ratios. This is important because minimum coverage requirements set to harmonise bank practices are commonly based on simple and straightforward criteria, primarily the vintage and the degree of collateralisation of the loan.[2]

[1] See the institutional framework in Section 2.

[2] See the ECB's expectations on provisioning contained in the addendum to the guidance to NPLs released as of March 2018.

We argue that there may be several factors explaining why banks report different coverage ratios, not all of which are justifiable in light of credit risk considerations. Indeed, which drivers matter in explaining banks' coverage ratios remains an empirical question.

To investigate drivers and dynamics of coverage ratios, we look at a sample of around 570 Euro Area (EA) banks in 2010-2016. We employ regression models to disentangle the effects of bank-specific from country-specific factors. As for the former, we aim to understand to what extent credit risk considerations matter as opposed to drivers unrelated to the riskiness of the loan portfolio. For example, these may reflect the discretionary components of provisioning as well as the bank funding structure. Differences at the country level can also explain variation in European banks' coverage ratios. In this respect, we are particularly interested in exploring the role played by the institutional framework.

There is little, if any, empirical evidence on the driving factors of coverage ratios. Previous works on related topics placed emphasis on the relevance of bank managers' discretionary behaviour to explain provisioning policies (Norden and Stoian 2013; Bouvatier and Lepetit 2012). Another strand of literature focuses on provision timeliness; this literature finds that delayed loan loss recognitions is associated with greater opacity and procyclical lending (Beatty and Liao 2011; Bouvatier and Lepetit 2008; Leaven and Majoni 2003). Most studies on the determinants of bank loan loss provisions aimed to test whether banks use discretion in annual provisioning to circumvent capital adequacy requirements or to smooth earnings.

We differentiate from this strand of literature for three reasons. First, we are interested in assessing the main drivers behind coverage ratios rather than provisioning that, as we will discuss in the institutional section, is only a component of coverage ratios.[3] Second, we argue that country specificities, and not only bank characteristics such as the amount of capital or earnings before the effect of the discretion, may play a role in explaining discrepancies in the level of coverage ratios. Indeed, the country specific component has been largely unexplored by the literature on the determinants of bank provisioning. Third, coverage ratios have only recently become key supervisory metrics as a consequence of the large stock of NPLs in Europe. As such, the motivation behind our analysis is in a sense unique: we take stock of the current situation in Europe to explore the main drivers of coverage ratios at both bank and country level.

Results from the micro-level analysis show the relevance of asset quality and funding structure. The relationship between these variables and coverage ratio is not linear. In our baseline specification, contrary to our expectations, we first find higher coverage ratios in banks with better asset quality as well

[3] In terms of variables, bank provisioning is commonly proxied by the ratio of LLP (a measure of flow) over total assets. We instead look at the *stock* of LLP accumulated over the years (i.e., the loan loss reserve) in percentage of NPLs.

as in banks more relying on customer deposits. However, for banks with very low asset quality and very limited reliance on traditional funding the relationship changes direction as these banks report higher coverage ratios. In other words, it seems that banks accelerate the build up of large loan loss reserves only when asset quality is very poor, possibly to mitigate the negative externalities associated to high bad loans. We also find increasing coverage ratios when the base of traditional deposits is very limited; this suggests that banks may want to enhance bank transparency when the market scrutiny is likely to be more intense.

In an extension to our main analysis, we also find that banks decreased coverage ratios during the euro-sovereign crisis, probably as an effect of the high raise in NPLs and lenient national supervisors in times of distress. On the contrary, the tightening of banking supervision due to the entrance into force of the SSM in 2014 is associated to higher coverage ratios in banks subjected to the ECB supervision relative to non-supervised banks. We also investigate whether banks adjust their coverage ratios to catch up to their peers; we find that banks with coverage ratios below their country average tend to catch up and the more so, the more they are below their target.

In the second part of the analysis, we exploit cross-country discrepancies by replacing country fixed effects with macro variables to account for some national specificities at the institutional level. We also exploit cross-country discrepancies in asset quality, by focusing on a subsample of banks from high NPLs countries. When we explore the role of macro-prudential policies, we find partial evidence of a positive association between a tightening in macro-prudential regulation and coverage ratios. Results change according to whether we focus on the whole sample vis-à-vis the subsample of high NPL countries. As expected, measures to address pro-cyclical provisioning seems to be associated to higher coverage ratios in both samples. Evidence on other macro-prudential measures is mixed. In our analysis on the whole sample, introducing more restrictive limits on bank borrowers or setting higher taxes on financial institutions is associated to higher coverage ratios, while requiring higher capital buffers on significant financial institutions is related to reduced coverage ratios. This last finding is not surprising and suggests that when regulatory capital burden becomes too binding (as in the case of larger institutions which are already subjected to stricter capital regulation), banks may prefer to increase retained earnings (in order to comply with higher capital requirements) rather than setting aside more LLP which are negative income statement item reducing earnings.

When we focus on banks from high NPLs countries, most of macro-prudential indices lose significance. Moreover, unlike the whole sample, we find that higher levy on financial institutions is associated to lower coverage ratios. Hence, when tax burden increases, banks from riskier jurisdictions

seem to have less incentive to set aside high LLP to increase their loan loss allowances. Finally, we find that banks from countries where secondary market for distressed debt are growing faster show higher coverage ratios. Because the European secondary market for loans is still in its infancy, higher coverage ratios (that correspond to lower net loan book values) seem a precondition to reduce the bid-ask spread between buyers and sellers.

To the best of our knowledge, this is the first empirical analysis on drivers of coverage ratio, an indicator of bank balance sheet strength that has gained increasing importance over the last few years. Providing comprehensive evidence on dynamics of coverage ratios across banks and countries in the euro area has relevant policy implications. Building up high coverage ratios is certainly desirable for supervisors to ensure sounder and more transparent bank balance sheet. It remains, however, that achieving high level of coverage ratios may entail cumbersome and costly strategies for banks, as provisions have a direct impact on bank earnings and, through it, on bank capital.

Our finding can inform the current debate and help policy makers clarifying which are the most effective levers to use. What it emerges from our analysis is that the level of coverage ratios is not entirely explained by variation in asset quality and that banks are not always able or willing to offset the increase in NPLs with larger loss coverage. Interestingly, funding structure is a bank characteristic that is strongly associated to coverage ratios: in general, a larger base of traditional funding is associated to higher level of coverage ratios, although the relationship is not linear.

A more stringent regulatory and supervisory framework seems to provide banks incentives to raise coverage ratios, although the evidence is mixed, varying according to the type of measures introduced. For example, setting higher capital burden and, at the same time, minimum loss coverage might be unfeasible or excessively costly for banks, as achieving higher coverage ratios by augmenting provisions has the side effect to reduce earnings and, consequently, it may have a negative impact on bank capital. Some characteristics of the banking system, such as the liquidity of the secondary market for distressed loans, are also relevant factors to understand level and dynamics of coverage ratios.

All in all, our analysis confirms the importance of comprehensive measures to tackle the NPLs problem in Europe. Stricter supervision is important but addressing structural sources of inefficiency (by developing the secondary market for loans and strengthening the legal framework) can also serve the purpose by providing banks with further tools to dispose legacy assets and, by this means, to achieve more adequate levels of coverage ratios.

The remainder of the paper is structured as follows. Section 2 provides some background details on the main measures taken to enhance loss coverage for NPLs and the reasons why, in a context of high

NPLs, coverage ratios are important for supervisors and investors. It also presents stylized facts on recent dynamics of NPLs and coverage ratios. Section 3 illustrates main sources of discrepancies in banks' coverage ratios, sets out the testable predictions, describes our data and empirical strategy; we split the analysis to disentangle micro and macro level drivers of coverage ratios and include several extensions and robustness checks to our baseline specifications. Section 4 concludes.

2 NPLs and coverage ratios: institutional background

2.1 Recent measures to enhance loss coverage

NPLs have recently become a concern for macroprudential authorities in Europe because of the potential negative externalities associated with large stock of troubled assets (ESRB 2019). As is well known, high NPLs are potentially detrimental to individual banks and the financial system for several reasons. Negative externalities may stem from the repercussions of an unresolved stock of NPLs on perceptions of the health of the financial system, making bank funding more expensive and discouraging banks from new lending. Lending can be impeded as banks with poorer asset quality may seek to regain adequate capital ratios by deleveraging and cutting back on lending rather than by raising new equity. High NPL ratios can also distort managers' incentives, if troubled loans, by eroding bank capital, heighten moral hazard and favor excessive risk taking (Bruno and Marino 2019).

NPLs in European banks skyrocketed to unprecedented levels in the wake of the global financial crisis, making them more vulnerable than international peers to the repercussions of poor asset quality (Figure 1).

The European supervisors have reacted fiercely to resolve the problem of legacy assets. Focusing on the euro area, as a result of these actions, according to ECB statistics, the NPLs ratio of significant institutions have decreased from 8% as of mid- 2015 to nearly 4% as of the third quarter of 2018; nevertheless, discrepancies across banks and countries still persist and the aggregate level of NPLs in euro area banks remains far too high, compared to international peers (the NPL ratio is nearly 1% in both the US and Japan as of end 2017, according to World bank data).

Several of these actions entailed measures on how to enhance provision coverage of NPLs.

In March 2017, the ECB released guidelines on how to manage and provision problem loans, complemented with quantitative indications, mainly based on the vintage and the degree of collateralisation of the non-performing exposures, on minimum levels of prudential provisions (see the

Addendum to the NPLs guidance as of March 2018). In July 2018, ECB announced the decision to set bank-specific supervisory expectations for the provisioning of NPLs as part of the supervisory dialogue.[4] In March 2018, the European Commission (EC) adopted a comprehensive package of measures; this comprises a proposal for a regulation amending the capital requirement rules to introduce common minimum coverage levels for newly originated loans that become non-performing.

To complete the picture, the accounting standard IFRS 9 introduced as of January 2018 has changed the impairment recognition by requiring banks, in essence, to make larger and more timely provisions.[5] Ideally, provisions should anticipate deteriorating economic conditions that may affect borrowers' ability to repay. In such a way, they could be effectively used to cover expected losses, while bank capital serves as a buffer against unexpected losses (Laeven and Majnoni 2003). However, until the introduction of IFRS 9, banks in most European countries accumulated provisions according to a backward-looking approach, reflecting "incurred" rather than "expected" credit losses (Cohen and Edwards 2017).

2.2 Why is it desirable to have high loss coverage?

Why have European policy makers placed such an emphasis on the loan provision coverage?

The answer is that adequate coverage ratios can help banks mitigate most of the concerns associated with high NPLs. This would occur through three main mechanisms: (1) by enhancing balance sheet strength, (2) by increasing bank transparency, and (3) by making troubled asset disposal more likely.

2.2.1 Coverage ratios as tools to strengthen bank balance sheets

Provisioning is a credit risk management tool through which banks alleviate credit risk by setting aside a given amount (LLP) as a buffer to absorb expected losses associated to a loan. LLPs allow banks to recognise the estimated loss in their profit and loss account, even before the actual loss can be determined with accuracy and certainty. The stock of LLPs accumulated over years is referred to as loan loss reserves or allowances (the numerator of the coverage ratio). When loan losses eventually materialise, banks can ideally draw on these reserves, thereby absorbing the losses without impairing capital; this would preserve banks' capacity to provide credit to the economy.[6]

[4] Precisely, the aim is to achieve same coverage of NPL stock and flow over the medium term through bank-specific expectations, guided by individual banks' current NPL ratio and their main financial features in a consistent way across comparable banks.

[5] There are some exceptions. Notably, Spanish bank regulators introduced a forward-looking provisioning regime in 2000, meant to address procyclicality issues, which led to more timely and higher general provisions (de Lis et al. 2001; Jiménez et al. 2017).

[6] The NPL Guidance stresses the importance of timely provisioning and write-off practices related to NPLs, as "these serve to strengthen banks' balance sheets, enabling them to (re)focus on their core business, most notably lending to the economy" (ECB 2018).

It follows that in a context of generalized poor asset quality, low coverage ratios represent a potential source of instability in that any future loss on the loan portfolio, if not sufficiently provisioned, would be covered by bank capital. This would make banks with large volumes of NPLs and moderate coverage ratios more vulnerable to negative shocks affecting borrowers' credit quality, especially in crisis years.[7]

2.2.2 Coverage ratios as tools to enhance banks' transparency and loan marketability

High coverage ratios are also important instruments to make banks' balance sheet less opaque. Loans are commonly illiquid and untraded contracts (Diamond and Dybvig 1983) whose fair value, in the absence of a true market price, is approximated through the process of provisioning. The process of accumulating provisions is, in fact, equivalent to reducing the face value of the loan to its present value, taking into account the allowance built up over time (Song 2002). Thus, if loan loss allowances were underestimated, bank balance sheet would be distorted, as bank assets and capital ratios would be overvalued.

Because high loan loss coverage corresponds de facto to low loan net book value, it follows that reporting high coverage ratios is also precondition to make the asset disposal more likely and reduce the bid-ask spread between sellers and buyers (Fell et al. 2016).

2.3. Some stylised facts on NPLs and coverage ratios

Despite the benefits associated to high coverage ratios, there still exists large variety across banks and countries in Europe. Figures 2 to 6 explore trends in NPLs and coverage ratios in our sample of euro area banks in 2010-2016 (details on the dataset used in the analysis are provided in Section 3.1). Figure 2 shows that the average coverage ratio in the euro area trended up since the euro sovereign debt crisis in 2010-2012 and, again, after the entrance into force of the single supervisor in 2014. Figure 3 shows that loan loss reserves increased relatively by more (or decreased by less) than NPLs, probably as an effect of prudent provisioning associated (in the most recent years) to more intense NPL resolution. This evidence suggests that European banks have progressively increased their coverage ratios, partly as a managerial response to asset quality deterioration, partly due to stricter supervisory and market scrutiny. [8]

Figures 4 to 6 confirm the presence of large cross-sectional variability in asset quality and coverage ratios, both across countries and across banks within the same country. Interestingly, the

[7] Low coverage ratios do not necessarily imply under-provisioning or delayed recognition of losses, as they might reflect rigorous lending practices or strong insolvency frameworks (EP 2016).

[8] "This may have been due to stricter supervisory and regulatory scrutiny in relation to the AQR exercise, increased market pressure, as well as a deterioration of collateral values (Council of the European Commission, 2017).

comparison between Figure 5 and 6 shows that, on average, there is no full correspondence between countries with low (i.e., below the sample average) asset quality and those with high (i.e., above the sample average) coverage ratios. This evidence points to the fact that comparing the level of coverage ratios across banks and jurisdictions may not be always the most meaningful way to assess the level of residual risks associated with NPLs. It also suggests that heterogeneity in European banks' coverage ratios is not fully explained by differences in asset quality.[9] Differences in coverage ratios may depend on other bank specific factors as well as on characteristics of the national legal, judicial and supervisory/regulatory framework.[10] In next section, we will empirically explore the relationship between coverage ratios and some of these characteristics.

3 Exploiting the cross section of banks: empirical analysis

In this section, we exploit our sample heterogeneity to explore the link between coverage ratios and some bank- and country-specific characteristics that seem to be more relevant to our purposes. There are several factors that, in principle, can justify variation in coverage ratios. Some of them relate to loan portfolio's characteristics as well as to additional bank characteristics, others to specificities at the country level. We illustrate these factors and formulate hypotheses. Because higher coverage ratios entail, by construction, larger provisions, in investigating the drivers of coverage ratios we will also draw on the literature on determinants of loan loss provisioning.

3.1 Data and summary statistics

We use a combined micro-macro-level dataset in order to test the role of both bank- and country-level characteristics in shaping coverage ratios. Due to data availability with respect to particular bank balance sheet items, the dataset spans the years 2010-2016 and covers all Euro Area (EA) countries. Owing to missing variables at the micro as well as the macro level, our panel dataset is not balanced. [11]

We collect annual bank-level data from the S&P Global Market Intelligence Platform (S&P Global).[12] We apply a careful cleaning procedure to the dataset in order to ensure to have as homogeneous a sample as possible. In doing so, we closely follow Eber and Minoiu (2016). To begin with,

[9] Interestingly, an EBA report on NPLs shows that the correlation between these assets and coverage ratios is low over time, with a correlation coefficient close to 0 at least since September 2014 (EBA 2016). This evidence also points to the fact that not all of the variation of coverage ratios is justifiable in light of credit risk management considerations.

[10] The ECB has taken stock of these differences and produced a report on national supervisory practices and legal frameworks related to NPLs. So far, the ECB has published two reports: the first one as of September 2016 and the second as of June 2017.

[11] Due to lack of data or limited cross section variation of available macro indicators, we are unable to explore all potential factors (e.g., the stringency of the legal system) that can affect banks coverage ratio.

[12] This database has formerly been known as SNL Financial.

we only keep the statements with the highest level of consolidation. We identify the 130 banks that were part of the Comprehensive Assessment (CA), which the European Central Bank carried out in 2014.[13] Next, we remove the subsidiaries of the banks that underwent the CA, as these banks could have also changed their provisioning policies in anticipation of the CA, while not formally showing up as banks under SSM supervision. 5.3. For the same reason, we delete parents and ultimate parents of CA banks. We also delete institutions not classified as 'bank' or 'savings bank/thrift/mutual'. Among the institutions classified as banks by S&P Global, we filter out those that have not been assigned to the CA despite having assets larger than 30bn EUR (which was a sufficient condition for being included in the CA), such as government-owned banks and asset management companies. At the same time, to avoid taking on board too small banks that could introduce noise, we only keep banks that are being classified as medium-sized and large according to the ECB definition in 2016.[14] Given the purpose of our analysis, and following Eber and Minoiu (2016), we also delete those banks whose lending business is negligible in the context of the whole business model, i.e. we only keep banks with a loans-to-assets ratio larger than 20%. Analogously, we delete banks with a deposits-to-assets ratio smaller than 20%. Furthermore, we delete bank-year observations where the coverage ratio exceeds 100%. Finally, all micro-level variables are winsorised at 2.5% and 97.5%, respectively.

The final sample contains 570 banks. Descriptive statistics for the main variables are shown in Table 1. The average sample bank is medium-sized according to the ECB definition, its assets amounting to nearly euro 10 billion; in terms of prevalent business model, it operates as a traditional commercial bank, whose core business is lending (the average loan to asset ratio is 64%) and whose main source of funds are customer deposits (the deposits to assets ratio averages 66%). As far as bank asset quality is concerned, the NPL to total asset ratio averages about 4% and the mean NPL to total loan ratio is 6.4%. The average coverage ratio is nearly 50%, with large variation across banks, the minimum coverage ratio being 14.5% and the maximum 87%. These numbers are comparable to those reported in aggregate statistics (IMF 2015; ECB 2016).

Looking at measures of bank capitalisation, the CET 1 regulatory capital ratio is close to 14%, well above the Basel III minimum requirement (8.5%, the fully loaded capital requirement, including the capital conservation buffer). Note that the European banking sector has taken a number of steps to strengthen its resilience since the onset of the euro debt crisis. The average levels of ROE and ROA (3% and 0.24%,

[13] More precisely, only 129 banks are covered by S&P Global as LCH. Clearnet missing.

[14] The ECB labels as large those institutions with assets greater then 0.5% of total consolidated assets of European Union banks and medium-sized as those with assets between 0.5% and 0.005%.

respectively) confirm that low profitability is a major source of concerns for European banks (Constâncio 2017). The comparison between the average ROA and the pre-impairment profits over total assets ratio (about 1%) suggests that allowances associated to the riskiness of lending have indeed eroded over 3/4 of revenues generated by the whole banking business. This supports the view that high NPLs are an important cause of low profitability in European banks (Altavilla et al. 2018).[15]

3.2 Econometric analysis: micro-level data

In a first step, we test whether the bank level characteristics have an impact on NPL coverage ratios by estimating the following panel fixed effects model[16]:

$$\left(\frac{LLR}{NPL}\right)_{ik,t} = \lambda_t + \mu_i + \gamma_{k,t} + \beta X_{ik,t-1} + \varepsilon_{ik,t} \qquad (1)$$

where $i = 1, \ldots, N$, $k = 1, \ldots, 19$ and $t = 1, \ldots, T$, with N being the number of banks, k being the country and T being the final year.

The equation includes time, bank and country-time fixed effects (λ_t μ_i and $\gamma_{k,t}$, respectively), with the latter accounting for country-time-specific characteristics which we will investigate in depth in the next section. $X_{ik,t-1}$ includes exogenous bank-level variables.

All explanatory variables are lagged by one year to mitigate concerns about reverse causality.

Our key variable is the coverage ratio, i.e. the amount of loan loss reserves over the stock of NPLs.[17] In a preliminary analysis, we decompose the coverage ratio and include, as additional dependent variables, the LLR in total assets and the NPLs in total assets. In an extension to our baseline analysis, we replace the level with the change in coverage ratio.

We include a set of controls for the main balance sheet items we consider being potential drivers of coverage ratios. The first plausible driver of coverage ratios is the quality of the loan portfolio. *Ceteris paribus*, one may expect poorer asset quality to be associated with higher coverage ratios as banks with lower asset quality should be more prone to increase loss coverage for the reasons discussed in the previous sections. We measure asset quality by the ratio of NPLs over total assets. To exploit variation

[15] According to the EBA, "The return on equity remains below the cost of equity with legacy assets, cost-efficiency and banks' business models still being some of the main obstacles towards reaching sustainable profitability levels". (EBA, Risk Dashboard as of Q1 2018)

[16] We are using the reghdfe command in Stata, which allows for multiple fixed effects, while also eliminating singleton observations.

[17] NPLs include the subcategories of bad loans, unlikely-to-pay exposures and past-due exposures. Unfortunately, the amounts of the subcategories are not available for several banks in our sample.

across banks and to account for potential non-linear effects of asset quality, in an extension to the baseline analysis, we also include the quadratic term of the ratio.

The literature on drivers of LLPs also points to profitability and capitalisation as factors affecting provisioning policy. Bank managers may exploit discretion in provisioning to smooth income and to manage capital (see ESRB 2017; Bouvatier and Lepetit 2012; Laeven and Majnoni 2003 and related literature therein). The income-smoothing hypothesis in loan loss provisioning states that banks provision during times of higher earnings in order to smooth profits over time: when earnings are low, provisions are deliberately understated to mitigate the adverse effect of other factors on earnings, in contrast to situations when earning are thought to be high. Therefore, under this income-smoothing behaviour banks' provisioning policy may be used to minimise the variance of reported earnings. The systematic under (over) provision in banks with low (high) profits should be reflected into lower coverage ratios.

We account for the potential influence of profitability on coverage ratios and test the income-smoothing hypothesis by using the return on assets (ROA). For robustness checks, we also include the return on equity (ROE) and the pre-impairment operating profit over TA.

About the capitalisation and coverage ratios, two main arguments point to a positive association between the two variables. According to the traditional view on accounting discretion and capital-management, capital-constrained banks may have the incentive to use provisions to achieve regulatory capital targets. This occurs because provisions, by reducing earnings (net of tax effect), have a mechanical detrimental effect on banks' capital. Hence, we would expect banks to preserve regulatory capital by holding back on loan loss provisioning. If this is the case, lower capitalisation should be associated to reduced provisions that may lead to lower coverage ratios. [18] A positive association would be also plausible because with high NPLs (that mechanically pull down coverage ratios), only well capitalised institutions could afford the cost of substantial increase in provisions to restore adequate level of coverage.

On the contrary, a different mechanism would support the existence of a negative association between coverage ratios and capitalisation. In this view, these two variables are substitutable buffers against potential losses. When raising capital is too costly, lower capitalised banks may have the incentive to increase coverage ratios, to partly compensate their lack of capital (Norden and Stoian 2013). Or, to change the perspective, better capitalised banks would be in a more comfortable position to absorb shocks deriving from the deterioration of the loan portfolio. As such, these banks should have less incentives to increase coverage ratios.

[18] For banks under the standardised approach for calculating regulatory capital ratios, the provisions regime varies across jurisdictions, building on the distinction between specific and general provisions. The former refers to identified problem loans for which trigger events (e.g., due payment) exist; the latter is made against a portfolio of loans, and the computation of it varies significantly across countries (ESRB 2017).

To test these different views we control for capitalisation by using the CET 1 capital ratio. The ability to absorb unexpected losses makes common equity the highest quality and most costly component of banks' regulatory capital. For robustness, we replace the CET1 ratio with two further capitalisation measures: the Tier 1 ratio and the CET1 over NPLs ratio.

Banks' funding structure can also influence coverage ratios because poor asset quality, by making banks more risky and opaque, can affect their ability to borrow (Bruno and Marino 2019). Conversely, as previously discussed, higher coverage ratios can mitigate the concerns associated with NPLs by buffering risk and enhancing transparency. We therefore expect that banks more exposed to market discipline have more incentives to report higher coverage ratios compared to banks less subjected to investors' scrutiny.

To capture the role of funding structure, we focus on the ratio of customer deposits to assets to gauge the importance of traditional sources of funds. We assume that banks that are more reliant on traditional deposits are less exposed to market scrutiny and, therefore, have less need to report high coverage ratios.

We control for size (log of total assets) because aggregate statistics show that smaller banks tend to report higher coverage ratios, although variation by bank asset size has declined progressively over time (EBA, 2018). We also control for the loan to asset ratio, because previous studies on the determinants of bank provisioning find a positive association between the relevance of the lending business and loan loss provisions behaviours (see, among others, Bouvatier and Lepetit 2012).

Table 2, Column 1 presents our baseline results for the preliminary investigation on the effect of the main bank-specific variables on coverage ratios. Only few bank-specific characteristics seem to have statistical significance. We find that banks with poorer asset quality (i.e., a higher share of NPL/TA) exhibit lower coverage ratios, while banks with a larger base of customer deposits show higher coverage ratios. Columns 2 and 3 present results on the components of coverage ratios, i.e., the loan loss reserves (the numerator of the coverage ratio) and NPLs (denominator of the coverage ratio) as a portion of total assets. In line with main empirical evidence on the drivers of loan loss provisions, we find higher LLR/TA in banks with lower asset quality and larger share of loans. We also uncover that banks with larger share of LLR tend be less profitable and less capitalized (Column 2). Consistently with previous evidence, we also find that lower level of profitability and larger loan portfolios are associated to higher level of the NPL/TA ratio (Column 3). Interestingly, funding structure does not seem to be a relevant driver of LLR and asset quality.

3.2.1 Outliers: Low quality, low capitalised and low deposit banks

To gain more insights on the reasons why banks build up coverage ratios, in Table 3 we focus on outliers by including the quadratic terms of our indicators of asset quality, funding structure and capitalization. Taking into account the features of coverage ratios illustrated in Section 2.1, we aim to explore the behaviour of banks with very low asset quality, low deposits and low capital to see whether and the extent to which they increase coverage ratios.

First, we find that the nexus between asset quality and coverage ratio is not linear. When we add a quadratic term of asset quality, the coefficient of this term is positive and statistically significant at the 1% level (Column 1). This result suggests that there may be a mechanical relation between NPLs and coverage ratios. A possible interpretation is that coverage ratios are somehow sticky: when NPLs increase, coverage ratios mechanically decrease because banks tend to adjust loan loss reserves at a slower pace than loan quality deteriorates. However, the mechanism seems to change for high levels of credit risk (i.e., when asset quality deteriorates significantly); in this case, banks restore loan loans allowance to increase higher coverage ratios.[19]

We then include the quadratic term of the customer deposit in total asset ratio. While the coefficient on the linear term of this indicator stays positive and significant, the coefficient of the quadratic term is negative and significant at the 1% level. This evidence supports the hypothesis that banks with a very large base of deposits are less exposed to the investors' scrutiny and, hence, have less of a need to report higher coverage ratios.[20]

Finally, to explore the non-linear effect of capitalisation, we include the quadratic term of the CET1 ratio (Column 3). Consistent with result in Column 1, capitalisation does not seem to be a relevant factor for loss coverage policies of banks.

In Column 4, we saturate the specification by adding all the three quadratic terms. Results are confirmed.

[19] In unreported regressions, we replace the quadratic term of asset quality with two different high NPL bank dummies that equal one when the NPL ratio is above either the mean value, or the top quartile of the distribution, and zero otherwise. The coefficient is negative for banks with NPL ratios above the sample average, while it is positive (significant at the 5% level) for banks with NPL ratios above the top quartile of the variable distribution. This evidence confirms that credit risk considerations matter for explaining variation of coverage ratios only for very risky banks.

[20] In untabulated results, to account for the role of funding structure, we include the share of wholesale funds over total assets. We also include the dummy listed banks. Contrary to our expectations, we do not find higher coverage ratios in banks more exposed to investors' scrutiny and market discipline (in both cases, the coefficients are statistically insignificant).

3.2.2 SSM banks and crisis years

In this subsection we explore the role played by two major events occurred in Europe over 2010-2016: the euro sovereign crisis years (2010-12) and the entrance into force of the single supervisor as of November 2014. Both events might have affected the way banks adjust their coverage ratios.

During the euro sovereign crisis, NPLs skyrocketed as an effect of the prolonged recession that started in the aftermath of the global financial crisis. Banks are expected to respond to increased asset quality deterioration by increasing provisions. Indeed, studies on determinants of LLP (see Laeven and Majnoni 2003, among others) generally find a significant and negative impact of the business cycle on bank provisioning. The question, however, is whether and the extent to which in very harsh times, banks adjust coverage ratios by increasing LLR to set off higher NPLs.

To take into account the effect of the euro sovereign crisis years, in Table 4 (Column 1) we remove year and country year fixed effects and include the dummy euro area crisis that equals 1 in 2010-2012 and 0 otherwise. We find that in crisis years coverage ratios tend to be lower. We interpret this result as an effect of the business cycle on default rates and non-performing loans (the denominator of coverage ratios). Notoriously, deterioration in macroeconomic conditions constitute a key factor explaining the sharp increase of NPLs (see among others Nkusu 2011 and Klein 2013). Consistently, when the economy slows down, non-performing loans tend to increase and so do loan provisions. Because in most countries and banks in Europe, backward-looking provisioning practices has been in place for long, changes in coverage ratios should be associated with the identification of troubled loans, which exhibit a cyclical pattern (Laeven and Majnoni, 2003; Bouvatier and Lepetit, 2012).

We argue, however, that because in times of severe distress is more difficult (costly) for banks to accumulate large provisions to offset increased bad loans, one may expect coverage ratios to decrease Interestingly, this result is also consistent with the evidence provided by Huizinga and Laeven (2012). They argue that regulators tend to be more lenient in bad times and that discretion over accounting rules combined to regulatory forbearance may lead banks to understate balance sheet stresses by under-provisioning to preserve bank capital. Indeed, one of the reason behind the switch to the single supervisor was that “common supervision across the Euro area could meet high standards and reassure citizens and markets in the aftermath of the euro debt crisis” (EC 2012).

According to an IMF survey on obstacles to NPL resolution, the robustness of coverage ratios appears to be linked to the stringency of supervision (Aiyar et al., 2017).[21] Empirical evidence confirms that supervisory and regulatory practices influence loan loss provisioning (Barth et al., 2013; Laurin, Majnoni, 2003; Nicoletti 2018). Laurin and Majnoni (2003), among others, state that banks tend to make strategic provisioning when supervisors appear to rely more on moral suasion and threat of actual sanctions rather than on sanctions to enforce provisioning regulations.[22] Huizinga and Laeven (2012) find that US banks exerted accounting discretion and overvalued their real estate asset during the global financial crisis because of regulatory forbereance.

As contended by many, the entrance into force of the single supervisor in Europe was a case of tightening in banking supervision under several respects. For example, the introduction of the SSM was preceded by an asset quality exercise leading to increased provisions for the reviewed banks by nearly and additional provisions of euro 48 billion (+12%) as an effect of the consistent application of the EBA restrictive approach to defining non performing exposures and the credit file review (ECB 2014). In addition, as discussed in the institutional section, SSM has recently introduced several new measures promoting more prudent provisioning and higher coverage ratios.

In Table 4 (Column 2 to 4) we test whether the shift to the single supervisor in 2014 was a triggering factor of higher coverage ratios in supervised banks. We remove bank and year fixed effects and include progressively the dummy SSM taking the value 1 for banks subjected to the single supervisor (Column 2, the dummy POST taking value 1 from 2014 onwards (Column 3), and the interacted term SSM bank x Post SSM (Colum 4) to account for supervised banks since the SSM inception. As expected, SSM banks in years following the inception of the single supervisor do increase their coverage ratios by more than non-supervised banks over the same time spam (in Column 4 the interacted term is positive and statistically significant at 5% level while the coefficient on the dummy post is insignificant).

3.2.3 Peer imitation behavior

In this subsection, we want to explore whether banks adjust coverage ratios due to peer imitation behaviour. Anecdotal and empirical evidence suggest that banks may want to adjust their coverage ratios

[21] The survey focuses on countries where the aggregate NPL ratio over 2008-2014 exceeded 10% and reflects the views of authorities as well as banks operating in those countries. See Aiyar et al., 2017 for the main outcomes of the survey.

[22] Supervisory practices (e.g., the periodicity of inspections, whether these are carried out on- or off-site, whether work of external auditors is incorporated into the assessment process, and so on) vary largely among European countries. In general, efficient supervision depends on the right combination of supervisory powers, including sanctions and penalties, and moral suasion. When supervisors have too much flexibility in enforcing prudential rules, it can result in supervisory forbearance, with negative effects on their credibility and on market discipline. See Laurin and Majnoni (2003). See also ECB reports published in 2016 and 2017 for a stocktaking of different national supervisory practices and legal frameworks related to NPLs in Europe.

"to catch up to their peers". Peer comparison is one of the most widely used methods of assessment employed by professional analysts as well as by individual investors. Supervisors tend to monitor and assess banks against their peers; in doing so they favour imitating behaviour.[23] Empirical analysis also confirms that herding in financial markets is a common phenomenon (see Rajan 1994, among others).[24] If herding behaviour occurs, banks may be tempted to adjust their coverage ratios to be aligned to their peers and regardless of other bank specific factors. To test this hypothesis, we replace our preferred dependent variable (the coverage ratio) to include the change in coverage ratio. We measure peer imitation behaviour in terms of deviation of a given bank's coverage ratio to a benchmark represented by country average coverage ratio. To calculate the average coverage ratio in each country we rely on official ECB statistics rather than on our sample country average.[25]

The regression model then becomes the following:

$$\Delta\left(\frac{LLR}{NPL}\right)_{ik,t} = \lambda_t + \mu_i + \beta_1 Deviation_{ik,t-1} + \beta_2 Below_{ik,t-1} + \beta_3 |Dev| \times Below_{ik,t-1} + \theta Y_{k,t} + \varepsilon_{ik,t} \quad (2)$$

Where $\Delta\left(\frac{LLR}{NPL}\right)_{ik,t}$ is the change in coverage ratio, defined as $\left(\frac{LLR}{NPL}\right)_{ik,t} - \left(\frac{LLR}{NPL}\right)_{ik,t-1}$. $Deviation_{ik,t-1}$ is the deviation of a bank's coverage ratio to its country average (in relative and absolute terms) ; $Below_{ik,t-1}$ is country average dummy that equals 1 in banks with coverage ratios below their country average; $|Dev| \times Below_{ik,t-1}$ is the interacted term between the absolute deviation and the below country average dummy.

In Table 5, Column 1, we first include the relative deviation of the single bank's coverage ratio to the country average. We find lower distance from the country average to be associated to a positive change in coverage ratios. Because banks may behave differently according to whether their coverage ratio is below rather than above their target, in Column 2 we focus on banks with a below average coverage ratio. We find that the coefficient of the below country average dummy is positive and significant at 1% level. To better understand the mechanism, in Column 3, we include the absolute deviation to the

[23] For example, in its guidance on NPLs (ECB 2017), the ECB claims that best practices "are intended to constitute ECB banking supervision's expectation" (p. 5) and that "where possible, indicators related to the NPL ratio/level and coverage should also be appropriately benchmarked against peers in order to provide the management body with a clear picture on competitive positioning" (p. 30).

[24] Rajan (1994) find evidence of herding behaviour in loan loss provisioning and charge offs in New England banks over 1986-1992, after correcting for changes in observable fundamentals.

[25] We do so to address the problem of underrepresentation of banks in some countries in our sample.

country average and its interaction with the below country average dummy. We first find that when the absolute distance increases, coverage ratios tend to decrease. However, the coefficient on the interacted term $|Dev| \times Below_{ik,t-1}$ shows that banks reporting coverage ratios below their country average behave differently as they tend to increase their coverage ratios the more they are distant to their target (i.e., the more their coverage ratio in a given year below the country average). This suggests that banks in a more unfavourable position tend to catch up, and the more so the more they are distant from their target. This provides evidence for the peer imitation behaviour hypothesis.

3.2.4. Other robustness checks

We run several robustness checks to account for alternative measures of asset quality, bank capitalisation and profitability. In Table 9, we first re-estimate Eq. (1) by replacing our preferred indicator of asset quality with the NPL ratio (i.e., the share of NPLs to total loans) which is the most commonly used measure of lending portfolio quality (Column 1). With respect to capitalisation, we replace the CET1 ratio by the share of CET1 capital over the stock of NPLs (Column 2) and the Tier 1 ratio (Column 3). As for profitability, to test the earning smoothing hypothesis, we alternatively use the return-on-equity (Column 4) and the earnings before taxes and LLPs to total assets ratio (Column 5). The baseline results are confirmed across the various specifications.

3.3. Econometric analysis: Focus on macro variables

In this section we focus on country-level factors by replacing country-time fixed effects with time-varying country-level variables.

Macro-level data come from a variety of sources. To control for the business cycle we include the real GDP growth rate (source Eurostat) defined as the percentage change with respect to the previous year. To complement the analysis on the role played supervision and regulation (see Section 4.2.2), we include the 2018 update of the country specific prudential measures derived from the Cerutti et al. (2017) macroprudential policy dataset. We start with the broadest index available in the dataset, the so-called Macroprudential Index. It covers three borrower-targeted and nine financial-institution-targeted instruments, therefore taking on values between 0 and 12, where 0 means that none of the instruments are in place and 12 means that all of them are in place. Hence, the higher the index, the more stringent the regulation in the respective country. We then substitute the index by some of its subcomponents. We

focus on components that, consistently with our institutional framework, are more likely to affect banks' coverage ratio. These components correspond to measures on provisioning policies, capital buffers, taxation, and limits to borrowers' loan-to-value ratio.[26]

The model thus becomes the following:

$$\left(\frac{LLR}{NPL}\right)_{ik,t} = \lambda_t + \mu_i + \beta X_{ik,t-1} + \theta Y_{k,t} + \varepsilon_{ik,t} \qquad (3)$$

where $X_{ik,t-1}$ includes exogenous bank-level variables illustrate in previous sections and $Y_{k,t}$ is comprising the time-varying macro level factors.

Table 6 contains the results from estimating Eq (3). First of all, funding structure and, to a lower extent, asset quality are confirmed significant drivers of coverage ratios. Unlike previous test, the coefficient on the share of loans to total assets is now significant and negatively correlated to loss coverage. In terms of general macroeconomic conditions, we find that GDP growth enters with a positive and significant coefficient, indicating that coverage ratios tend to be pro-cyclical as they increase during times of economic upswings while decreasing in recession. This evidence is consistent with our findings in Table 4 on the dynamics of loss coverage during the euro sovereign crisis. Looking at the overall index of macroprudential regulation, this turns out to be insignificant (Column 1). However, it might be the case that the overall index is too broad to identify the effect of stricter macroprudential measures on coverage ratios. We then explore the role of measures that may be better able to influence coverage ratios (Column 2 to 5). In line with our expectation, the indicator on time-varying/dynamic loan-loss provisioning is positive and significant (Column 2). This indicates that when measures to address pro-cyclical provisioning are in place, banks tend to increase coverage ratios. Increasing taxation on financial institutions is also associated to higher coverage ratios (Column 4), plausibly because higher deductions associated to larger provisions can reduce taxable income.[27] We also find that setting limits to borrowers' loan-to-value ratios (namely, by increasing loan collateralisation) is associated to higher coverage ratios (column 5). This result suggests that collateral and coverage ratios are complementary rather than substitute tools to strengthen bank balance sheets, although characteristics of collateral and the actual ability to enforce such collateral are additional elements that can influence coverage ratios. Interestingly, setting higher capital buffer in

[26] Precisely, first, we add an indicator on time-varying/dynamic loan-loss provisioning, which indicates whether banks in a certain country are required to provision more during upturns. The second indicator takes on a value of one if systemically important financial institutions are required to hold a higher capital level than other financial institutions. The third variable indicates whether revenues of financial institutions are subject to taxation in a certain country. The fourth indicator shows if banks are subject to caps on the loan-to-value ratio.

[27] In most euro area countries provisions are partially if not fully deductible from taxable income.

large institutions (SIFI) is associated to lower coverage ratio (Column 4). As discussed in previous sections, there are two potential (and not mutually exclusive) reasons explaining a negative association between capitalisation and coverage ratios. First, the higher capital buffer and higher coverage ratios can be deemed as substitute tools to strengthen balance sheets. Second, because increasing coverage ratios and raising capital are both costly strategies, banks subjected to stricter (binding) capital requirements would have more incentive to retain earnings (to the benefit of capital ratios) rather than to accumulate more provisions (to build up higher coverage ratios).

3.3.1 Exploiting cross country variation in asset quality

In this subsection, we exploit asset quality variation across countries to focus on banks from jurisdictions featured by high level of NPLs.[28] We argue that, all things being equal, banks from countries afflicted by high levels of NPLs can behave differently from the average sample bank, for a number of reasons. As such, they should react differently to changes in our micro / macro variables. For example, NPLs tend to be higher in countries where foreclosure periods are longer. Specifically, the high NPL countries according to the ECB definition (with the exception of Spain) are also those featured by the longest time to foreclosure (Ayar et al. 2016). At least in principle, coverage ratios should be higher when the procedures to enforce the loan are more lengthy and costly.

Table 7 we replicate the analysis from estimating Eq (3) in banks from high NPL countries. This leads to a drop of the number of banks from over 400 to nearly one hundred. Results differ across the two samples. First, unlike the previous test, we uncover a positive nexus between capitalisation and coverage ratios, supporting the view that in a context of high NPLs, only banks with higher level of capital can face the cost of increased coverage ratios. Interestingly, the coefficient on the NPL to asset ratio turns insignificant, while we find a negative association between coverage ratio and the loan to asset ratio that is significant at 1% level across specification. When the lending business expand, banks tend to reduce their coverage ratio. As in previous test, banks from countries with high legacy assets tend to increase coverage ratios when rely more on deposit funding.

In terms of macro variables, interestingly, we do not find any significant association between coverage ratios and the business cycle. Instead, results show that only macro-prudential policies associated to increased provisioning stimulate higher coverage ratios (Column 2). The other macro-

[28] High and low NPL jurisdictions are classified according to the ECB "Stocktake of national supervisory practices and legal frameworks related to NPLs". High NPL jurisdictions: Cyprus, Greece, Ireland, Italy, Portugal, Slovenia and Spain. Low NPL jurisdictions: Austria, Belgium, Estonia, Finland, France, Germany, Latvia, Lithuania, Luxembourg, Malta, the Netherlands and Slovakia.

prudential measures seems to be either ineffective (Columns 3 and 5) or associated to lower coverage ratios, as it happens when the tax regime becomes more stringent (Column 4).

3.3.2. The role of NPL secondary market

How developed and liquid is the secondary markets for distressed loans is another feature that can explain variation in coverage ratios. The secondary market for troubled assets is a market for lemons à la Akerlof, being characterised by high information asymmetries and large bid-ask spreads between sellers and buyers (Fell et al. 2016). Because coverage ratios are inversely proportional to loans' carrying values, one may expect higher coverage ratios (corresponding to lower carrying values) in countries where secondary markets for distressed loans are underdeveloped and hence, more exposed to lemon problems. In such a case, all other things being equal, there would be more need to increase coverage ratios, to enhance balance sheet transparency and to reduce bid-ask spreads between the market participants.

Although still underdeveloped, NPLs transactions have progressively increased over the last years, varying from less than 10 billion in 2010 to nearly euro 100 billion as of end 2016, according to PwC reports.[29] Transactions are concentrated in a few countries, i.,e., the UK, Germany, Spain, Ireland, and more recently, Italy (the largest market place since 2016). Figure (7) shows the value of NPL transactions by countries in 2010-2016.

In Table 9, we expand our micro-macro baseline regression to account for the relevance of the NPL secondary market in a given country (source PwC reports). We use three proxies: the share of NPL transaction over the total banking assets at country level (Column 1); the (log) volume of secondary market transactions (column 2); and the growth rate of the market (yearly percentage change, in Column 3). Due to the negligible volume of trades in most European countries, data on secondary NPL market refer to Ireland, Spain, Germany and Italy, where transaction have taken place in 2010-2016.[30]

We find a more intense activity in the NPL secondary market to be associated to higher coverage ratios. This is not surprising, in light of the fact that NPL transactions in Europe are still limited and that some of the fastest growing markets are high NPL countries. Information asymmetry concerns help explain the need for higher coverage ratios to mitigate lemon problems.

[29] The EC's package of measure to tackle high NPLs presented in March 2018 includes initiatives to encourage the development of secondary markets, such as a proposal for a directive aiming to harmonize requirements and create a single market for credit servicers and buyers.

[30] The dataset also include transactions for France (2012), Belgium (2013), Netherlands (2013, 2015 and 2016), and Greece (2016).

4 Conclusions

In this paper, we have analysed the main micro and macro drivers of coverage ratio, an indicator of bank balance sheet strength that has gained increasing importance in the last few years. We analyse the euro area, which provides an interesting case study as it is affected by a high level of NPLs but also includes substantial bank and country heterogeneity under several dimensions that are relevant to our purposes.

We have addressed our question by using a micro and a macro econometric model and by including several extensions to our baseline specifications. Our analysis reveal some interesting findings. Main bank specific factors associated to coverage ratios are asset quality and funding structure. The relationship between these variable and coverage ratios is not linear. First, it seems that banks accelerate the build up of large loan loss reserves only when asset quality is very poor, possibly to mitigate the negative externalities associated to high bad loans. Second, banks increases coverage ratios when traditional deposits increases. However, when the base of traditional funding is very large (and the market scrutiny is presumably low), banks tend to reduce coverage ratios.

Both micro and macro analyses show that the build up of loss coverage is procyclical, as it decreases during the euro-sovereign crisis or, more generally, in bad times, suggesting that banks are either unable or unwilling to offset the increase of NPLs through adequate provisioning when they need it most.

The third finding is that a more stringent supervisory and regulatory framework may serve the purpose of increasing coverage ratio. Results, however, are not always consistent across specifications. Specifically, the shift to a stricter supervisory approach in the euro area after the inception of the SSM in 2014 is associated to higher coverage ratios in supervised banks. When we introduce country specific indicators of macroprudential policies, results change according to the policy measure and to whether we analyse the whole sample compared to the subsample of high NPL countries. The introduction of specific measures to address pro-cyclical provisioning is associated to higher coverage ratios in both samples, while findings on the introduction of limits on bank borrowers, taxes on financial institutions, or capital surcharge on SIFI are inconsistent. In this last respect, results (although not conclusive) suggest that when regulatory capital burden becomes too binding, banks may prefer to increase retained earnings (in order to comply with higher capital requirements) rather than setting aside more LLP which are negative income statement item reducing earnings.

We also investigate whether banks adjust their coverage ratios to catch up to their peers. We find that this is the case and the more so, the more they are distant (below) from their target. This confirms that benchmarking is a common practice even with respect to the creation of loss coverage. Finally, we examine the characteristics of the secondary market for distressed debt. We uncover that more developed markets are associated to higher coverage ratios. This result is consistent with the fact that, although fats growing, the secondary market for loans in Europe remains affected by information asymmetry concerns.

All in all, our findings suggest that there are reasons beyond asset quality to explain discrepancies in coverage ratios. Country specificities matter, pointing to the fact that addressing inefficiencies at the institutional level may help create higher coverage ratios through a faster resolution of NPLs or, conversely, may enable banks to operate with lower coverage ratio without compromising their balance sheet strength.

References

Aiyar, S., Bergthaler, W., Garrido, J. M., Ilyina, A., Jobst, A., Kang, K. H., Kovtun, D., Liu, Y., Monaghan, D., & Moretti, M. (2017). A strategy for resolving Europe's problem loans. European Economy, (2017.1).

Altavilla, C., Boucinha, M., and Peydró, J.L. (2018). Monetary policy and bank profitability in a low interest rate environment, Economic Policy, October: 531-586.

Barth, J., Lin, C., Ma, Y., Seade, J., & Song, F. M. (2013). Do bank regulation, supervision and monitoring enhance or impede bank efficiency? Journal of Banking and Finance, 37(8):2879–2892.

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

Bholat, D., Lastra, R., Markose, S., Miglionico, A., & Sen, K. (2016). Nonperforming loans: regulatory and accounting treatments of assets. Bank of England working papers 594, Bank of England.

Bouvatier, V. & Lepetit, L. (2012). Provisioning rules and bank lending: A theoretical model. Journal of Financial Stability, 8(1):25 – 31.

Bruno, B. & Marino, I. (2019). How Banks Respond to NPLs. Evidence from the Euro Area. CSEF Working Papers 513, Centre for Studies in Economics and Finance (CSEF), University of Naples.

Cerutti, Eugenio; Claessens, Stijn; and Luc Laeven (2017). The Use and Effectiveness of Macroprudential Policies: New Evidence. Journal of Financial Stability, vol. 28, pp. 203-224.

Cohen, B. H. & Edwards, G. A. (2017). The new era of expected credit loss provisioning. BIS Quarterly Review.

Constâncio V. (2017). Resolving Europe's NPL Burden: Challenges and Benefits. Keynote speech at Bruegel Event: Tackling Europe's Non-performing Loans Crisis: Restructuring Debt, Reviving Growth, 3, February 2017.

Council of the European Commission (2017). Report of the FSC Subgroup on non performing loans. General Secretariat of the Council, 31 May.

de Lis, S. F., Pagés, J. M., & Saurina, J. (2001). Credit growth, problem loans and credit risk provisioning in Spain. In: Marrying the macro- and micro-prudential dimensions of financial stability, B. for International Settlements, ed., volume 1 of BIS Papers chapters, pages 331–353. Bank for International Settlements.

Diamond, D. W. & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. The Journal of Political Economy, 91 (3): 401-419.

Draghi, M. (2017). European Banking Supervision Three Years on. Welcome Remarks by Mario Draghi, President of the ECB, at the Second ECB Forum on Banking Supervision, Frankfurt am Main, 7 November.

Eber, M. & Minoiu, C. (2016). How do banks adjust to stricter supervision? Technical report, mimeo.

European Banking Authority (2016). EBA report on the dynamics of non-performing exposures in the EU banking sector, 22 July.

European Banking Authority (2018). Risk dashboard data as of Q3 2018.

European Central Bank (2014). Aggregate Report on the Comprehensive Assessment, October.

European Central Bank (2016). Stocktake of National Supervisory Practices and Legal Frameworks Related to NPLs, September.

European Central Bank (2017). Guidance to banks on NPLs, March.

European Commission (2012). A roadmap towards a Banking Union. COM (2012) 510 final, 12 September.

European Systemic Risk Board (2017). Financial stability implication of IFRS 9, July.

European Systemic Risk Board (2019). Macro prudential approaches to non-performing loans, January.

European Parliament (2016). Non-performing loans in the Banking Union: stocktaking and challenges, 18 March.

Fell J., Grodzicki M., Martin R. and E. O'Brien (2016). Addressing market failures in the resolution of non-performing loans in the euro area. ECB Financial Stability Review – Special features, November

Huizinga, H., Laeven, L. (2012). Bank evaluation and accounting discretion during a financial crisis. Journal of Financial Economics 106: 614-634.

Jiménez, G., Ongena, S., Peydro, J.-L., & Saurina, J. (2017). Macroprudential policy, countercyclical bank capital buffers, and credit supply: Evidence from the Spanish dynamic provisioning experiments. The Journal of Political Economy, 125(6):2126 – 2177.

Klein, N. (2013). Non-Performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance. IMF WP 13/72.

Laeven, L. & Majnoni, G. (2003). Loan loss provisioning and economic slowdowns: too much, too late? Journal of Financial Intermediation, 12(2):178 – 197.

Laurin, A. & Majnoni, G. (2003). Bank Loan Classification and Provisioning Practices in Selected Developed and Emerging Countries. Number 15157 in World Bank Publications. The World Bank.

Nicoletti, A. (2018). The effects of bank regulators and external auditors on loan loss provisions. Journal of Accounting and Economics, 66 (81): 244-265.

Nkusu, M. (2011). Non-Performing Loans and Macrofinancial Vulnerabilities in Advanced Economies. IMF Working Paper 1/27

Norden, L. & Stoian, A. (2013). Bank earnings management through loan loss provisions: A double-edged sword? DNB Working Paper 404/December.

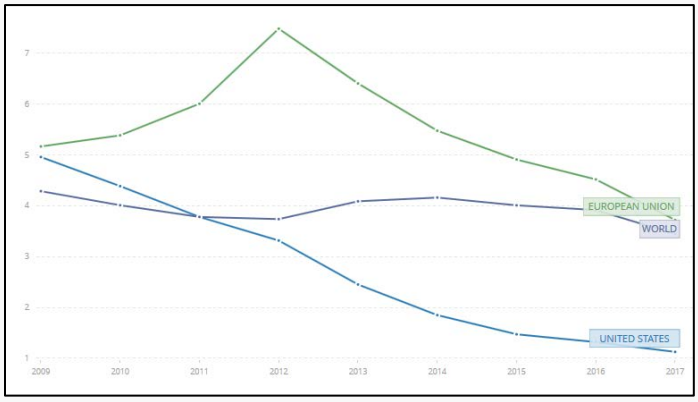
Rajan, R. (1994). Why bank credit policies fluctuate: A theory and some evidence. The Quarterly Journal of Economics, 109: 399-441.

Schiantarelli, F., Stacchini, M., & Strahan, P. (2016). Bank quality, judicial efficiency and borrower runs: loan repayment delays in Italy. Temi di discussion (Economic working papers) 1072, Bank of Italy, Economic Research and International Relations Area.

Song, I. (2002). Collateral in loan classification and provisioning. IMF Working Paper 02/122.

Appendix

Figure 1. Panel A: International comparison on NPL ratios (2009-2017)



Source: World Bank

Figure 2: Average coverage ratio for EA banks (2010 – 2016)

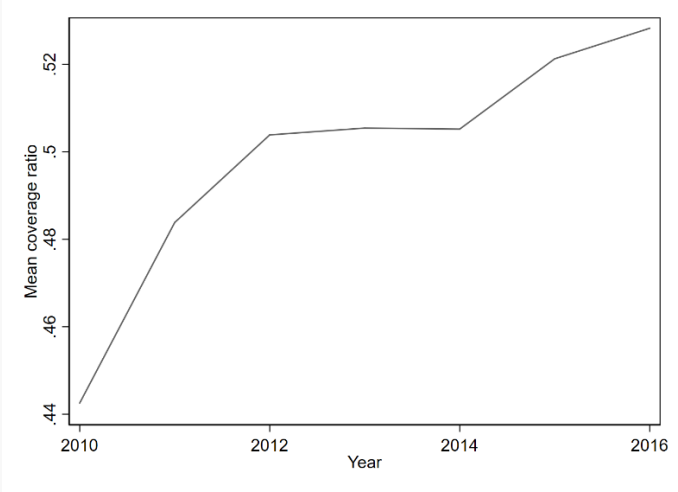


Figure 3: Components of the coverage ratio, 2010 - 2016 (in millions of EUR)

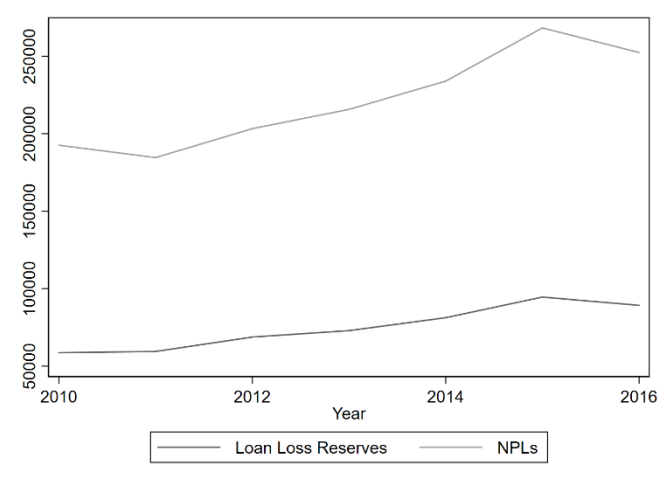


Figure 4: Average NPL/TA and average NPL/TL by country

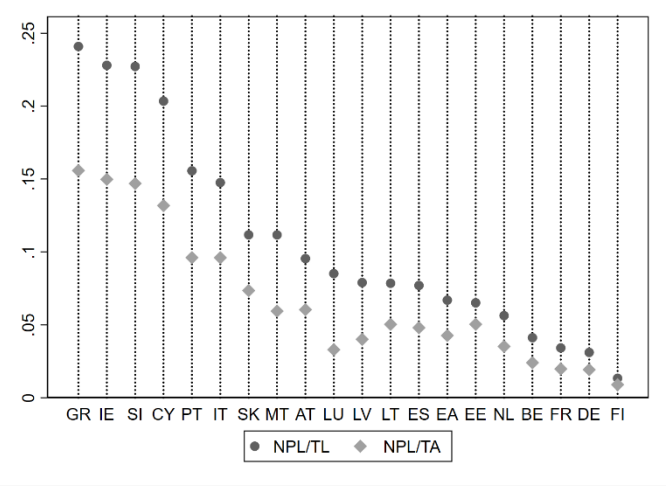


Figure 5: Range and mean of NPL/TA

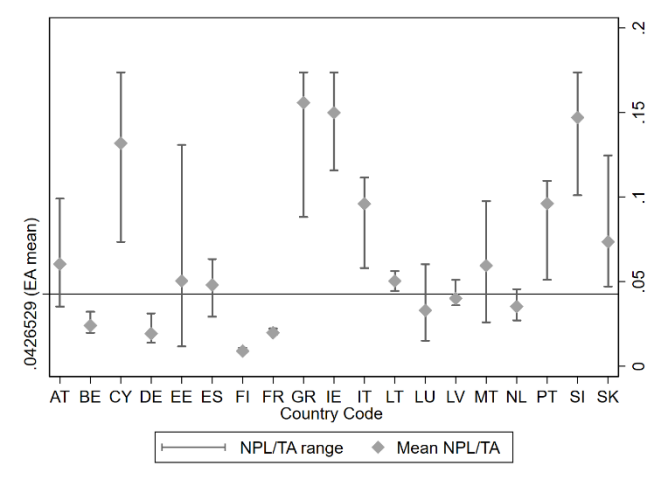


Figure 6: Range and mean of the coverage ratio

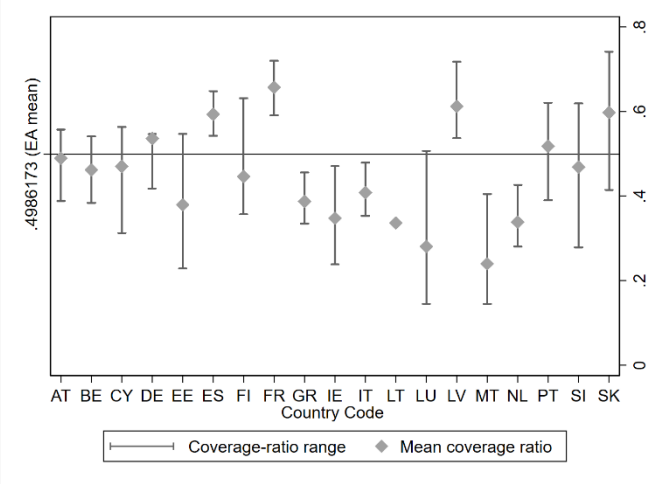


Figure 7: Secondary loan market transaction data

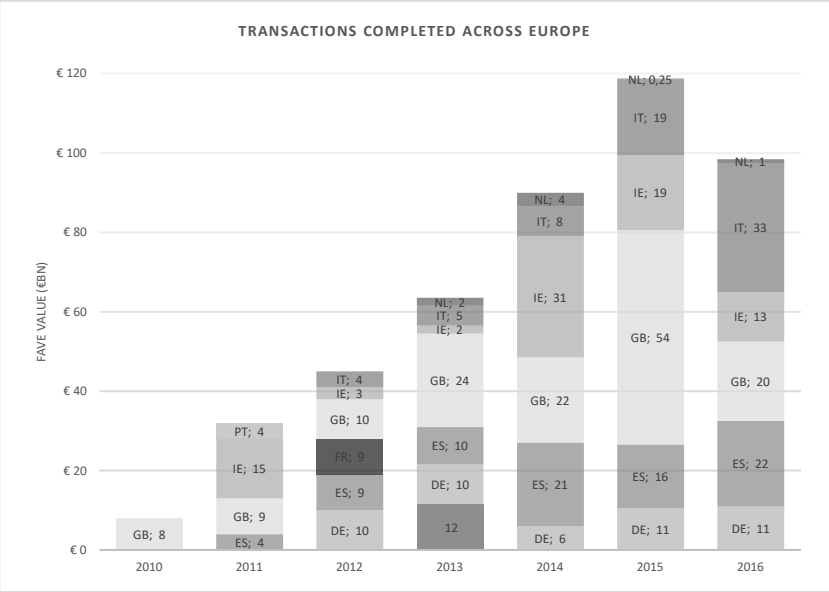


Table 1: Summary statistics. This table gives summary statistics for the baseline regression sample.

	Mean	Std. dev.	Min	p10	p50	p90	Max
Coverage ratio	50,77%	16,22%	14,47%	30,57%	50,06%	72,97%	86,84%
NPL / TA	4,08%	4,49%	0,12%	0,60%	2,26%	11,10%	17,37%
Gross loans_/_TA	63,81%	13,62%	29,16%	45,21%	65,10%	80,36%	87,37%
NPLs / gross loans	6,45%	6,92%	0,24%	1,04%	3,60%	16,95%	27,77%
CET1	13,87%	4,27%	7,13%	9,06%	13,33%	19,08%	34,41%
Total capital ratio	16,42%	4,46%	3,76%	11,92%	15,62%	21,78%	51,66%
Total Assets (in thousands)	9958858	11723879	1670832	1885038	4112080	36402000	36402000
Deposits / TA	65,75%	15,77%	33,28%	38,47%	70,40%	82,44%	89,37%
ROAA	0,24%	0,36%	-0,79%	0,02%	0,21%	0,61%	1,35%
ROAE	3,00%	4,32%	-9,70%	0,30%	2,60%	8,02%	13,78%
Net income before taxes / TA	0,43%	0,44%	-0,89%	0,06%	0,43%	0,88%	1,66%
Profits / average assets	0,97%	0,45%	0,11%	0,45%	0,91%	1,58%	2,24%
Pre-impairment profits / TA	0,96%	0,44%	0,10%	0,45%	0,90%	1,54%	2,21%

Table 2: Micro-level regressions baseline: Determinants of coverage ratios and components of coverage ratios. This table reports estimation results from the OLS micro-level regressions. The dependent variables are the coverage ratio (1), LLR/TA (2), and NPL/TA (3) at the bank level. Coverage ratio is defined as LLR/NPLs. Time, country-time, and bank dummies are included in each regression. Robust standard errors are clustered at the bank-level and reported in parentheses.

	(1)	(2)	(3)
Dependent Variable	*Coverage Ratio*	*LLR/TA*	*NPL/TA*
NPL/TA (t-1)	-1.119***	0.243***	
	(0.393)	(0.049)	
Gross Loans/TA (t-1)	-0.111	0.032**	0.044**
	(0.100)	(0.015)	(0.019)
Log (TA) (t-1)	-0.038	-0.008	0.011
	(0.044)	(0.007)	(0.010)
Deposits/TA (t-1)	0.145**	0.006	0.011
	(0.061)	(0.009)	(0.016)
ROAA (t-1)	0.007	-0.866***	-1.101***
	(0.968)	(0.234)	(0.298)
CET1 (t-1)	0.128	-0.047**	-0.007
	(0.177)	(0.020)	(0.025)
Constant	1.096	0.124	-0.156
	(0.716)	(0.117)	(0.154)
Observations	1,471	1,471	1,471
No. of banks	409	409	409
Adjusted R-squared	0.822	0.938	0.958
FE Bank	Yes	Yes	Yes
FE Country * Year	Yes	Yes	Yes
FE Year	Yes	Yes	Yes

Table 3: Micro-level regressions outliers: Determinants of coverage ratios. This table reports estimation results from the OLS micro-level regressions. The dependent variable is the coverage ratio, defined as LLR/NPLs. Time, country-time, and bank dummies are included in each regression. Robust standard errors are clustered at the bank-level and reported in parentheses.

	(1)	(2)	(3)	(4)
Dependent Variable:	Coverage Ratio	Coverage Ratio	Coverage Ratio	Coverage Ratio
NPL/TA (t-1)	-3.304***	-1.209***	-1.122***	-3.382***
	(0.649)	(0.384)	(0.391)	(0.647)
Gross Loans/TA (t-1)	-0.14	-0.14	-0.11	-0.160*
	(0.094)	(0.097)	(0.100)	(0.092)
Log (TA) (t-1)	-0.04	-0.03	-0.04	-0.03
	(0.044)	(0.044)	(0.044)	(0.044)
Deposits/TA (t-1)	0.131**	1.080***	0.145**	1.053***
	(0.059)	(0.362)	(0.061)	(0.338)
ROAA (t-1)	0.25	0.05	-0.03	0.27
	(0.950)	(0.970)	(0.981)	(0.959)
CET1 (t-1)	0.18	0.1	0.24	0.2
	(0.174)	(0.173)	(0.651)	(0.616)
$(NPL/TA)^2$ (t-1)	10.885***			10.822***
	(2.756)			(2.713)
$(Deposits/TA)^2$ (t-1)		-0.784***		-0.772***
		(0.298)		(0.282)
$(CET1)^2$ (t-1)			-0.36	-0.16
			(1.797)	(1.728)
Constant	1.15	0.81	1.08	0.86
	(0.715)	(0.721)	(0.730)	(0.725)
Observations	1471	1471	1471	1471
No. of banks	409	409	409	409
Adjusted R-squared	0.83	0.82	0.82	0.83
FE Bank	Yes	Yes	Yes	Yes
FE Country * Year	Yes	Yes	Yes	Yes
FE Year	Yes	Yes	Yes	Yes

Table 4: Micro-level regressions extensions: Determinants of coverage ratios. This table reports estimation results from the OLS micro-level regressions. The dependent variable is the coverage ratio, defined as LLR/NPLs. Time, country-time, and bank dummies are included in each regression. Robust standard errors are clustered at the bank-level and reported in parentheses.

	(1)	(2)	(3)	(4)
Dependent Variable	Coverage Ratio	Coverage Ratio	Coverage Ratio	Coverage Ratio
NPL/TA (t-1)	-0.334	-0.965***	-0.715***	-0.747***
	(0.312)	(0.273)	(0.233)	(0.235)
Gross Loans/TA (t-1)	-0.273***	0.042	0.001	-0.001
	(0.089)	(0.051)	(0.049)	(0.049)
log(TA) (t-1)	0.004	0.015	0.014	0.014
	(0.043)	(0.010)	(0.010)	(0.010)
Deposits/TA (t-1)	0.306***	0.064	0.077	0.075
	(0.074)	(0.059)	(0.057)	(0.057)
ROAA (t-1)	0.174	-0.403	-0.043	-0.227
	(1.120)	(2.042)	(1.772)	(1.786)
CET1 (t-1)	0.314*	0.219	0.205	0.187
	(0.162)	(0.164)	(0.155)	(0.157)
Euro Area Crisis Dummy	-0.019**			
	(0.008)			
SSM Bank Dummy		-0.052**	-0.056**	-0.079***
		(0.026)	(0.025)	(0.028)
Post SSM (1)			0.022**	0.014
			(0.009)	(0.010)
*SSM Bank Dummy * Post SSM (2)*				0.039**
				(0.018)
Constant	0.396	0.229	0.234	0.249
	(0.701)	(0.168)	(0.165)	(0.166)
F-test statistic: (1) + (2) = 0				10.698
p-value				0.001
Observations	1494	1550	1570	1570
No. of banks	411	486	487	487
Adjusted R-squared	0.805	0.248	0.251	0.253
FE Bank	Yes	No	No	No
FE Country	Yes	No	Yes	Yes
FE Country * Year	No	Yes	No	No
FE Year	No	Yes	No	No

Table 5: Micro-level regressions herding behaviour: Determinants of change in coverage ratios. This table reports estimation results from the OLS micro-level regressions. The dependent variable is the change in coverage ratio, defined as LLR/NPLs (t) – LLR/NPLs (t-1). Time, country-time, and bank dummies are included in each regression. Robust standard errors are clustered at the bank-level and reported in parentheses.

	(1)	(2)	(3)
Dependent Variable	Delta Coverage Ratio	Delta Coverage Ratio	Delta Coverage Ratio
NPL/TA (t-1)	-0.073	0.682***	-0.004
	(0.246)	(0.207)	(0.221)
Gross Loans/TA (t-1)	-0.169**	-0.204***	-0.169**
	(0.067)	(0.067)	(0.066)
log(TA) (t-1)	-0.019	-0.008	-0.017
	(0.034)	(0.033)	(0.033)
Deposits/TA (t-1)	0.093**	0.091*	0.101**
	(0.045)	(0.049)	(0.044)
ROAA (t-1)	1.279*	1.963**	1.371*
	(0.752)	(0.861)	(0.746)
CET1 (t-1)	0.341***	0.502***	0.332***
	(0.124)	(0.124)	(0.122)
Deviation from Country Avg. (t-1)	-0.498***		
	(0.044)		
Below Country Avg. Dummy (t-1)		0.061***	0.022***
		(0.007)	(0.007)
Absolute Deviation from Country Avg. (t-1) (1)			-0.496***
			(0.048)
*Abs. Deviation * Below Country Avg. Dummy (t-1) (2)*			0.850***
			(0.107)
Constant	0.355	0.089	0.308
	(0.543)	(0.526)	(0.540)
F-test statistic: (1) + (2) = 0			19.154
p-value			0.00
Observations	1460	1471	1460
No. of firms	406	409	406
Adjusted R-squared	0.261	0.096	0.268
FE Bank	Yes	Yes	Yes
FE Country * Year	Yes	Yes	Yes
FE Year	Yes	Yes	Yes

Table 6: Micro-macro regressions: Determinants of coverage ratios. This table reports estimation results from the panel fixed-effects micro-macro regressions. The dependent is the coverage ratio at the bank level. A set of bank and time dummies is included in each regression. Robust standard errors are clustered at the bank-level (all sample).

Dependent Variable	(1) Coverage Ratio	(2) Coverage Ratio	(3) Coverage Ratio	(4) Coverage Ratio	(5) Coverage Ratio
NPL/TA (t-1)	-0.493	-0.515*	-0.511*	-0.666**	-0.764**
	(0.303)	(0.303)	(0.303)	(0.315)	(0.315)
Gross Loans/TA (t-1)	-0.271***	-0.282***	-0.270***	-0.227**	-0.175*
	(0.094)	(0.094)	(0.095)	(0.094)	(0.096)
Log(TA) (t-1)	-0.020	-0.023	-0.014	-0.024	-0.032
	(0.045)	(0.045)	(0.046)	(0.045)	(0.045)
Deposits/TA (t-1)	0.230***	0.227***	0.232***	0.207***	0.193***
	(0.068)	(0.069)	(0.070)	(0.068)	(0.067)
ROAA (t-1)	0.392	0.376	0.344	0.348	0.252
	(1.086)	(1.075)	(1.089)	(1.091)	(1.047)
CET1 (t-1)	0.089	0.079	0.067	0.089	0.134
	(0.173)	(0.173)	(0.172)	(0.170)	(0.169)
Real GDP growth rate per country, percentage change on previous year	0.006**	0.007**	0.007***	0.005*	0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Macroprudential Index	0.008				
	(0.007)				
Time-Varying/Dynamic Loan-Loss Provisioning		0.040*			
		(0.022)			
Capital Surcharges on SIFIs			-0.037**		
			(0.015)		
Levy/Tax on Financial Institutions				0.033***	
				(0.013)	
Loan-to-Value Ratio Caps					0.053***
					(0.015)
Constant	0.819	0.896	0.756	0.874	0.978
	(0.749)	(0.747)	(0.758)	(0.749)	(0.743)
Observations	1494	1494	1494	1494	1494
No. of banks	411	411	411	411	411
Adjusted within R-squared	0.049	0.05	0.05	0.058	0.071
FE Bank	Yes	Yes	Yes	Yes	Yes
FE Year	Yes	Yes	Yes	Yes	Yes

Table 7: Micro-macro regressions: Determinants of coverage ratios. This table reports estimation results from the panel fixed-effects micro-macro regressions for high-NPL countries. The dependent is the coverage ratio at the bank level. A set of bank and time dummies is included in each regression. Robust standard errors are clustered at the bank-level (high-npl countries).

Dependent Variable	(1) Coverage Ratio	(2) Coverage Ratio	(3) Coverage Ratio	(4) Coverage Ratio	(5) Coverage Ratio
NPL/TA (t-1)	0.220	0.128	0.236	0.290	0.222
	(0.219)	(0.226)	(0.218)	(0.224)	(0.223)
Gross Loans/TA (t-1)	-0.323***	-0.316***	-0.327***	-0.327***	-0.324***
	(0.086)	(0.085)	(0.084)	(0.082)	(0.085)
Log(TA) (t-1)	-0.040	-0.044	-0.036	-0.026	-0.039
	(0.049)	(0.048)	(0.050)	(0.046)	(0.049)
Deposits/TA (t-1)	0.127**	0.121**	0.135**	0.112**	0.126**
	(0.054)	(0.051)	(0.053)	(0.052)	(0.053)
ROAA (t-1)	0.134	0.073	0.128	-0.171	0.141
	(0.954)	(0.943)	(0.958)	(0.836)	(0.950)
CET1 (t-1)	0.506**	0.484**	0.495**	0.490**	0.506**
	(0.235)	(0.234)	(0.237)	(0.221)	(0.235)
Real GDP growth rate per country, percentage change on previous year	0.002	0.003	0.002	0.003	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Macroprudential Index	0.001				
	(0.009)				
Time-Varying/Dynamic Loan-Loss Provisioning		0.042*			
		(0.023)			
Capital Surcharges on SIFIs			-0.015		
			(0.018)		
Levy/Tax on Financial Institutions				-0.053***	
				(0.014)	
Loan-to-Value Ratio Caps					0.000
					(0.015)
Constant	1.128	1.202	1.075	0.948	1.130
	(0.795)	(0.786)	(0.809)	(0.748)	(0.798)
Observations	422	422	422	422	422
No. of banks	102	102	102	102	102
Adjusted within R-squared	0.079	0.094	0.081	0.106	0.078
FE Bank	Yes	Yes	Yes	Yes	Yes
FE Year	Yes	Yes	Yes	Yes	Yes

Table 8: Micro-macro regressions: Determinants of coverage ratios, secondary NPL market transactions. This table reports estimation results from the OLS micro-macro regressions. The dependent is the coverage ratio at the bank level. A set of time dummies is included in each regression. Robust standard errors are clustered at the bank-level.

	(1)	(2)	(3)
Dependent Variable	Coverage Ratio	Coverage Ratio	Coverage Ratio
Real GDP growth rate per country	0.005***	0.008***	0.006***
	(0.002)	(0.002)	(0.002)
NPL/TA (t-1)	-0.3	0.2	-0.1
	(0.276)	(0.273)	(0.255)
Gross Loans/TA (t-1)	-0.210**	-0.352***	-0.258***
	(0.091)	(0.089)	(0.088)
CET1 (t-1)	0	-0	0
	(0.049)	(0.047)	(0.049)
log(TA) (t-1)	0.133**	0.1	0.138**
	(0.065)	(0.089)	(0.067)
Deposits/TA (t-1)	-0	0.4	-0
	(0.835)	(0.950)	(0.860)
ROAA (t-1)	0.2	0.413*	0.1
	(0.198)	(0.240)	(0.203)
Secondary market transactions over country TA	0.030***		
	(0.010)		
Log (Secondary market transaction)		0.00	
		(0.002)	
Secondary market transaction growth rate			3.610**
			(1.509)
Constant	0.1	0.9	0.4
	(0.781)	(0.755)	(0.786)
Observations	1218	1060	1218
No. of banks	350	341	350
Adjusted R-squared	0.1	0	0.1
FE Country	Yes	Yes	Yes
FE Year	Yes	Yes	Yes

Table 9: Micro-level regressions robustness: Determinants of coverage ratios. This table reports estimation results from the OLS micro-level regressions with bank, year, and country-year fixed effects. The dependent variable is the coverage ratio, defined as LLR/NPLs. Robust standard errors are clustered at the bank-level and reported in parentheses. In (Column 1) NPL/TA is replaced with NPL/GL, which is the most commonly used measure of lending portfolio quality. With respect to capitalisation, we replace the CET1 ratio by the share of CET1 capital over the stock of NPLs (Column 2) and the Tier 1 ratio (Column 3). As for profitability, we alternatively use the return-on-equity (Column 4) and the earnings before taxes and LLPs to total assets ratio (Column 5).

	(1)	(2)	(3)	(4)	(5)
Dependent Variable	Coverage Ratio	Coverage Ratio	Coverage Ratio	Coverage Ratio	Coverage Ratio
NPL/Gross Loans (t-1)	-0.560**				
	(0.259)				
NPL/TA (t-1)		-1.102***	-1.373***	-1.126***	-1.109***
		(0.394)	(0.381)	(0.395)	(0.386)
Gross Loans/TA (t-1)	-0.179*	-0.114	-0.127	-0.118	-0.121
	(0.094)	(0.100)	(0.110)	(0.100)	(0.100)
log(TA) (t-1)	-0.037	-0.039	-0.038	-0.04	-0.039
	(0.046)	(0.044)	(0.044)	(0.044)	(0.044)
Deposits/TA (t-1)	0.134**	0.146**	0.149**	0.143**	0.142**
	(0.060)	(0.061)	(0.065)	(0.061)	(0.062)
ROAA (t-1)	-0.037	0.094	0.129		
	(1.011)	(0.972)	(0.943)		
CET1 (t-1)	0.121			0.128	0.124
	(0.177)			(0.178)	(0.177)
CET1 / NPLs (t-1)		1000.493			
		(1613.873)			
Tier 1 Capital Ratio (t-1)			-0.017		
			(0.190)		
ROAE (t-1)				0.015	
				(0.078)	
Pre-impairment operating profit / TA (t-1)					1.091
					(0.956)
Constant	1.124	1.14	1.131	1.146	1.122
	(0.754)	(0.713)	(0.718)	(0.721)	(0.724)
Observations	1471	1471	1573	1468	1471
No. of banks	409	409	419	409	409
Adjusted R-squared	0.82	0.822	0.814	0.822	0.822
FE Bank	Yes	Yes	Yes	Yes	Yes
FE Country * Year	Yes	Yes	Yes	Yes	Yes
FE Year	Yes	Yes	Yes	Yes	Yes