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David E. Rappoport

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The Effect of Banks’ Financial Position on Credit Growth: Evidence from OECD Countries

David E. Rappoport
Federal Reserve Board

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Abstract

This paper presents empirical evidence on the effect of banks’ financial position on credit growth using a sample of 29 OECD countries. The failure of the exogeneity assumption of explanatory variables is addressed using dynamic panel type instruments. The empirical results show that among capital, profits and liquidity at the end of the previous year, capital is the most important predictor of credit growth in the current year. The relationship between capital and credit growth is non-linear. Point estimates from the preferred econometric specification imply that at the sample mean a one standard deviation increase (decrease) in capital is associated with an increase (decrease) of 0.8 (0.3) percentage points in credit growth upon impact and 1.6 (0.6) percentage points in the long-run.

JEL classification: G21, E44, G28.

Keywords: Bank lending, banking, bank financial position, credit supply, OECD.

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1 Introduction

Understanding the determinants of credit growth is an important issue, as credit is considered a key transmitter of financial shocks into real activity and it is at the heart of the lending channel of monetary policy. These issues have received renewed attention after the recent Great Recession following the collapse of the subprime housing market in the US.

This paper presents empirical evidence on the effect of banks’ financial position (capital, profits and liquidity) on credit growth using a sample of 29 OECD countries. The empirical results show that among capital, profits and liquidity at the end of the previous year, capital is the most important predictor of credit growth in the current year. The relationship between capital and credit growth is non-linear. Point estimates from the preferred econometric specification imply that at the sample mean a one standard deviation increase (decrease) in capital is associated with an increase (decrease) of 0.8 (0.3) percentage points in credit growth upon impact and 1.6 (0.6) percentage points in the long-run. Capital is followed in importance by profits. Liquidity only seems to affect aggregate credit growth significantly in countries where smaller banks are important. These results are robust to the definition used to measure banks’ financial positions and economic conditions, and are robust to considering the organization of the bank sector in each country. The failure of the exogeneity assumption of explanatory variables is addressed using the system GMM estimator from the dynamic panel literature. The use of this estimator for a “square” panel, instead of a “short” panel as originally devised, presents technical challenges that are discussed in the paper.

The paper is related to the literature on the determinants of banks’ credit growth. This topic received considerable attention after the US recession of the early 90s, which coincided with a decline in banks’ credit. Sharpe (1995) provides a very comprehensive survey of this work and discusses the extent to which the slowdown in credit growth was a result of weaknesses in banks’ balance sheets, increased capital requirement or more stringent regulatory practices. The author concludes that the evidence shows a robust link between credit growth and both loan performance and bank profitability, although the causality of this relationship is not clear. The studies surveyed by Sharpe mostly analyze cross-sections of banks. In contrast, the results presented here use a panel of countries, adding to this literature in two dimensions. First, it investigates the generality of previous findings analyzing a single country. Second, the use of dynamic panel estimation techniques provides a nice alternative for the identification problem in this literature.
The use of a panel of countries to study bank-related questions is not new, but this is the first work to analyze the effect of banks’ financial position on credit growth using this type of dataset. Ferreira (2009) used a panel of 26 EU countries, with quarterly observations between 1991 and 2006, to study the evolution of lending as a fraction of GDP and the lending channel of monetary policy. On the other hand, Levintal (2013) used a panel 28 OECD countries, with yearly observations for 1980-2003, to analyze the real effects of banking shocks. Levintal uses the same data source for bank information as this paper and identifies three types of bank shocks: profitability, capital, and reserves. He finds that profits, measured by ROA, is the bank shock with the most significant real effect. In contrast, the present paper ascribes the biggest explanatory power predicting credit growth to banks’ equity capital. Thus, to the extent that the real effect of bank shocks operates through credit the result of the present study is at odds with the evidence presented by Levintal (2013). Furthermore, both studies cited above use “square” panels and so are subject to the methodological issues discussed in here.

The paper is organized as follows. Section 2 considers the specification of the economic model with a discussion about the variables that should be included in the model. Section 3 presents the data used in the econometric analysis. Section 4 discusses the econometric specification of the model with a discussion of how the system GMM estimator is used to address the dynamic panel bias and the failure of the exogeneity assumption of the variables included in the model. It presents the main results of the paper and analyzes in detail the estimated effects of banks’ financial position on credit growth. Section 5 presents robustness checks to the main results, and section 6 concludes.

2 Model Specification

This section reviews the determinants of credit growth to inform the selection of the variables to be included in the model. The focus of the paper is on the effect of banks’ financial position, which will be measured both from balance sheet and income statements. In particular, the effect of: (i) profits; (ii) equity capital; and (iii) liquidity, will be estimated. Additional variables are included to control for the time series structure of loan growth, economic conditions and the organization of the bank sector. The definition and rationale for all these variables is discussed below.
**Time series structure:** The dependent variable is the growth rate of outstanding loans, defined as the log change in outstanding loans, \( \Delta \ell_t = \log L_t - \log L_{t-1} \). Using loan growth is standard in the literature and has the advantages over using loans in level of being stationary. It is expected that loan growth depends on past values, as outstanding loans do not fully adjust in a year, which is the frequency of the dataset. Thus, \( \Delta \ell_t \) will depend on its own lags.

In order to specify the other variables that will be included in the model, it is helpful to start with the following simplified version of a bank balance sheet:

| Assets | Liabilities |
|--------|-------------|
| \( L_t + L^{IB}_t + \text{Sec}_t + M_t \) | \( D_t + D^{IB}_t + E_t \) |

where \( L_t \) stands for loans, superscript IB for inter-banks, \( \text{Sec}_t \) for securities, \( M_t \) for cash or money holdings, \( D_t \) for deposits and \( E_t \) for equity. All variables measured at the end of period \( t \). Moreover, let \( A_t \) be the size of the bank balance sheet or total assets or liabilities, and \( \delta_t \) denote the ratio of loans to asset, \( \delta_t = \frac{L_t}{A_t} \). Using these definitions we have that,

\[
\Delta \ell_t = \log \left( \frac{L_t}{L_{t-1}} \right) = \log \left( \frac{\delta_t A_t}{\delta_{t-1} A_{t-1}} \right) = \Delta \log \delta_t + \Delta a_t
\]

This is, the growth rate of loans can be decomposed into changes in bank’s portfolio and the growth rate of assets. In practice any given variable can affect these two margins, but for expositional purposes it will be helpful to consider them separately. The growth rate of assets, *ceteris paribus* and assuming the bank business is profitable, will depend on the availability of funds, which typically come from equity and deposits. The portfolio decision, in turn, will depend on funding costs and expected returns, which will be given by economic conditions.

**Banks financial position:** *Profits* are one source of new equity. Let \( Y_t \) be banks (after tax) profits in year \( t \) and assume that these profits are used to increase the banks equity capital keeping the same leverage. Let \( \lambda_t \) be banks’ leverage at the end of year \( t \), equal to the ratio of assets to equity, \( \frac{A_t}{E_t} \). Thus, the increase in

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[^2]: I use the convention that small caps letter denote the log of capital letters.
assets from these profits, $\Delta A^*$, is given by:  

$$\Delta A^* = (E^* - E_t) \frac{A^* - A_t}{E^* - E_t} = Y_t \lambda_t \quad \text{or} \quad \Delta a^* = \frac{Y_t}{A_t} \lambda_t$$

This is the increase in log assets is the return on assets (ROA) times leverage, or simply the return on equity (ROE). However, when equity at year-end is negative, $E_t < 0$, leverage is not defined and the previous expression does not hold. In this case the bank sector is insolvent and it will be assumed that profits are used to rebuild banks’ equity. In other words, we can think of the bank as a net debtor, who will use new profits to pay these debts first and therefore we expect no effect on the size of the balance sheet.

Banks’ equity capital may play a key role on balance sheet expansion, as emphasized in the literature. In general, external funds for balance sheet expansion may come from the issuance of equity, debt or deposits. The literature emphasizes the role of banks’s equity capital on funding costs by alleviating the moral hazard problem of bank managers (Holmström and Tirole, 1997). Thus, it is expected that banks with higher ratios of equity to assets will be able to raise new funds at lower costs. Moreover, minimum capital requirement limit banks’ ability to expand their balance sheets. Therefore, we would expect a nonlinear effect of capital ratios due to regulation thresholds (cf. Peek and Rosengren 1995; and Thakor, 1996).

Finally, liquidity will also play a key role in the growth of credit as selling securities is a cheaper source of funds given adverse selection problems. In fact, Stein (1998) shows that loan sales and uninsured liabilities involve higher funding costs due to adverse selection problems as the bank has private information about their loan portfolio. It follows that banks prefer to fund lending activities by selling securities or issuing insured deposits. Therefore, the growth rate of loans may depend on availability of liquid assets and the costs of insured deposits. Kashyap and Stein (2000) measure the former as balance sheet liquidity, $\text{BSL}_{it}$, defined as the ratio of securities to assets. The evidence suggests that small banks are more sensitive to this adverse selection costs, therefore liquidity measures interacted with the fraction of small to total banks’ assets at the country level, are also to be considered.  

\[ 4\text{See Kashyap and Stein (2000) and Ostergaard (2001).} \]

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3 In fact,  

$$Y_t \lambda_t = \Delta A^* \equiv A^* - A_t = A_t \left( \frac{A^*}{A_t} - 1 \right) \quad \Rightarrow \quad \Delta a^* \equiv \log \left( \frac{A^*}{A_t} \right) = \log \left( 1 + \frac{Y_t}{A_t} \lambda_t \right) \approx \frac{Y_t}{A_t} \lambda_t$$

4 See Kashyap and Stein (2000) and Ostergaard (2001).
**Economic conditions:** will affect the costs of deposits, expected returns on different investments and the demand for credit. The *cost of deposits* could be proxied as the ratio of total interest expenses to total deposits.\(^5\) Alternatively, the costs of deposits could be measured directly as the interest rate on deposits.

*Expected returns* on loans versus other type of assets will affect the portfolio decision. Bernanke and Blinder (1988) stress the dependence of this margin on interest rates, both on loans and on alternative investments (government bonds in the model). Another alternative is to invest in securities, which expected returns could be proxied by the return on domestic security markets. The expected return on loans depends on the interest rate and on the probability of borrower’s default, the latter could be controlled for by the ratio of loans provisions to outstanding loans. This is the mechanism emphasized by the literature on the *credit risk channel*. Finally, Tobin (1982) highlights the dependence of the portfolio choice on the cost of banks’ deposits, which were discussed above.

The *business cycle* will affect both the demand for credit and lending standards. Credit demand will be given by private and government consumption and investments decisions which are partially financed with credit. Finally, the bank literature also shows that banks change their lending standards over the business cycle.\(^6\)

**Organization of the bank sector:** The banking literature identify other variables that may affect the growth of loans at the country level. First, the literature on bank efficiency identify a potential role for bank size and diversification. At the aggregate level bank size could be proxy by the ratio of banks’ assets to GDP. On the other hand, we can use the fact that larger banks take more risk to use the ratio of large bank assets to total banks assets as a measure of both diversification and economies of scale in lending activities. This ratio of large banks assets to total banks assets may affect aggregate lending just by a composition effect as the evidence for the US have found that larger banks hold smaller fraction of loans to total assets.\(^7\)

Finally, it is important to bear in mind that several variables affect loan growth through more than one channel something that needs to be considered when interpreting the results.

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\(^5\) Loutskina and Strahan (2009) measure cost of deposits from Call Report for commercial banks in the US as the ratio of total interest expenses on deposits to total deposits. The data on banks used here only reports total interest expenses.

\(^6\) Asea and Blomberg, 1998; Lown and Morgan, 2001; Schreft and Owens, 1991; Weinberg, 1995.

\(^7\) See Berger, Demsetz, and Strahan (1999).
3 Data

This section describes the data used in the econometric analysis, consisting of an unbalanced panel of countries with yearly observations. The sample of countries is determined primarily by availability of banks’ information, which is obtained from the OECD Bank Statistics database. This data set reports information for bank groups in each country. The most aggregated group is all banks, which includes: commercial banks, saving banks, cooperative banks, and other miscellaneous monetary institutions. When available information for large commercial banks and foreign commercial banks is reported separately. The subsequent analysis considers information at the country level, therefore the most comprehensive bank group is chosen for each country. Table 1 presents the list of countries present in the OECD Bank Statistics dataset and the bank group selected for the analysis.\(^8\)

Table 1 considers only availability of information on credit growth, when information on all bank variables is considered the total number of observation drops from 726 to 705. Additional information is lost when bank variables are merged with long-term and lending rates leaving a total of 530 country-year observations.\(^9\) Including domestic stock market returns further reduce the number of observations to 500 and 6 more observations are lost when real variables (GDP, consumption and investment) are included. It should be noted that Turkey and Luxembourg are left out of the analysis because of the information requirements. Turkey does not have information on long-term interest rates, whereas the series on stock market returns and lending rates do not overlap in the case of Luxembourg. As mentioned above it will be assumed that the growth rate of credit depends on its own lagged realization, which will make additional observations to be discarded in the econometric analysis. As Table 2 shows, in the benchmark regression, the number of observations is 480. The Table also lists the sample period by country of the data used in the analysis.

The OECD Bank Statistics database contains data for income statements and balance sheets of bank groups in OECD countries. All figures are in local currency at the end of the period and are transformed to real values using individual countries consumer price indices (CPI).\(^{10}\) Information on outstanding nominal

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\(^8\)For four countries (Canada, Greece, Mexico and US) information on the second most comprehensive bank group is used to extend the time series, see notes to Table 1.

\(^9\)One reason why information on interest rates is not complete is because in 1999 the countries in the European Union changed the way statistics on lending rates are reported. This presents challenges in the construction of time series for lending (and deposits) rates as no lending rates with the old methodology are published anymore.

\(^{10}\)Data in millions of National currency, except for Japan (100 millions) and Slovak Republic (thousands).
loans for country $i$ at the end of year $t$, is included in the assets breakdown of the balance sheet as item 16. Using domestic CPI loan series are deflated to obtain real outstanding loans, $L_{it}$. Loan growth is defined as the log-difference of real loans, $\Delta \ell_{it} \equiv \log L_{it} - \log L_{i,t-1}$ expressed in percents. Table 3 presents mean loan growth by country for the sample of 480 observation used in the econometric analysis. The sample mean of credit growth is 5.8% per year. Ireland presents the largest annual growth of real credit with almost 22% for the period 1997-2005, whereas Mexico exhibit the largest decline in real credit with an average decline of 2.2% per year in 1995-2007.

Profit measures are constructed based on income statements reported in the OECD dataset. Return on equity, (ROE) is defined as the ratio of item 11, after-tax profits, to item 19, capital and reserves, expressed in percents. Capital and reserves is the closest measure of banks’ capital reported. Table 3 presents averages by country of $\text{ROE}_{i,t-1}$ for the sample used in the estimations below. The sample mean is 8.5%. New Zealand presents the highest average ROE in the sample with almost 17%, whereas Japan presents the lowest with almost -2%. Banks’ equity capital, CAP is defined as the ratio of item 19, capital and reserves, to item 25, end-year balance sheet total, expressed in percents. Balance sheet total equals the sum of assets or liabilities at year-end and henceforth it will be referred to as total assets. Table 3 presents means by country of $\text{CAP}_{i,t-1}$. Considering all country-year observations the mean is 6.1%, whereas taking individual countries it ranges from 3.1% in Belgium to 10.1% in Australia. Likewise, balance sheet liquidity, BSL is defined as item 17, securities in the asset side of the balance sheet at year-end, to total assets (item 25) and it is expressed in percents. Averages for this ratio for individual countries go from 7.1% in Australia to 33.4% in Greece. When all counties are considered the average $\text{BSL}_{i,t-1}$ is 18.9% (Table 3).

Measures on deposits costs and loan provisions are also calculated using information from the OECD Bank Statistics dataset. DEPOSIT COSTS is defined as the ratio of item 2, interest expenses, to item 22, non-bank deposits.\footnote{According to the definitions in the OECD Bank dataset interest expenses “generally includes interest paid on liabilities and fee expenses related to borrowing operations, and it may include in some cases the difference between the issue price on debt instruments and their par value” (OECD, 2004).} Non-bank deposits corresponds to deposits held by bank customers as opposed to interbank deposits hold by banks among themselves. Table 4 presents the sample mean for DEPOSIT COSTS considering the sample of 480 observations used in the estimations below: approximately 10%. Since information on loan provisions (item 8.a) is not available for all countries and years, total provisions (item 8)
is used instead in the benchmark specification. PROVISIONS is defined as the ratio of total provisions to nominal outstanding loans (item 16). The sample average of this variable is 86 basis points, as reported in Table 4. Loan provisions will be used to check the robustness of the results in section 5.

Economic conditions also include variables collected from other sources. Real effective lending rates are calculated as the difference between nominal lending rates from the IFS, line 60P.ZF... and effective CPI inflation obtained from the OECD Main Economic Indicators, Prices: Consumer Prices. Real effective long-term interest rates are calculated as the difference between nominal 10 year government bonds or similar and effective CPI inflation. Nominal long term rates are obtained from the OECD Main Economic Indicators and the IFS.\textsuperscript{12} Real domestic stock market returns are calculated as the log difference of real stock market price indices and expressed in percents. Nominal price indices are obtained from the OECD Main Economic Indicators and the IFS and deflated using domestic CPI to compute real stock market price indices. Changes in real aggregate demand are calculated as the log difference of real aggregate demand and expressed in percents. Real aggregate demand is defined as the sum of real private and government consumption and investment. All these series are obtained from the OECD Main Economic Indicators.\textsuperscript{13}

Organization of the bank sector is measured as the ratio of banks’ total assets to GDP. GDP figures corresponds to real GDP at 2000 prices published by the OECD. Real total assets at 2000 prices were computed from nominal total assets, deflated by domestic CPI.\textsuperscript{14} Table 4 reports averages by country and for all observations of all these variables. Appendix A provides additional descriptive statistics for all the variables in Tables 3 and 4.

\section{Estimation of the Effect of Banks’ Financial Position on Credit Growth}

This section discusses the econometric issues that arise when estimating the effect of banks’ financial position on credit growth and specifies the benchmark econometric model for this analysis. Subsequently, it presents the main results on the effect of banks’ financial position on credit growth. First, the effect of profits, capital and liquidity are estimated independently while controlling for economic conditions and the

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{12}For Chile CPI-indexed bonds yields, obtained from the Central Bank of Chile, are used instead.
\item \textsuperscript{13}Real private consumption corresponds to households and non-profit institutions serving households. Real government consumption is final consumption expenditure of general government. Real investment is gross fixed capital formation.
\item \textsuperscript{14}Real GDP figures for Japan are in 100 millions and for Slovak Republic in thousands.
\end{itemize}
\end{footnotesize}
organization of the banking sector. Then, alternative measures for the three dimensions of banks’ financial position are considered. Additional robustness checks are provided in section 5.

4.1 Econometric Specification

Credit growth is defined as the log-difference of real loans, \( \Delta \ell_{it} = \log L_{it} - \log L_{i,t-1} \). The model to be estimated takes the form:

\[
\Delta \ell_{it} = \alpha(L) \Delta \ell_{it} + \beta' X_{it} + \mu_i + \mu_t + v_{it} \quad i = 1, \ldots, N \quad t = 1, \ldots, T
\] (2)

where \( \alpha(L) \) is a lag polynomial with coefficients to be estimated, \( \beta \) is a vector of coefficients to be estimated, \( X_{it} \) is a vector of controls, \( \mu_i \) are time effects, \( \mu_t \) are country fixed effects and \( v_{it} \) is an idiosyncratic shock.

The variables to be included in the vector of controls, for country \( i \) in year \( t \), follows from the discussion in section 2. It comprises two set of variables \( X_{it} = [X_{it}^{pre} \ X_{it}^{endo}] \), with \( X_{it}^{pre} \) variables that are predetermined at the beginning of period \( t \) and \( X_{it}^{endo} \) variables that are endogenous to the idiosyncratic shock \( v_{it} \), given by,

\[
X_{it}^{pre} = \begin{bmatrix}
\text{ROE}_{i,t-1} & \text{CAP}_{i,t-1} & \text{CAP}_{i,t-1}^2 & \text{BSL}_{i,t-1} \\
\text{DEPOSIT COSTS}_{i,t-1} & \text{PROVISIONS}_{i,t-1} & \text{ASSETS/GDP}_{i,t-1}
\end{bmatrix}
\]

\[
X_{it}^{endo} = \begin{bmatrix}
\text{LENDING RATE}_{it} & \text{LONG TERM RATE}_{it} \\
\text{STOCK RETURNS}_{it} & \Delta \text{AGG. DEMAND}_{i,t}
\end{bmatrix}
\]

The first set of predetermined variables measure banks’ financial position at the end of the previous year. Return on equity, \( \text{ROE}_{i,t-1} \) measures banks’ profits. The ratio of equity capital to assets, \( \text{CAP}_{i,t-1} \) measures capital and the square of this variable is included to estimate potential nonlinear effects of banks’ capital around regulatory thresholds. Finally, balance sheet liquidity, \( \text{BSL}_{i,t-1} \) is measured as the ratio of securities to assets. Other variables control for economic conditions and the organization of the bank sector.

The identification strategy relies on two assumptions. First, it is assumed that predetermined variables and the lagged value of credit growth \( \Delta \ell_{i,t-1} \) are weakly exogenous; whereas contemporaneous variables are
endogenous. This is,

\[ \mathbb{E}(v_{it} | \Delta \ell_{it-1}, X_{it}^{pre}, \Delta \ell_{it-2}, X_{it-1}, \ldots, \Delta \ell_{t1}, X_{it}) = 0 \]  \hspace{1cm} \text{(Assumption 1)}

Second, it is assumed that the idiosyncratic shocks are serially uncorrelated:

\[ \mathbb{E}[v_{it} v_{i,t-1}] = 0 \]  \hspace{1cm} \text{(Assumption 2)}

Note that Assumption 1 does not rule out that the idiosyncratic disturbance, \( v_{it} \), could be correlated with future predetermined and contemporaneous endogenous variables. Nor does it rule out that banks can change their income or balance sheet statements, according to their expectation of future credit growth, as long as their expectations are not correlated with the error term. In other words, Assumption 1 says that when banks form their expectations about future credit growth, they do not know anything about future shocks.

In model (2) the growth rate of loans depends on its own lagged value and the country considered causing a *dynamic panel bias* in the estimation. This renders OLS estimates biased. In fact, if we consider model (2) with a disturbance, \( \varepsilon_{it} = \mu_i + v_{it} \) then the coefficient on lagged credit growth will be positively biased, as the estimation will attribute predictive power to this variable that belongs to the country fixed effect in the error term. On the contrary, if we estimate the model using the within group (*i.e.* fixed effects) estimator, the bias will be negative due to the within group transformation. Although biased the fact that both estimates are biased in opposite directions provides a useful benchmark for theoretically superior estimators (Bond, 2002). Table 5 reports estimated coefficient for model (2) with 1 lag of the dependent variable, using OLS and FE. The coefficient on lagged credit growth is statistically significant in both specifications and these estimates imply an interval for its value between 0.19 and 0.32 (columns 1 and 2). Both ROE and BSL have positive signs and only the latter appears statistically significant in the specifications with country effects. The second order polynomial on equity capital, \( \text{CAP}_{it-1}^2 \) is jointly statistically significant at the 5% level in the FE estimation, with only \( \text{CAP}_{it-1}^2 \) significant at the 10% level. This suggest the presence of nonlinear effect for this variable on credit growth, as expected. Other coefficients have the expected signs. One exception is real LONG TERM RATE which displays a positive sign and it is statistically significant. Another exception is the estimated coefficient on ASSETS/GDP which turns negative when country effects
are taken into account and the coefficient is statistically significant. Contemporaneous changes in aggregate
demand are statistically significant, but this might be the result of the endogeneity of this variable. Perhaps
more surprising is that contemporaneous stock returns and lending rates are not significant when country
effects are considered.

The dynamic panel bias is inversely proportional to the panel’s length, $T$. This is, it is larger for shorter
panels, i.e. when the temporal dimension, $T$ is small. Table 2 shows that the average time length is 16.6
years with a maximum of 28 years, which is not in the “small” range for $T$. Thus, this bias is not the main
econometric concern in the estimation of this model. Nonetheless, the techniques to address this bias will
serve to address the endogeneity problem or more generally the failure of the strict exogeneity assumption
of the variables included in $X_{it}$, which is the main econometric challenge here. In general, there are two
approaches to address the dynamic panel bias. The methods proposed in the literature to solve the dynamic
panel bias rely on constructing suitable sets of instrumental variables under assumptions 1 and 2, using past
information of the existing variables for this. The first approach discussed below consists of transforming the
model by taking first differences, yielding the difference GMM estimator. Next, the system GMM estimator
is discussed which combines the former with using suitable instruments for the model in levels. The latter
approach is best suited in cases where some variables are highly persistent as the case at hand.

Arellano-Bond (1991) propose a difference GMM estimator for dynamic panels. The idea is to take first
differences of model (2) and then instrument for endogenous variables in the transformed model. Differen-
ting the model gives,

$$
\Delta^2 \ell_{it} = \alpha \Delta^2 \ell_{i,t-1} + \beta' \Delta X_{it} + \Delta \mu_{it} + \Delta v_{it}
$$

where $\Delta^2 \ell_{it} = \Delta \ell_{it} - \Delta \ell_{i,t-1}$. This transformation eliminates fixed effects, but makes $\Delta^2 \ell_{i,t-1}$ endogenous,
as $\Delta \ell_{i,t-1}$ is correlated with $v_{i,t-1}$ in the new disturbance $\Delta v_{it}$. Similarly, any predetermined variable become
endogenous. In fact, for predetermined variable $x$, the term $x_{i,t-1}$ in $\Delta x_{it}$ will be correlated with $v_{i,t-1}$. But
$x_{i,t-1}$ ($\Delta \ell_{i,t-2}$) will be a suitable instrument for $\Delta x_{it}$ ($\Delta^2 \ell_{i,t-1}$) as it is correlated with it and independent of
$v_{i,t-1}$ by Assumption 1. Deeper lags of $x$ ($\Delta \ell$) will also be candidate instruments, as $\Delta x_{i,t-1}$ ($\Delta^2 \ell_{i,t-2}$) and
deeper lags of it will be as well. The standard way of using \( x_{i,t-1} \) as an instrument is to consider the vector,

\[
\begin{bmatrix}
\vdots \\
x_{i,1} \\
\vdots \\
x_{i,T-1}
\end{bmatrix}
\]

where “\( \cdot \)” denote a missing value. This procedure is also referred as instrumenting in IV style. One of the shortcomings of this approach is that each additional instruments comes at the burden of reducing the sample size, as each additional lag forces to drop one time period. In contrast, in GMM framework it is possible to use \( x_{i,t-1} \) to build a set of instruments with one instrument for each time period and substituting zeros for missing observations, giving rise to meaningful instrument moment conditions. This approach generates a matrix of instruments of the form:

\[
\begin{bmatrix}
0 & 0 & \cdots & 0 \\
x_{i,1} & 0 & \cdots & 0 \\
0 & x_{i,2} & \cdots & 0 \\
\vdots & \vdots & \ddots & \vdots \\
0 & 0 & \cdots & x_{i,T-1}
\end{bmatrix}
\]

Replacing missing with zeros there is no longer a trade-off between number of instruments and number of observations; thus, it is common practice in the literature of dynamic panels to include as many instruments as possible. The number of instruments equals the number of columns of the matrix of instruments. For the lagged dependent variable instrumenting in GMM-style using \( \Delta \ell_{i,t-2} \) will generate \( T - 2 \) instruments.\(^{15}\) Additional lags will generate \( T - 3, T - 4, \ldots, 1 \) additional instruments. Therefore, using all available lags to construct the set of instrumental variables makes the number of instruments quadratic in \( T \). The same is the case for any other variable that is to be instrumented. This will generate too many instruments in the case of “square” panels like the one studied here, which could be problematic. First, a large number of instruments can overfit endogenous variables (Roodman, 2006). In fact, in the extreme case where the

\(^{15}\)The number of instruments could be \( T \) if information for lagged values of variables are available. This is the case for the data being analyzed here.
number of instruments equal the number of observations the instrument set will span the space of the explanatory variables, causing the projection of the endogenous variable in the instrument space to equal itself, violating the instrumental variable assumption. Second, too many instruments cause numerical problems in the estimation affecting the accuracy of the estimates. Third, it weakens the Hansen test of overidentifying restrictions leading to its non-rejection (Bowsher, 2002).

There are two ways around the problem of too many instruments which will be considered below. The first one is to restrict the number of lags to be used as instruments. The second consist of collapsing the set of instruments to get one instrument per instrumental variable. The latter combines elements of the IV and GMM style, as it builds a single instrumental variable using \( x_{i,t-1} \) but still replaces missing with zeros. This gives a single instrument using \( x_{i,t-1} \) as instrument:

\[
\begin{pmatrix}
0 \\
x_{i,1} \\
\vdots \\
x_{i,T-1}
\end{pmatrix}
\]

As discussed above, when \( x_{it} \) is a predetermined variable lags one and up are suitable instruments for the differenced model (3). In contrast, when \( x_{it} \) is an endogenous variable suitable instruments are the second and deeper lags of the variable. In fact, in this case the term \( x_{i,t-1} \) is correlated with \( v_{i,t-1} \) and therefore \( x_{i,t-1} \) will not be a suitable instrument for \( \Delta x_{it} \), but \( x_{i,t-2} \) is still independent of \( v_{i,t-1} \) and could be used as an instrument. Deeper lags of \( x_{i,t-2} \) and \( \Delta x_{i,t-2} \) and deeper lags of it will also be valid instruments.

Estimations using difference GMM are reported in Table 5 columns 3 to 6. Column 3 presents estimates that use 2 lags of explanatory variables as instruments in GMM style. The estimated coefficient is in the lower range of the interval \([0.19, 0.32]\), but the number of instruments is almost equal to the number of observations. With 6 lags in GMM style, the number of instruments is greater than the number of observation, but the algorithm limits the number of instruments by the number of observations. Estimated coefficients are very similar to the FE estimates, as was to be expected by the use of as many instruments as observations. Collapsing the set of instruments, using 2 and 6 lags of each explanatory variable yields instrument sets with 52 and 100 elements, respectively (columns 5 and 6). This yields a more reasonable number of instruments,
but the coefficient on lagged credit growth falls outside the desired interval and there are other problems that suggests the model is poorly specified. Indeed, the Sargan tests rejects the joint validity of the moment restrictions. Moreover, the Arellano-Bond test for the independence of the idiosyncratic disturbances—Assumption 2—is rejected, suggesting serial correlation of the innovations of model (2). This assumption was key in the construction of the appropriate instrument sets. Arellano and Bond (1991) shows how to construct a test statistics under the null of serial independence, that converges to a normal distribution when the number of panels, \( N \) is large. The procedure consist of testing for second order serial correlation in the differenced residuals to test for first order serial correlation on the original disturbances. The p-values for this tests are reported in all the GMM regressions for first and second order serial correlation in the original disturbances, AR(2) and AR(3) for the differenced residuals, respectively. For example, using 6 collapsed lags as instruments this test indicate first order serial correlation at the 5% significance level, but cannot reject that there is no serial correlation of second order for the original disturbances. There are two ways to take this time series pattern into account. One is to construct the instrument set starting with lag \( t - 2 \) and \( t - 3 \), respectively for predetermined and endogenous variables. However, following this approach seems to weaken the instruments significantly.

Another is to enrich the time series specification of the variables in the model, so the innovations become serially uncorrelated, as we do below including an additional lag for credit growth to the model.

Table 6 reports the estimates using OLS, FE and difference GMM of model (2) including 2 lags of credit growth as explanatory variables. Now the Arellano-Bond tests cannot reject the null of serially uncorrelated innovations. With 2 lags of the dependent variable we expect the sum of the coefficients in the \( \alpha(L) \) polynomial to be upward and downward biased, respectively in the case of OLS and FE. Therefore, all models report the sum of the estimated coefficients on \( \Delta \ell_{i,t-1} \) and \( \Delta \ell_{i,t-2} \) to facilitate comparison. As it was the case before OLS and FE estimates provide a useful benchmark to asses the performance of theoretically superior estimators, [0.36,0.48] in this case. Now the model seems better specified. The sum of these coefficients is in the desired range and the diagnostics tests do not reject the serial independence of the innovations or

\[\text{This test is not consistent in the presence of non-spherical disturbances as in here; nonetheless, it is the best statistic for model diagnostics. The alternative Hansen test, which is consistent, has the disadvantage of being weakened by the use of a large number of instruments (Bowsher, 2002). In fact, this test does not reject the null of valid moment restrictions in all the GMM models reported in Table 5.}\]

\[\text{Carrying out the estimation using system GMM and restricting the set of instruments in this way yields statistical insignificant coefficient for most variables suggesting that instruments are weakened significantly (Appendix C).}\]
the joint validity of the moment restrictions. The coefficients of the FE estimator are similar as before and the joint test on the coefficients of CAP is rejected at the 5% confidence level. Figure 1 panel (a) plots the estimated effect of $\text{CAP}_{i,t-1}$ on credit growth based on the FE estimates. Point estimates of the FE model imply that an increase of one standard deviation in the ratio of bank capital to assets at the sample mean of 6.1% will increase credit growth by 72 basis points upon impact and 1.13 percentage point in the long-run.

Despite the fact, that the difference GMM estimates pass the validations of the diagnostics checks indicated above, there are some signs of problems, as most coefficients are not significant. The problem with the difference GMM estimator in this case is originated by the use of persistent individual series. Bond (2002) recommends investigating the time series properties of all the series being used in the estimation and suggests using system GMM when they are found to be highly persistent. Appendix B analyze the time series properties of the individual series. BSL and ASSETS/GDP are found to be highly persistent with estimated coefficients for the autoregressive term between 0.81 and 0.93, and 0.98 and 1.04, respectively.

The system GMM estimator uses both the differenced and level equations, “doubling” the number of observations used in the estimation. The way right-hand side variables are instrumented for in the difference equations is the same as in difference GMM. For the level equations, right-hand side variables are instrumented by their differences, which are assumed independent of the individual effects. For example, for $\Delta \ell_{i,t-1}$ a valid instrument will be $\Delta^2 \ell_{i,t-1}$, as it is assumed not correlated with the fixed effect and correlated with $\Delta \ell_{i,t-1}$. Similarly, for a variable $x_{it}$ which is predetermined, $\Delta x_{it}$ will be a valid instrument as it is assumed not correlated with the fixed effect and correlated with $x_{it}$. Deeper lags of them will also be valid instruments. For endogenous variables $\Delta x_{i,t-1}$ and deeper lags may be used as instruments.

Column 5, system GMM with 2 collapsed lags seems the best fit for the model. LENDING RATE and ΔAGG. DEMAND are significant, and LONG TERM RATE and ASSETS/GDP have the desired signs. The sum of the coefficient on lagged credit growth is on the upper part of the desired range and the diagnostics tests do not reject neither joint validity of moment restriction nor the serial uncorrelation of the innovations. The estimated effects of banks’ financial position yields CAP as the only significant variable. In fact the coefficient on the linear term is significant at the 10% level and the linear and quadratic terms are jointly significant at the 5% level. This nonlinear effect will depend on the initial level of the ratio of equity to assets (Figure 1 panel b). For instance, starting at the sample mean of 6.1% the effect of an increase
(decrease) of one standard deviation in CAP is an increase (decrease) of 0.8 (0.3) percentage points in the growth rate of credit.18 The presence of lagged credit growth in the model imply that the long-run effect will be the previous effect times $\frac{1}{1-\alpha(L)}$, i.e. an associated increase (decrease) in credit growth in the long-run of 1.6 (0.6) percentage points. The coefficient on ROE displays the right sign, but it does not seem to have neither a statically or economically significant effect on credit growth. Balance sheet liquidity, BSL, have a negative sign in contrast to what was expected. Deposit costs at the end of the previous year and contemporaneous lending rates, stock returns and aggregate demand growth are all significant with the expected signs. The implied effects on credit growth of this point estimates from a one standard deviation increase are: DEPOSIT COSTS (ratio of interest expenses to deposits) -2.76 percentage points; LENDING RATE 4.72 percentage points; STOCK RETURNS 5.01 percentage points; and the growth rate of aggregate demand, ΔAGG. DEMAND 1.01 percentage points.19

### 4.2 Effect of Banks’ Financial Position

Having specified the benchmark specification it is now possible to study in more detail the effect of banks’ financial position on credit growth. Three aspects will be considered. First, the individual effect of each variable that measures banks’ financial positions will be considered. Then, it will be analyzed the effect of different measures of profits, liquidity and capital, respectively. Finally, the next section presents some robustness checks. Table 7 presents the results when banks’ variables are included one at a time to investigate the significance of each one separately and potential non-linear effect of profits and liquidity. The first column presents the benchmark regression results to facilitate comparison. All models use two collapsed lags to construct the instrument set and the system GMM estimator. When only CAP is included in the model, estimates remain qualitatively the same. The joint significance of the linear and quadratic capital terms is affected but they are still significant at the 10% level (column 3). When only ROE is included the estimates are as before. More interesting is the estimation that considers both a linear and a quadratic profit term (column 5). Both of the ROE coefficients are significant at the 10% level, but they are not jointly

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18The standard deviation of CAP for the whole sample is 2.2% as reported in Appendix A.

19Standard deviations are reported in Appendix A and equal: 5.684 for DEPOSIT COSTS; 3.101 for LENDING RATE; 20.635 for STOCK RETURNS; and 2.774 for ΔAGG. DEMAND.
significant in evidence the individual coefficients were only marginally significant.\textsuperscript{20} When only balance sheet liquidity, BSL is included the coefficient turns bigger in absolute value, but it is still statistically insignificant. No significant effect is found when both a linear and a quadratic BSL term are included. This analysis reinforce the result that CAP is the only significant predictor of subsequent credit growth in this sample, with an effect that is nonlinear as was expected by the presence of capital regulations.

Table 8 reports estimations for different definitions of banks’ profits. As detailed above ROE was set to zero when equity was negative. If ROE is defined as the ratio of after tax profits to equity, even when equity is negative results remain unchanged. This was expected as there is only one country-year observation with negative equity, corresponding to the US in 1983 (see Appendix A). Next, return on assets (ROA) at the end of the previous year is considered instead of ROE. Column 3 in Table 8 reports the results for this specification. The coefficient on ROA is positive, but statistically insignificant. When leverage is included as an additional control the estimated coefficient on ROA do not change significantly. But the coefficient associated with CAP do change, but the joint significance of the linear and quadratic terms is not compromised.

Table 9 presents the estimation results for different definitions of banks’ liquidity. Once again, to facilitate comparison, the first column presents the benchmark regression results. The second column presents the results of replacing BSL\textsubscript{i,t−1} with the interaction of this variable and SMALL, the fraction of small banks’ assets to total assets.\textsuperscript{21} Not all countries reports information to compute this ratio so the regression include only 18 countries and 249 observations. The coefficient on liquidity turns statistically insignificant, in line with previous studies that suggests that liquid assets are a more important funding source for smaller banks. The second order polynomial on capital remains significant and now the linear term is significant by itself at the 1\% level. More surprising is the fact, that the coefficient on ROE becomes significant and the coefficient on the lending rate becomes negative. The specification tests show that the joint validity of the moment conditions is rejected, whereas the independence of the original disturbances is not. Column 3 present the benchmark regression estimated with the restricted sample of 249 observations used in the

\textsuperscript{20}Considering the difference GMM estimator—not reported—individual coefficients lose their significance. Only when 6 collapsed lags are included using the system GMM estimator the coefficients on ROE are jointly significant. All this suggest that ROE might have a nonlinear effect, but it can not be ruled out that this is due to overfitting, as the result only becomes strong when many instruments are included.

\textsuperscript{21}The ratio of small bank assets to total assets, SMALL is calculated as the ratio of assets of non-large commercial banks, savings banks and cooperative banks to total banks assets.
previous regression. Again the joint validity of the moment restrictions is rejected, suggesting that the number of instruments is too large relative to the sample size of 249. Column 4 considers the sum of securities and reserves\textsuperscript{22} to total assets at the end of the previous year as the measure of liquidity. Comparison with the benchmark regression shows that the coefficient on liquidity turns negative, the point estimates of other coefficients do not change significantly, and the results of the test of the significance of coefficients and diagnostics test are the same. The last column presents the estimation when liquidity is measured by the ratio of (non-bank) deposits to total assets at the end of the previous year. Again the coefficient of this measure of liquidity turns negative and the rest of the coefficient are in line with the baseline regression. An exception is ASSETS/GDP which changes sign.

Finally, Table 10 presents the results when alternative definitions of banks’ capital are included in the model. To account for the non-linearity of the estimated effect of banks’ capital, this variable is interacted with different dummy variables. The first one is whether $\text{CAP}_{i,t-1}$ is larger or equal to the $25^{\text{th}}$ percentile of the distribution of CAP in country $i$. The second one is whether $\text{CAP}_{i,t-1}$ is larger or equal to 4% and the third one whether is larger or equal to 6%. As could be seen from the results reported in Table 10 (columns 2-4) none of this non-linear transformations capture the nonlinear effect of capital as none of the estimated coefficients is significant. The estimated effect of the other variables is in line with the baseline specifications.

This results correspond to countries and may not be compared in a straight forward way to the results from individual banks, as studying aggregate banks balance sheets it is not possible to identify movements between individual institutions. In fact, estimates pick up the multiplier effect of financial transactions. For example, a bank grants a loan to a client, who deposits part of the funds or spend them and the recipient deposits the proceeds in a domestic bank. Then the latter bank may grant a loan with the cycle continuing.

5 Robustness Tests

This section presents robustness tests to the benchmark regression reported above. First, real deposit rates are included instead of the ratio of interest expenses to deposits to control for the cost of deposits. Second,

\textsuperscript{22}Reserves corresponds to item 14 cash and balances with Central Bank of the OECD Bank Statistics dataset. For Japan reserves are included in interbank deposits, which are used instead.
the ratio of large banks’ assets to total assets, LARGE, is included to control for the structure of the bank sector. Third, LOAN PROVISIONS, defined as the ratio of provisions on loans to total loans is used instead of PROVISIONS to control for the riskiness of borrowers. Finally, alternative measures to control for real activity are considered. Table 11 presents the first set of robustness checks.

Table 12 reports further robustness checks for the way real economic activity is controlled for in the model. Once again the table starts with the benchmark estimation results (column 1). Column 2 considers changes in real GDP, $\Delta \text{GDP}_t$, instead of changes in aggregate demand.

In sum, these robustness checks lend support to the main finding of the paper that banks’ equity capital is a significant determinant of subsequent credit growth and that neither profits or liquidity display a significant role at the country level for OECD countries.

6 Conclusion

This paper presented estimates of the effect of banks’ financial position on credit growth for a sample of 29 OECD countries. The identification relied on the assumption that country-year innovations to the growth rate of loans are independent of predetermined variables and past values of endogenous variables, and that these innovations are not serially correlated. The paper discussed how to adapt GMM estimators, designed for “short” panels, to the present context where the data is organized in a “square” panel. The main issue is on building suitable instrument sets without using too many instruments that will render the instruments invalid and generate other estimation problems. It was argued that the system GMM estimator was to be preferred due to the presence of highly persistent series and an instrument set using two lags of independent variables collapsed to economize on the number of instruments was chosen. The empirical results shows that among capital, profits and liquidity at the end of the previous year, capital is the most important predictor of credit growth in the current year. The relationship between capital and credit growth is non-linear. Point estimates from the preferred econometric specification imply that at the sample mean a one standard deviation increase (decrease) is associated with an increase (decrease) of 0.8 (0.3) percentage points in credit growth upon impact and 1.6 (0.6) percentage points in the long-run. These results were found robust to the definition of the variables included in the model as well as changes in the set of controls used in the estimation.
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Appendix

A Descriptive Statistics of Main Variables

The model to be estimated is given in equation (2). Recall $\Delta \ell_{it} = \alpha \Delta \ell_{i,t-1} + \beta' X_{it} + \mu_t + \mu_i + v_{it}$. Here I present descriptive statistics for the variables Sample according to availability of information model (2).

Table A.1: Descriptive Statistics for Credit Growth by Country

(in percents)

| Country          | mean  | min   | max   | st. dev. |
|------------------|-------|-------|-------|----------|
| Australia        | 5.711 | -20.933 | 32.421 | 11.584   |
| Austria          | 5.990 | 5.329  | 6.650  | 0.934    |
| Belgium          | 3.976 | -5.812 | 14.950 | 4.482    |
| Canada           | 3.628 | -2.244 | 14.314 | 4.010    |
| Chile            | 7.093 | -2.092 | 14.543 | 5.215    |
| Czech Republic   | 2.011 | -8.000 | 13.552 | 8.701    |
| Denmark          | 5.244 | -11.747| 20.829 | 8.182    |
| Finland          | 2.369 | -16.775| 33.663 | 11.687   |
| France           | 1.255 | -9.579 | 6.575  | 4.168    |
| Germany          | 4.572 | -3.734 | 9.845  | 2.984    |
| Greece           | 13.733| -2.059 | 43.961 | 12.271   |
| Hungary          | 13.717| 7.276  | 24.391 | 5.195    |
| Iceland          | 13.134| 0.091  | 36.726 | 11.987   |
| Ireland          | 21.998| 3.607  | 48.989 | 15.727   |
| Italy            | 4.826 | -3.094 | 12.803 | 4.605    |
| Japan            | -1.056| -10.214| 3.597  | 3.497    |
| Korea            | 12.331| -23.941| 42.042 | 13.408   |
| Mexico           | -2.156| -15.492| 14.075 | 9.874    |
| Netherlands      | 6.768 | -10.407| 25.206 | 9.322    |
| New Zealand      | 8.270 | 4.884  | 13.115 | 2.422    |
| Norway           | 7.509 | -8.376 | 22.119 | 7.550    |
| Poland           | 6.805 | 0.690  | 20.959 | 7.604    |
| Portugal         | 10.508| -5.987 | 23.041 | 9.589    |
| Slovak Republic  | 4.234 | -27.145| 22.349 | 17.626   |
| Spain            | 5.194 | -9.749 | 11.833 | 5.292    |
| Sweden           | 4.110 | -23.421| 21.980 | 10.602   |
| Switzerland      | 3.289 | -11.442| 14.617 | 5.513    |
| United Kingdom   | 9.240 | -3.652 | 42.383 | 11.132   |
| United States    | 2.575 | -13.480| 14.648 | 5.817    |
| All              | 5.812 | -27.145| 48.989 | 9.092    |

Source: Own elaboration based on OECD Bank Statistics and OECD Main Economic Indicators.
Table A.2: Descriptive Statistics for ROE\(^1\) by Country

| Country           | mean  | min   | max    | st. dev. |
|-------------------|-------|-------|--------|----------|
| Australia         | 9.152 | -0.913| 35.149 | 8.414    |
| Austria           | 8.003 | 7.603 | 8.402  | 0.565    |
| Belgium           | 9.267 | 3.555 | 21.667 | 4.073    |
| Canada            | 12.720| 4.963 | 16.834 | 2.668    |
| Chile             | 13.011| 8.844 | 15.691 | 1.974    |
| Czech Republic    | 9.744 | 0.755 | 14.147 | 5.212    |
| Denmark           | 6.774 | -21.384| 25.622 | 9.676    |
| Finland           | 0.014 | -49.504| 24.228 | 19.523   |
| France            | 6.150 | -1.291| 10.283 | 3.808    |
| Germany           | 6.114 | 3.696 | 8.894  | 1.084    |
| Greece            | 14.109| 7.045 | 21.901 | 3.939    |
| Hungary           | 15.414| 10.529| 19.884 | 3.620    |
| Iceland           | 8.737 | -0.883| 14.852 | 4.750    |
| Ireland           | 13.356| 10.452| 15.937 | 1.526    |
| Italy             | 7.307 | 1.208 | 12.842 | 3.306    |
| Japan             | -1.992| -22.388| 15.085 | 12.182   |
| Korea             | -0.023| -79.028| 18.174 | 24.044   |
| Mexico            | 6.920 | -5.008| 20.079 | 7.252    |
| Netherlands       | 10.864| -11.195| 18.023 | 6.267    |
| New Zealand       | 16.752| 6.839 | 23.283 | 4.244    |
| Norway            | 5.033 | -113.774| 17.897 | 25.325   |
| Poland            | 10.240| 4.742 | 16.572 | 4.742    |
| Portugal          | 7.084 | 5.770 | 9.528  | 1.227    |
| Slovak Republic   | 12.174| -29.391| 26.495 | 18.135   |
| Spain             | 8.600 | 1.356 | 11.697 | 2.072    |
| Sweden            | 9.999 | 2.052 | 39.752 | 8.498    |
| Switzerland       | 8.415 | 0.308 | 16.402 | 3.671    |
| United Kingdom    | 13.102| 1.117 | 21.013 | 5.898    |
| United States     | 9.698 | 0.000 | 14.043 | 4.197    |
| All               | 8.536 | -113.774| 39.752 | 10.692   |

Source: Own elaboration based on OECD Bank Statistics.

\(^1\) ROE defined as zero when equity is negative.
Table A.3: Descriptive Statistics for Capital (ratio of Equity to Assets) by Country

| Country            | mean | min  | p25  | max   | st. dev. |
|--------------------|------|------|------|-------|----------|
| Australia          | 10.096 | 7.063 | 9.918 | 12.344 | 1.196    |
| Austria            | 4.621 | 4.504 | 4.504 | 4.737 | 0.164    |
| Belgium            | 3.071 | 2.384 | 2.545 | 3.957 | 0.514    |
| Canada             | 5.279 | 4.185 | 5.099 | 5.877 | 0.411    |
| Chile              | 8.517 | 7.276 | 8.316 | 9.199 | 0.459    |
| Czech Republic     | 8.483 | 6.013 | 8.202 | 10.643 | 1.695    |
| Denmark            | 7.628 | 5.512 | 6.542 | 9.930 | 1.352    |
| Finland            | 6.820 | 5.044 | 6.126 | 10.823 | 1.622    |
| France             | 4.260 | 3.124 | 3.996 | 5.064 | 0.539    |
| Germany            | 3.793 | 3.271 | 3.557 | 4.242 | 0.310    |
| Greece             | 5.732 | 2.443 | 4.552 | 9.886 | 2.343    |
| Hungary            | 9.326 | 8.999 | 9.088 | 9.785 | 0.262    |
| Iceland            | 7.321 | 6.410 | 6.734 | 7.980 | 0.600    |
| Ireland            | 5.911 | 4.985 | 5.690 | 6.681 | 0.582    |
| Italy              | 6.435 | 3.887 | 6.116 | 8.035 | 0.965    |
| Japan              | 3.951 | 2.837 | 3.338 | 5.260 | 0.665    |
| Korea              | 5.775 | 3.583 | 4.098 | 8.867 | 1.874    |
| Mexico             | 7.349 | 5.298 | 6.389 | 9.713 | 1.256    |
| Netherlands        | 3.878 | 2.668 | 3.605 | 4.601 | 0.524    |
| New Zealand        | 5.700 | 3.676 | 4.805 | 7.686 | 1.218    |
| Norway             | 5.457 | 2.904 | 4.544 | 7.295 | 1.245    |
| Poland             | 9.492 | 8.348 | 9.151 | 10.204 | 0.694    |
| Portugal           | 9.863 | 8.227 | 9.012 | 11.584 | 1.029    |
| Slovak Republic    | 7.325 | 3.733 | 4.808 | 13.049 | 2.970    |
| Spain              | 7.862 | 6.564 | 7.222 | 9.472 | 0.704    |
| Sweden             | 5.762 | 4.268 | 5.342 | 7.163 | 0.796    |
| Switzerland        | 5.904 | 4.531 | 5.622 | 6.807 | 0.661    |
| United Kingdom     | 4.560 | 3.256 | 4.051 | 5.995 | 0.715    |
| United States      | 6.730 | -11.666 | 5.543 | 10.345 | 4.058    |

All   6.087 -11.666 4.481 13.049 2.234

Source: Own elaboration based on OECD Bank Statistics.

Note: p25 = 25th percentile.
Table A.4: Descriptive Statistics for Balance Sheet Liquidity (BSL, ratio of securities to assets) by Country

(in percents)

| Country         | mean  | min   | max   | st. dev |
|-----------------|-------|-------|-------|---------|
| Australia       | 7.096 | 3.457 | 10.048| 1.823   |
| Austria         | 16.025| 15.956| 16.094| 0.098   |
| Belgium         | 29.528| 23.251| 34.169| 2.485   |
| Canada          | 17.304| 10.224| 26.325| 5.343   |
| Chile           | 16.060| 10.811| 18.998| 2.686   |
| Czech Republic  | 23.766| 20.422| 26.887| 2.389   |
| Denmark         | 24.411| 18.335| 29.137| 3.627   |
| Finland         | 16.673| 8.471 | 23.459| 4.572   |
| France          | 16.710| 7.789 | 22.866| 4.940   |
| Germany         | 17.598| 12.352| 23.981| 3.638   |
| Greece          | 33.412| 28.895| 36.661| 2.411   |
| Hungary         | 16.430| 14.107| 18.731| 1.692   |
| Iceland         | 13.562| 9.330 | 19.061| 2.940   |
| Ireland         | 23.902| 19.189| 29.521| 3.961   |
| Italy           | 14.829| 9.132 | 22.755| 4.208   |
| Japan           | 19.669| 14.343| 27.225| 4.925   |
| Korea           | 17.291| 12.491| 24.983| 3.265   |
| Mexico          | 26.933| 15.634| 33.526| 6.694   |
| Netherlands     | 21.291| 11.601| 30.992| 5.450   |
| New Zealand     | 11.114| 5.436 | 20.354| 4.288   |
| Norway          | 15.747| 8.100 | 34.108| 7.802   |
| Poland          | 22.104| 20.396| 23.218| 1.033   |
| Portugal        | 21.373| 15.000| 27.348| 3.973   |
| Slovak Republic | 25.821| 14.275| 36.199| 6.663   |
| Spain           | 18.756| 12.621| 24.787| 3.224   |
| Sweden          | 21.514| 11.579| 29.731| 5.432   |
| Switzerland     | 14.995| 9.636 | 23.524| 4.822   |
| United Kingdom  | 14.950| 6.944 | 20.924| 5.029   |
| United States   | 19.119| 13.943| 23.386| 3.373   |

All | 18.924 | 3.457 | 36.661 | 6.833 |

Source: Own elaboration based on OECD Bank Statistics.
Table A.5: Descriptive Statistics for Deposit Cost (ratio of interest expenses to deposits) by Country

(in percents)

| Country            | mean | min  | max   | st. dev |
|--------------------|------|------|-------|---------|
| Australia          | 8.758| 5.860| 16.371| 3.434   |
| Austria            | 8.607| 8.531| 8.683 | 0.107   |
| Belgium            | 20.617| 9.881| 30.662| 5.659   |
| Canada             | 6.998| 2.823| 11.909| 2.705   |
| Chile              | 11.880| 5.509| 20.631| 5.383   |
| Czech Republic     | 4.129| 2.597| 6.514 | 1.567   |
| Denmark            | 10.115| 5.795| 14.292| 2.913   |
| Finland            | 9.517| 3.611| 16.466| 4.041   |
| France             | 21.712| 11.786| 31.949| 6.392   |
| Germany            | 9.316| 7.219| 12.288| 1.347   |
| Greece             | 10.019| 4.212| 14.074| 3.142   |
| Hungary            | 8.298| 6.783| 10.822| 1.305   |
| Iceland            | 11.769| 6.526| 22.087| 5.259   |
| Ireland            | 9.511| 7.908| 11.460| 1.239   |
| Italy              | 11.190| 5.527| 17.236| 3.199   |
| Japan              | 2.907| 0.339| 8.207 | 2.615   |
| Korea              | 6.984| 3.954| 11.871| 2.139   |
| Mexico             | 20.288| 9.442| 47.965| 11.394  |
| Netherlands        | 9.225| 5.599| 12.257| 1.865   |
| New Zealand        | 6.863| 4.175| 11.662| 2.255   |
| Norway             | 9.879| 4.655| 18.819| 3.845   |
| Poland             | 7.280| 4.034| 12.997| 4.041   |
| Portugal           | 11.265| 8.505| 14.163| 1.675   |
| Slovak Republic    | 5.707| 2.947| 12.361| 3.216   |
| Spain              | 9.180| 3.973| 12.763| 2.462   |
| Sweden             | 12.141| 4.219| 21.127| 4.475   |
| Switzerland        | 7.339| 3.709| 11.212| 2.169   |
| United Kingdom     | 6.881| 4.053| 11.084| 1.883   |
| United States      | 6.870| 2.003| 12.947| 2.954   |
| All                | 9.991| 0.339| 47.965| 5.684   |

Source: Own elaboration based on OECD Bank Statistics.
Table A.6: Descriptive Statistics for Real Lending Rates\(^1\) by Country

| Country          | mean | min  | max  | st. dev. |
|------------------|------|------|------|----------|
| Australia        | 7.060| 4.282| 10.869| 1.931    |
| Austria          | 5.284| 5.069| 5.499| 0.304    |
| Belgium          | 6.924| 3.922| 10.572| 1.727    |
| Canada           | 4.889| 1.929| 9.283| 2.070    |
| Chile            | 7.133| 3.369| 15.059| 3.492    |
| Czech Republic   | 4.066| 2.449| 5.840| 1.341    |
| Denmark          | 7.663| 4.627| 11.458| 1.901    |
| Finland          | 5.106| 2.565| 9.217| 1.986    |
| France           | 5.796| 4.465| 7.589| 1.055    |
| Germany          | 8.101| 6.757| 9.192| 0.658    |
| Greece           | 9.644|-2.515| 16.568| 5.625    |
| Hungary          | 4.165| 1.127| 6.081| 1.515    |
| Iceland          | 10.466| 9.014| 11.664| 0.847    |
| Ireland          | 0.997|-0.806| 5.153| 2.142    |
| Italy            | 6.517| 3.157| 11.253| 2.614    |
| Japan            | 2.450| 0.531| 4.437| 1.088    |
| Korea            | 4.358| 2.234| 8.583| 1.970    |
| Mexico           | 5.880| 1.514| 24.433| 6.183    |
| Netherlands      | 2.511| 0.671| 5.490| 1.660    |
| New Zealand      | 7.904| 6.161| 9.578| 1.122    |
| Norway           | 6.335| 0.543| 11.922| 2.821    |
| Poland           | 7.118| 4.178| 12.952| 3.652    |
| Portugal         | 8.424| 2.854| 14.529| 3.160    |
| Slovak Republic  | 3.463|-0.095| 7.123| 2.199    |
| Spain            | 4.886| 0.560| 11.114| 3.161    |
| Sweden           | 6.546| 2.861| 12.826| 2.390    |
| Switzerland      | 2.759|-0.930| 4.710| 1.239    |
| United Kingdom   | 4.345| 1.012| 8.679| 1.896    |
| United States    | 5.194| 1.663| 8.730| 1.864    |
| **All**          | **5.725**| **-2.515**| **24.433**| **3.101**|

Source: Own elaboration based on OECD Bank Statistics and OECD Main Economic Indicators.

\(^1\) Real effective lending rates calculated as nominal rates minus effective inflation in the year.
Table A.7: Descriptive Statistics for ratio of Total Provisions to Loans by Country

| Country           | mean  | min   | max   | st. dev. |
|-------------------|-------|-------|-------|----------|
| Australia         | 0.704 | 0.141 | 2.052 | 0.680    |
| Austria           | 0.733 | 0.722 | 0.744 | 0.016    |
| Belgium           | 0.638 | -0.079| 1.307 | 0.368    |
| Canada            | 0.549 | 0.158 | 1.331 | 0.288    |
| Chile             | 1.111 | 0.519 | 2.045 | 0.438    |
| Czech Republic    | -1.628| -2.923| 0.574 | 1.408    |
| Denmark           | 1.959 | 0.623 | 3.611 | 1.017    |
| Finland           | 0.172 | -0.105| 0.813 | 0.278    |
| France            | 0.870 | 0.367 | 1.780 | 0.466    |
| Germany           | 0.618 | 0.200 | 0.946 | 0.195    |
| Greece            | 1.186 | 0.651 | 1.866 | 0.441    |
| Hungary           | 0.411 | -0.084| 0.662 | 0.227    |
| Iceland           | 1.490 | 0.947 | 3.166 | 0.731    |
| Ireland           | 0.196 | 0.076 | 0.298 | 0.062    |
| Italy             | 1.197 | 0.260 | 1.823 | 0.429    |
| Japan             | 0.564 | 0.046 | 1.602 | 0.500    |
| Korea             | 1.524 | 0.585 | 3.018 | 0.795    |
| Mexico            | 1.962 | 0.946 | 3.645 | 0.977    |
| Netherlands       | 0.305 | 0.093 | 0.810 | 0.166    |
| New Zealand       | 0.198 | -0.141| 1.042 | 0.317    |
| Norway            | 0.924 | -0.161| 4.791 | 1.135    |
| Poland            | 1.881 | 0.585 | 3.088 | 0.971    |
| Portugal          | 2.476 | 1.070 | 4.867 | 1.355    |
| Slovak Republic   | -0.395| -4.010| 7.255 | 3.278    |
| Spain             | 1.406 | 0.452 | 3.151 | 0.585    |
| Sweden            | 0.076 | -6.792| 2.027 | 1.912    |
| Switzerland       | 1.001 | 0.372 | 1.797 | 0.399    |
| United Kingdom    | 0.912 | 0.307 | 2.655 | 0.739    |
| United States     | 0.761 | 0.305 | 1.545 | 0.371    |
| All               | 0.864 | -6.792| 7.255 | 1.047    |

Source: Own elaboration based on OECD Bank Statistics.
Table A.8: Descriptive Statistics for Real Long Term Rates\textsuperscript{1} by Country

(in percents)

| Country         | mean | min   | max   | st. dev. |
|-----------------|------|-------|-------|----------|
| Australia       | 4.835| 1.253 | 8.211 | 2.230    |
| Austria         | 3.950| 3.791 | 4.110 | 0.226    |
| Belgium         | 4.449| 0.566 | 7.331 | 1.838    |
| Canada          | 4.466| 1.233 | 8.405 | 1.967    |
| Chile           | 4.571| 2.550 | 7.330 | 1.720    |
| Czech Republic  | 2.465| 1.568 | 4.006 | 1.045    |
| Denmark         | 5.749| 2.412 | 10.264| 2.109    |
| Finland         | 5.466| 2.440 | 9.053 | 2.118    |
| France          | 4.361| 1.964 | 6.701 | 1.448    |
| Germany         | 4.326| 2.131 | 6.288 | 1.113    |
| Greece          | 3.662| -7.233| 9.825 | 4.351    |
| Hungary         | 1.432| -1.215| 3.186 | 1.720    |
| Iceland         | 5.591| 2.763 | 8.000 | 1.550    |
| Ireland         | 1.567| -0.079| 4.839 | 1.632    |
| Italy           | 4.371| 1.332 | 7.997 | 2.166    |
| Japan           | 2.098| 0.088 | 3.673 | 1.066    |
| Korea           | 4.711| 0.862 | 8.871 | 2.694    |
| Mexico          | 4.845| -1.568| 16.744| 4.321    |
| Netherlands     | 2.704| 0.796 | 4.976 | 1.071    |
| New Zealand     | 4.535| 2.122 | 7.387 | 1.468    |
| Norway          | 4.179| -1.344| 7.436 | 2.115    |
| Poland          | 4.382| 3.034 | 5.451 | 1.022    |
| Portugal        | 3.970| 2.033 | 7.289 | 1.647    |
| Slovak Republic | -0.349| -3.696| 3.808 | 2.685    |
| Spain           | 4.523| 1.263 | 7.956 | 2.143    |
| Sweden          | 4.684| 1.248 | 7.788 | 1.942    |
| Switzerland     | 1.853| -1.057| 4.106 | 1.185    |
| United Kingdom  | 4.206| 0.977 | 6.707 | 1.433    |
| United States   | 3.872| 0.897 | 8.138 | 1.906    |

| All             | 4.010| -7.233| 16.744| 2.303    |

Source: Own elaboration based on OECD Main Economic Indicators, IFS, and National Sources.

\textsuperscript{1} Real effective long term rates calculated as nominal rates minus effective inflation in the year. Nominal long term rates corresponds to 10 year government bonds or similar. For Chile indexed bonds yields are used. Year averages.
Table A.9: Descriptive Statistics for Real Stock Returns by Country

| Country          | mean  | min   | max   | st. dev. |
|------------------|-------|-------|-------|----------|
| Australia        | 3.236 | -6.930| 13.666| 6.803    |
| Austria          | 0.214 | -10.571| 10.999| 15.252   |
| Belgium          | 7.258 | -21.659| 35.240| 15.062   |
| Canada           | 3.965 | -24.217| 28.142| 12.499   |
| Chile            | 2.663 | -32.983| 27.590| 16.487   |
| Czech Republic   | 14.235| -33.835| 40.992| 30.287   |
| Denmark          | 8.933 | -21.735| 49.235| 18.504   |
| Finland          | 8.229 | -57.899| 61.773| 36.661   |
| France           | 2.791 | -26.417| 29.879| 18.528   |
| Germany          | 4.919 | -29.558| 31.118| 18.865   |
| Greece           | 4.746 | -43.945| 67.555| 30.773   |
| Hungary          | 4.473 | -33.609| 43.942| 26.845   |
| Iceland          | 12.757| -38.385| 46.953| 23.057   |
| Ireland          | 7.517 | -24.900| 31.969| 18.579   |
| Italy            | 1.165 | -39.873| 69.081| 26.233   |
| Japan            | -3.807| -35.093| 24.585| 18.928   |
| Korea            | 1.083 | -54.076| 66.551| 28.792   |
| Mexico           | 9.665 | -42.743| 34.965| 22.416   |
| Netherlands      | 1.642 | -36.478| 38.252| 23.711   |
| New Zealand      | 1.412 | -33.298| 20.973| 12.657   |
| Norway           | 8.587 | -25.134| 42.439| 21.201   |
| Poland           | 11.236| -33.104| 36.536| 25.433   |
| Portugal         | 3.381 | -27.630| 43.256| 24.531   |
| Slovak Republic  | 14.402| -12.408| 69.236| 26.099   |
| Spain            | 6.883 | -22.058| 62.705| 22.421   |
| Sweden           | 10.666| -37.691| 57.308| 23.887   |
| Switzerland      | 5.185 | -28.461| 33.663| 16.974   |
| United Kingdom   | 3.317 | -21.184| 20.634| 12.746   |
| United States    | 6.194 | -15.271| 26.400| 11.281   |
| All              | 5.427 | -57.899| 69.236| 20.635   |

Source: Own elaboration based on OECD Main Economic Indicators and IFS.

Note: Computed as the log changes of real stock market indices for domestic markets in each country. All indices deflated by domestic CPIs.
Table A.10: Descriptive Statistics for Real Aggregate Demand by Country

(in percents)

| Country          | mean  | min  | max  | st. dev. |
|------------------|-------|------|------|----------|
| Australia        | 3.832 | 0.268| 6.111| 1.947    |
| Austria          | 2.282 | 2.024| 2.539| 0.364    |
| Belgium          | 2.014 | -0.880| 4.503| 1.353    |
| Canada           | 3.038 | -1.303| 5.315| 1.680    |
| Chile            | 4.576 | -4.657|10.219| 4.180    |
| Czech Republic   | 3.234 | 1.792| 4.536| 1.130    |
| Denmark          | 1.893 | -3.230| 7.291| 2.492    |
| Finland          | 1.692 | -6.278| 6.297| 4.275    |
| France           | 1.865 | -0.560| 3.818| 1.236    |
| Germany          | 1.722 | -1.752| 4.469| 1.699    |
| Greece           | 2.999 | -1.141| 5.869| 2.129    |
| Hungary          | 3.404 | -0.915| 9.159| 3.437    |
| Iceland          | 4.088 | -2.549|12.425| 4.364    |
| Ireland          | 6.659 | 3.537| 9.185| 2.401    |
| Italy            | 1.452 | -4.536| 4.557| 2.096    |
| Japan            | 0.923 | -2.229| 2.975| 1.215    |
| Korea            | 4.118 | -15.019|10.001| 5.758    |
| Mexico           | 2.929 | -13.258| 8.283| 5.671    |
| Netherlands      | 2.213 | -3.490| 5.316| 2.184    |
| New Zealand      | 3.609 | -1.107| 7.261| 2.296    |
| Norway           | 2.689 | -1.609| 6.415| 2.207    |
| Poland           | 2.945 | -0.387| 6.857| 2.584    |
| Portugal         | 3.855 | -0.548| 6.553| 2.117    |
| Slovak Republic  | 4.507 | -0.598| 8.413| 3.213    |
| Spain            | 3.146 | -2.748| 7.471| 2.728    |
| Sweden           | 1.712 | -4.057| 4.488| 2.074    |
| Switzerland      | 1.602 | -1.708| 3.429| 1.289    |
| United Kingdom   | 2.844 | -1.676| 6.905| 1.827    |
| United States    | 3.214 | -0.542| 6.202| 1.606    |
| All              | 2.695 | -15.019|12.425| 2.774    |

Source: Own elaboration based on OECD Main Economic Indicators.

Note: Computed as the log changes of the sum of real private consumption (household and non-profits), real government final consumption and real gross fixed capital formation.
Table A.11: Descriptive Statistics for Assets to GDP by Country

(in percents)

| Country          | mean   | min   | max   | st. dev. |
|------------------|--------|-------|-------|----------|
| Australia        | 105.178| 95.213| 118.581| 7.749    |
| Austria          | 247.809| 241.259| 254.359| 9.263    |
| Belgium          | 291.774| 219.571| 365.779| 35.033   |
| Canada           | 140.348| 110.685| 180.169| 21.132   |
| Chile            | 100.584| 82.520| 136.346| 15.642   |
| Czech Republic   | 109.361| 97.288| 124.122| 11.223   |
| Denmark          | 114.330| 77.119| 148.415| 20.222   |
| Finland          | 122.673| 97.217| 146.150| 15.154   |
| France           | 236.109| 224.426| 254.429| 8.765    |
| Germany          | 168.793| 116.938| 268.464| 49.278   |
| Greece           | 69.855 | 50.866| 104.403| 20.704   |
| Hungary          | 73.632 | 59.700| 94.819 | 13.226   |
| Iceland          | 88.277 | 54.556| 147.149| 35.562   |
| Ireland          | 337.898| 147.228| 500.307| 116.351  |
| Italy            | 155.749| 117.336| 222.295| 30.046   |
| Japan            | 166.883| 141.734| 225.223| 24.361   |
| Korea            | 94.198 | 56.608| 131.700| 27.326   |
| Mexico           | 46.236 | 33.261| 61.285 | 8.326    |
| Netherlands      | 384.141| 213.657| 597.025| 129.745  |
| New Zealand      | 137.906| 103.211| 186.810| 26.750   |
| Norway           | 80.465 | 52.668| 159.743| 24.827   |
| Poland           | 57.889 | 56.830| 59.240 | 1.058    |
| Portugal         | 148.646| 103.170| 197.532| 36.319   |
| Slovak Republic  | 85.934 | 77.060| 93.154 | 6.226    |
| Spain            | 139.707| 105.691| 176.582| 21.246   |
| Sweden           | 97.837 | 69.222| 144.522| 22.638   |
| Switzerland      | 409.050| 258.519| 660.909| 119.501  |
| United Kingdom   | 149.411| 73.870| 392.820| 84.457   |
| United States    | 93.180 | 79.512| 113.440| 12.628   |
| All              | 160.274| 33.261| 660.909| 108.564  |

Source: Own elaboration based on OECD Bank Statistics and OECD Main Economic Indicators.
B Time Series Properties of Individual Variables

Here I present an analysis of the time series properties of the individual series used in the benchmark model. To facilitate comparison dependent variables are the explanatory variables used in the benchmark regressions with the same timing convention and restricting the sample to the sample of model (2).
Table B.1: Estimation of Time Series Process for Credit Growth ($\Delta \ell_{it}$)

| Dependent Variable: $\Delta \ell_{it}$ | (1)  | (2)  | (3)  | (4)  | (5)  | (6)  | (7)  | (8)  |
|----------------------------------------|------|------|------|------|------|------|------|------|
| $\Delta \ell_{i,t-1}$                  | OLS  | FE   | OLS  | FE   | OLS  | GMM  | GMM  | GMM  |
|                                        |      |      | 2 collapsed | 4 collapsed | 6 collapsed | 2 collapsed | 4 collapsed | 6 collapsed |
|                                        | 0.273*** | 0.154* | 0.350*** | 0.300*** | 0.285*** | 0.369*** | 0.324*** | 0.312*** |
|                                        | (0.0811) | (0.0832) | (0.1000) | (0.0970) | (0.0976) | (0.105) | (0.0987) | (0.100) |
| $\Delta \ell_{i,t-2}$                  | OLS  | FE   | OLS  | FE   | OLS  | GMM  | GMM  | GMM  |
|                                        | 0.230*** | 0.132** | 0.327*** | 0.277*** | 0.259*** | 0.324*** | 0.277*** | 0.266*** |
|                                        | (0.0766) | (0.0534) | (0.0816) | (0.0659) | (0.0666) | (0.0866) | (0.0727) | (0.0735) |
| Year effects                           | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  |
| Country effects\(^1\)                  | No   | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  | Yes  |
| $\Delta \ell_{i,t-1} + \Delta \ell_{i,t-2}$ | 0.504 | 0.285 | 0.678 | 0.577 | 0.544 | 0.693 | 0.601 | 0.578 |
| $\sigma^2_{\mu_i}/\sigma^2_{\nu_i}$   | 0.219 |      |      |      |      |      |      |      |
| Sargan test                            | 0.429 | 0.173 | 0.0699 | 0.292 | 0.188 | 0.110 |
| Hansen test                            | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| $H_0$: residuals are serially uncorrelated |       |      |      |      |      |      |      |      |
| Arellano-Bond for AR(2)                | 0.201 | 0.345 | 0.435 | 0.235 | 0.409 | 0.465 |
| Arellano-Bond for AR(3)                | 0.212 | 0.262 | 0.285 | 0.229 | 0.276 | 0.287 |
| Number of instruments                  | 30   | 32   | 34   | 32   | 34   | 34   | 36   |      |
| $R^2$                                  | 0.315 | 0.247 |      |      |      |      |      |      |
| Number observations                    | 464  | 464  | 448  | 448  | 448  | 464  | 464  | 464  |
| Number countries                       | 29   | 29   | 29   | 29   | 29   | 29   | 29   | 29   |

Notes: \(^1\) Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. $R^2$ for FE correspond to the within $R^2$. Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.2: Estimation of Time Series Process for ROE

| Dependent Variable: ROE<sub>i,t-1</sub> | (1) OLS | (2) FE | Difference GMM | (3) 2 collapsed | (4) 4 collapsed | (5) 6 collapsed | (6) System GMM | (7) 2 collapsed | (8) 4 collapsed | (9) 6 collapsed |
|----------------------------------------|--------|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| ROE<sub>i,t-2</sub>                    | 0.518*** (0.145) | 0.427*** (0.0738) | 0.493*** (0.105) | 0.519*** (0.0831) | 0.533*** (0.0825) | 0.476*** (0.109) | 0.496*** (0.0908) | 0.505*** (0.0916) |
| Year effects                           | Yes   | Yes   | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            |
| Country effects<sup>1</sup>             | No    | Yes   | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            |

**Notes:**
- Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. 
- Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
- <sup>1</sup>ROE<sub>i,t-1</sub> and ROE<sub>i,t-2</sub> are measured in percentage terms.
- All regressions include year effects.
- The numbers of instruments and observations are reported for the FE specification.
- The numbers of instruments, observations, and countries are reported for the difference GMM specifications.
Table B.3: Estimation of Time Series Process for CAPITAL

| Dependent Variable: CAP_{t, t-1} | (1) OLS | (2) FE | (3) difference GMM | (4) 2 collapsed | (5) 4 collapsed | (6) 6 collapsed | (7) system GMM | (8) 2 collapsed | (9) 4 collapsed | (10) 6 collapsed |
|-----------------------------------|-------|------|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CAP_{t, t-2}                      | 0.828*** (0.0922) | 0.535*** (0.120) | 0.341          | 0.347          | 0.348          | 0.359*         | 0.373*         | 0.371*         |                  |                  |
| Year effects                      | Yes   | Yes  | Yes               | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            |                  |
| Country effects\(^1\)            | No    | Yes  | Yes               | Yes            | Yes            | Yes            | Yes            | Yes            | Yes            |                  |
| \(\sigma^2_{\mu}/\sigma^2_{\nu}\) |       |      |                   | 0.551          |                |                |                |                |                |                  |
| H\(_0\): joint validity of moment restrictions |       |      |                   |                |                |                |                |                |                |                  |
| Sargan test                       |       |      |                   | 0.042          | 0.086          | 0.208          | 0.147          | 0.175          | 0.318          |                  |
| Hansen test                       |       |      |                   | 1.000          | 1.000          | 1.000          | 1.000          | 1.000          | 1.000          |                  |
| H\(_0\): residuals are serially uncorrelated |       |      |                   | 0.001          | 0.001          | 0.001          | 0.005          | 0.005          | 0.005          | 0.005          |
| Arellano-Bond for AR(2)           |       |      |                   | 0.005          | 0.005          | 0.005          | 0.006          | 0.005          | 0.006          | 0.006          |
| Arellano-Bond for AR(3)           |       |      |                   | 0.005          | 0.005          | 0.005          | 0.006          | 0.005          | 0.006          | 0.006          |
| Number of instruments             |       |      |                   | 30             | 32             | 34             | 32             | 34             | 36             |                  |
| \(R^2\)                           |       |      |                   | 0.696          | 0.342          |                |                |                |                |                  |
| Number observations              |       |      |                   | 480            | 480            | 464            | 464            | 464            | 480            | 480            |
| Number countries                  |       |      |                   | 29             | 29             | 29             | 29             | 29             | 29             | 29             |

Notes: \(^1\)Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. \(R^2\) for FE correspond to the within \(R^2\). Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.4: Estimation of Time Series Process for BSL

| Dependent Variable: BSL_{t-1} | (1)       | (2)       | (3)       | (4)       | (5)       | (6)       | (7)       | (8)       |
|-------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| OLS                           |           |           |           |           |           |           |           |           |
| FE                            |           |           |           |           |           |           |           |           |
| difference GMM                |           |           |           |           |           |           |           |           |
| 2 collapsed                   |           |           |           |           |           |           |           |           |
| 4 collapsed                   |           |           |           |           |           |           |           |           |
| 6 collapsed                   |           |           |           |           |           |           |           |           |
| system GMM                    |           |           |           |           |           |           |           |           |
| 2 collapsed                   |           |           |           |           |           |           |           |           |
| 4 collapsed                   |           |           |           |           |           |           |           |           |
| 6 collapsed                   |           |           |           |           |           |           |           |           |
| BSL_{t-2}                     | 0.943***  | 0.836***  | 1.182***  | 1.054***  | 1.051***  | 1.144***  | 1.052***  | 1.057***  |
|                               | (0.0159)  | (0.0342)  | (0.165)   | (0.133)   | (0.134)   | (0.0743)  | (0.0574)  | (0.0606)  |
| Year effects                  | Yes       | Yes       | Yes       | Yes       | Yes       | Yes       | Yes       | Yes       |
| Country effects¹              | No        | Yes       | Yes       | Yes       | Yes       | Yes       | Yes       | Yes       |
| $\sigma^2_{\mu}/\sigma^2_{\nu}$ |           |           |           |           |           |           |           |           |
| $H_0$: joint validity of moment restrictions |           |           |           |           |           |           |           |           |
| Sargan test                   | 0.004     | 0.002     | 0.00322   | 0.0216    | 0.00312   | 0.00721   |           |           |
| Hansen test                   | 1.000     | 1.000     | 1.000     | 1.000     | 1.000     | 1.000     |           |           |
| $H_0$: residuals are serially uncorrelated |           |           |           |           |           |           |           |           |
| Arellano-Bond for AR(2)       | 0.434     | 0.383     | 0.381     | 0.442     | 0.409     | 0.410     |           |           |
| Arellano-Bond for AR(3)       | 0.646     | 0.604     | 0.604     | 0.628     | 0.594     | 0.595     |           |           |
| Number of instruments         | 30        | 32        | 34        | 32        | 34        | 36        |           |           |
| $R^2$                         | 0.896     | 0.778     |           |           |           |           |           |           |
| Number observations           | 480       | 480       | 464       | 464       | 464       | 480       | 480       | 480       |
| Number countries              | 29        | 29        | 29        | 29        | 29        | 29        | 29        | 29        |

Notes: ¹ Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. $R^2$ for FE correspond to the within $R^2$. Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.5: Estimation of Time Series Process for DEPOSIT COSTS

| Dependent Variable: DEPOSIT COSTS<sub>i,t-1</sub> | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| OLS difference GMM system GMM                |     |     |     |     |     |     |     |     |
| DEPOSIT COSTS<sub>i,t-2</sub>                | 0.881*** | 0.657*** | 1.139*** | 1.086*** | 0.992*** | 0.766*** | 0.760*** | 0.753*** |
| (0.0457) (0.101)                              |     |     |     |     |     |     |     |     |
| Year effects                                  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects<sup>1</sup>                   | No  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| σ_μ<sup>2</sup> / σ_v<sup>2</sup>             | 0.470 |
| H<sub>0</sub>: joint validity of moment restrictions |     |     |     |     |     |     |     |     |
| Sargan test                                   | 0.223 | 0.360 | 0.004 | 0.082 | 0.220 | 0.003 |
| Hansen test                                   | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| H<sub>0</sub>: residuals are serially uncorrelated |     |     |     |     |     |     |     |     |
| Arellano-Bond for AR(2)                       | 0.395 | 0.392 | 0.386 | 0.255 | 0.259 | 0.273 |
| Arellano-Bond for AR(3)                       | 0.731 | 0.742 | 0.762 | 0.792 | 0.800 | 0.806 |
| Number of instruments                         | 30  | 32  | 34  | 32  | 34  | 36  |
| R<sup>2</sup>                                  | 0.855 | 0.698 |
| Number observations                           | 477 | 477 | 459 | 459 | 477 | 477 |
| Number countries                              | 29  | 29  | 29  | 29  | 29  | 29  |

Notes: <sup>1</sup> Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. R<sup>2</sup> for FE correspond to the within R<sup>2</sup>. Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.6: Estimation of Time Series Process for LENDING RATE

| Dependent Variable: | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| LENDING RATE <i>_i</i>, <i>_t</i> − 1 | OLS | FE | difference GMM | GMM 2 collapsed | 4 collapsed | 6 collapsed | 2 collapsed | 4 collapsed | 6 collapsed |
| LENDING RATE <i>_i</i>, <i>_t</i> − 2 | 0.745*** | 0.517*** | 0.559*** | 0.557*** | 0.535*** | 0.587*** | 0.593*** | 0.585*** |
| (0.0903) | (0.115) | (0.0878) | (0.0957) | (0.0994) | (0.125) | (0.124) | (0.125) |
| Year effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects<sup>1</sup> | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| σ<sub>μ</sub>/σ<sub>v</sub> | 0.315 |
| H<sub>0</sub>: joint validity of moment restrictions |
| Sargan test | 0.567 | 0.915 | 0.571 | 0.105 | 0.338 | 0.364 |
| Hansen test | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| H<sub>0</sub>: residuals are serially uncorrelated |
| Arellano-Bond for AR(2) | 0.721 | 0.719 | 0.722 | 0.743 | 0.744 | 0.745 |
| Arellano-Bond for AR(3) | 0.254 | 0.236 | 0.232 | 0.255 | 0.247 | 0.247 |
| Number of instruments | 30 | 32 | 34 | 32 | 34 | 36 |
| R<sup>2</sup> | 0.669 | 0.509 |
| Number observations | 476 | 476 | 473 | 473 | 473 | 476 | 476 |
| Number countries | 29 | 29 | 28 | 28 | 28 | 29 | 29 |

Notes: <sup>1</sup> Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. R<sup>2</sup> for FE correspond to the within R<sup>2</sup>. Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.7: Estimation of Time Series Process for PROVISIONS

| Dependent Variable: PROVISIONS<sub>i, t-1</sub> | (1)   | (2)   | (3)   | (4)   | (5)   | (6)   | (7)   | (8)   |
|-----------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| OLS                                          |       |       |       |       |       |       |       |       |
| FE GMM                                       |       |       |       |       |       |       |       |       |
| FE difference GMM                            |       |       |       |       |       |       |       |       |
| System GMM                                   |       |       |       |       |       |       |       |       |
| 2 collapsed                                  |       |       |       |       |       |       |       |       |
| 4 collapsed                                  |       |       |       |       |       |       |       |       |
| 6 collapsed                                  |       |       |       |       |       |       |       |       |
| σ²/σ²υ                                      | 0.405 |       |       |       |       |       |       |       |
| H₀: joint validity of moment restrictions    |       |       |       |       |       |       |       |       |
| Sargan test                                  | 0.923 | 0.072 | 0.194 | 0.981 | 0.123 | 0.282 |       |       |
| Hansen test                                  | 0.999 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |       |       |
| H₀: residuals are serially uncorrelated       |       |       |       |       |       |       |       |       |
| Arellano-Bond for AR(2)                      | 0.591 | 0.608 | 0.607 | 0.606 | 0.624 | 0.624 |       |       |
| Arellano-Bond for AR(3)                      | 0.211 | 0.213 | 0.212 | 0.200 | 0.202 | 0.201 |       |       |
| Number of instruments                        | 30    | 32    | 34    | 32    | 34    | 36    |       |       |
| R²                                           | 0.509 | 0.349 |       |       |       |       |       |       |
| Number observations                          | 479   | 479   | 463   | 463   | 463   | 479   | 479   | 479   |
| Number countries                             | 29    | 29    | 29    | 29    | 29    | 29    | 29    | 29    |

Notes: ¹ Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. R² for FE correspond to the within R². Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.8: Estimation of Time Series Process for LONG TERM RATES

| Dependent Variable: LONG TERM RATE_{i,t-1} | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|-------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| OLS FE difference GMM system GMM         | 2 collapsed | 4 collapsed | 6 collapsed | 2 collapsed | 4 collapsed | 6 collapsed | 2 collapsed | 4 collapsed | 6 collapsed |
| LONG TERM RATE_{i,t-2}                   | 0.609*** | 0.453*** | 0.591 | 0.479 | 0.366 | 0.735*** | 0.685*** | 0.648*** |
| (0.104) (0.142) (0.573) (0.375) (0.301) (0.216) (0.182) (0.184) |     |     |     |     |     |     |     |     |
| Year effects                              | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects¹                          | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| σ²u/σ²v                                  | 0.197 |
| H₀: joint validity of moment restrictions |     |     |     |     |     |     |     |     |
| Sargan test                               | 0.019 | 0.052 | 0.028 | 0.080 | 0.135 | 0.088 |
| Hansen test                               | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| H₀: residuals are serially uncorrelated   |     |     |     |     |     |     |     |     |
| Arellano-Bond for AR(2)                   | 0.888 | 0.891 | 0.933 | 0.862 | 0.849 | 0.844 |
| Arellano-Bond for AR(3)                   | 0.261 | 0.291 | 0.345 | 0.254 | 0.260 | 0.270 |
| Number of instruments                     | 30 | 32 | 34 | 32 | 34 | 36 |
| R²                                        | 0.642 | 0.568 |
| Number observations                       | 470 | 470 | 461 | 461 | 461 | 470 | 470 |
| Number countries                          | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Notes: ¹ Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. R² for FE correspond to the within R². Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.9: Estimation of Time Series Process for STOCK RETURNS

| Dependent Variable: STOCK RETURNS<sub>i,t-1</sub> | (1) OLS | (2) FE | (3) difference GMM 2 collapsed | (4) difference GMM 4 collapsed | (5) difference GMM 6 collapsed | (6) system GMM 2 collapsed | (7) system GMM 4 collapsed | (8) system GMM 6 collapsed |
|---|---|---|---|---|---|---|---|---|
| STOCK RETURNS<sub>i,t-2</sub> | 0.224*** (0.0742) | 0.186*** (0.0439) | 0.402* (0.209) | 0.350 (0.218) | 0.351 (0.217) | 0.477** (0.212) | 0.442** (0.222) | 0.435* (0.224) |
| Year effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects<sup>1</sup> | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| \( \frac{\sigma^2}{\mu^2} \) | 0.0966 | | | | | | | |
| \( H_0: \text{joint validity of moment restrictions} \) | Sargan test | 0.805 | 0.709 | 0.910 | 0.928 | 0.936 | 0.982 |
| | Hansen test | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| \( H_0: \text{residuals are serially uncorrelated} \) | Arellano-Bond for AR(2) | 0.859 | 0.953 | 0.949 | 0.762 | 0.820 | 0.832 |
| | Arellano-Bond for AR(3) | 0.575 | 0.590 | 0.591 | 0.552 | 0.554 | 0.554 |
| Number of instruments | | 30 | 32 | 34 | 32 | 34 | 36 |
| \( R^2 \) | | 0.495 | 0.502 | | | | |
| Number observations | | 477 | 477 | 475 | 475 | 475 | 477 | 477 |
| Number countries | | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Notes: <sup>1</sup> Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. \( R^2 \) for FE correspond to the within \( R^2 \). Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table B.10: Estimation of Time Series Process for ΔAGG. DEMAND

| Dependent Variable: ΔAGG. DEMAND<sub>i,t-1</sub> | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| OLS                                            | OLS | FE  | difference GMM | difference GMM system GMM | difference GMM system GMM | difference GMM system GMM | difference GMM system GMM | difference GMM system GMM |
| ΔAGG. DEMAND<sub>i,t-2</sub>                   | 0.402*** | 0.304*** | 0.423** | 0.379** | 0.375** | 0.344* | 0.304 | 0.305 |
| Year effects                                   | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects<sup>1</sup>                    | No  | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| σ<sup>2</sup> / σ<sup>2</sup>                  | 0.128 |
| H<sub>0</sub>: joint validity of moment restrictions | Sargan test | 0.284 | 0.453 | 0.726 | 0.335 | 0.324 | 0.541 |
|                                                | Hansen test | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| H<sub>0</sub>: residuals are serially uncorrelated | Arellano-Bond for AR(2) | 0.987 | 0.903 | 0.891 | 0.822 | 0.726 | 0.730 |
|                                                | Arellano-Bond for AR(3) | 0.655 | 0.604 | 0.604 | 0.584 | 0.530 | 0.528 |
| Number of instruments                          | 30  | 32  | 34  | 32  | 34  | 32  | 34  | 36  |
| R<sup>2</sup>                                   | 0.323 | 0.273 |
| Number observations                            | 479 | 479 | 478 | 478 | 478 | 479 | 479 | 479 |
| Number countries                               | 29  | 29  | 29  | 29  | 29  | 29  | 29  | 29  |

Notes: 1 Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. R<sup>2</sup> for FE correspond to the within R<sup>2</sup>. Heteroskedasticity robust standard errors in parentheses. *** *, *, * denote significant at 1%, 5% and 10%, respectively.
Table B.11: Estimation of Time Series Process for ASSETS/GDP

| Dependent Variable: \( \frac{ASSETS}{GDP} \_t \) | (1) OLS | (2) FE | difference GMM | (3) 2 collapsed | 4 collapsed | 6 collapsed | (4) 2 collapsed | 4 collapsed | 6 collapsed | (5) system GMM | 2 collapsed | 4 collapsed | 6 collapsed |
|-----------------------------------------------|--------|-------|----------------|----------------|-------------|-------------|----------------|-------------|-------------|----------------|-------------|-------------|-------------|
| \( \frac{ASSETS}{GDP} \_t \_1 \)               |        |       |                |                |             |             |                |             |             |                |             |             |             |
| 1.038***                                      | 0.986*** |       | 0.837***       | 0.835***       | 0.833***    | 1.106***    | 1.106***       | 1.104***    |             |                |             |             |             |
| (0.0115)                                      | (0.0182) |       | (0.110)        | (0.111)        | (0.110)     | (0.0219)    | (0.0230)       | (0.0229)    |             |                |             |             |             |
| Year effects                                  | Yes    | Yes   | Yes            | Yes            | Yes         | Yes         | Yes            | Yes         |             |                |             |             |             |
| Country effects\(^1\)                         | No     | Yes   | Yes            | Yes            | Yes         | Yes         | Yes            | Yes         |             |                |             |             |             |
| \( \frac{\sigma^2_k}{\sigma^2_v} \)          | 0.574  |       |                |                |             |             |                |             |             |                |             |             |             |
| \( H_0: \) joint validity of moment restrictions | Sargan test | 0.086 | 0.119 | 0.308 | 0.034 | 0.0401 | 0.081 |
|                                               | Hansen test | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| \( H_0: \) residuals are serially uncorrelated | Arellano-Bond for AR(2) | 0.229 | 0.229 | 0.227 | 0.252 | 0.252 | 0.252 |
|                                               | Arellano-Bond for AR(3) | 0.167 | 0.166 | 0.169 | 0.146 | 0.146 | 0.148 |
| Number of instruments                         | 30     | 32    | 34             | 32             | 34          | 36          |                |             |             |                |             |             |             |
| \( R^2 \)                                     | 0.985  | 0.941 |                |                |             |             |                |             |             |                |             |             |             |
| Number observations                           | 479    | 479   | 462            | 462            | 462         | 479         | 479            | 479         |             |                |             |             |             |
| Number countries                              | 29     | 29    | 29             | 29             | 29          | 29          | 29             | 29          |             |                |             |             |             |

Notes: \(^1\) Fixed Effects (FE) and difference GMM regressions eliminate country effects by taking differences. \( R^2 \) for FE correspond to the within \( R^2 \). Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
C Additional Regressions

Table C.1: System GMM Estimates of the Effect of Bank Financial Position on Credit Growth

residuals serially correlated (order 1)

| Dependent Variable: Δℓ_{it} | 4 lags | 4 collapsed | 12 collapsed | all collapsed |
|-----------------------------|--------|-------------|--------------|---------------|
|                             | (1)    | (2)         | (3)          | (4)           |
| Δℓ_{it-1}                   | 0.318*** | 0.308**     | 0.222***     | 0.214***     |
|                             | (0.054) | (0.126)     | (0.072)      | (0.071)       |
| ROE_{it-1}                  | 0.050   | 0.117       | 0.117**      | 0.054         |
|                             | (0.066) | (0.101)     | (0.058)      | (0.061)       |
| CAP_{it-1}                  | -0.074  | -1.072      | 1.722        | 0.384         |
|                             | (0.151) | (2.228)     | (2.122)      | (0.718)       |
| CAP_{it-1}^{2}              | 0.008   | 0.032       | -0.143       | -0.031        |
|                             | (0.016) | (0.127)     | (0.142)      | (0.056)       |
| BSL_{it-1}                  | 0.076   | -0.019      | 0.006        | -0.009        |
|                             | (0.050) | (0.177)     | (0.144)      | (0.081)       |
| DEPOSIT COSTS_{it-1}        | -0.243** | -0.367*     | -0.311*      | -0.288***     |
|                             | (0.102) | (0.217)     | (0.175)      | (0.132)       |
| PROVISIONS_{it-1}           | -0.068  | 0.084       | 0.450        | -0.212        |
|                             | (0.315) | (1.263)     | (0.678)      | (0.450)       |
| LENDING RATE_{it}           | 0.424** | 0.213       | 0.324        | 0.666***      |
|                             | (0.177) | (0.731)     | (0.457)      | (0.243)       |
| LONG TERM RATE_{it}         | 0.491** | 0.465       | 0.794***     | 0.396         |
|                             | (0.237) | (0.737)     | (0.399)      | (0.345)       |
| STOCK RETURNS_{it}          | 0.044** | 0.112       | 0.074*       | 0.052***      |
|                             | (0.017) | (0.082)     | (0.040)      | (0.017)       |
| ΔAGG. DEMAND_{it}           | 1.250*** | 0.372       | 0.780***     | 1.161***      |
|                             | (0.217) | (0.452)     | (0.248)      | (0.230)       |
| ASSETS/GDP_{it-1}           | 0.005   | 0.004       | 0.011        | 0.014*        |
|                             | (0.004) | (0.015)     | (0.010)      | (0.008)       |

H₀: CAP_{it-1} = 0
CAP_{it-1}^{2} = 0 [p-value] [0.852] [0.777] [0.509] [0.854]

Year effects Yes Yes Yes Yes
Country effects Yes Yes Yes Yes

Number observations 480 480 480 480
Number countries 29 29 29 29
Number of instruments 480 73 169 383
H₀: joint validity of moment restrictions
Sargan [p-value] [0.655] [0.363] [0.739] [0.137]
Hansen [p-value] [1.000] [1.000] [1.000] [1.000]
H₀: residuals are serially uncorrelated
Arellano-Bond for AR(2) [p-value] [0.003] [0.017] [0.004] [0.004]
Arellano-Bond for AR(3) [p-value] [0.028] [0.095] [0.037] [0.043]

Notes: ¹Fixed Effects (FE) and Arellano-Bond regressions eliminate country effects by taking first differences. Heteroskedasticity robust standard errors in parentheses. ***, **, * denote significant at 1%, 5% and 10%, respectively.
### Table 1: Bank Groups and sample with information for loan growth by Country

| #  | Country         | Bank Group          | Sample     | Number of observations |
|----|-----------------|---------------------|------------|------------------------|
| 1  | Australia       | All banks           | 1987-2003  | 17                     |
| 2  | Austria         | All banks           | 1988-2008  | 21                     |
| 3  | Belgium         | All banks           | 1982-2009  | 28                     |
| 4  | Canada†         | All banks           | 1983-2009  | 27                     |
| 5  | Chile           | All banks           | 1991-2009  | 19                     |
| 6  | Czech Republic  | All banks           | 1994-2005  | 12                     |
| 7  | Denmark         | All banks           | 1980-2008  | 29                     |
| 8  | Finland         | All banks           | 1980-2009  | 30                     |
| 9  | France          | All banks           | 1989-2008  | 20                     |
| 10 | Germany         | All banks           | 1980-2008  | 29                     |
| 11 | Greece†         | Commercial banks    | 1980-2009  | 30                     |
| 12 | Hungary         | Commercial banks    | 1995-2008  | 14                     |
| 13 | Iceland         | All banks           | 1980-2003  | 24                     |
| 14 | Ireland         | All banks           | 1996-2008  | 13                     |
| 15 | Italy           | All banks           | 1985-2009  | 25                     |
| 16 | Japan           | All banks           | 1990-2008  | 19                     |
| 17 | Korea           | All banks           | 1991-2008  | 18                     |
| 18 | Luxembourg      | All banks           | 1980-2008  | 29                     |
| 19 | Mexico†         | All banks           | 1991-2009  | 19                     |
| 20 | Netherlands     | All banks           | 1980-2009  | 30                     |
| 21 | New Zealand     | All banks           | 1991-2009  | 19                     |
| 22 | Norway          | All banks           | 1980-2009  | 30                     |
| 23 | Poland          | All banks           | 1994-2008  | 15                     |
| 24 | Portugal        | Commercial banks    | 1980-2008  | 29                     |
| 25 | Slovak Republic | All banks           | 1997-2009  | 13                     |
| 26 | Spain           | All banks           | 1980-2008  | 29                     |
| 27 | Sweden          | All banks           | 1980-2008  | 29                     |
| 28 | Switzerland     | All banks           | 1980-2008  | 29                     |
| 29 | Turkey          | Commercial banks    | 1982-2009  | 28                     |
| 30 | United Kingdom  | Large commercial banks | 1985-2008 | 24                     |
| 31 | United States†  | All banks           | 1980-2007  | 28                     |

| All | 726 |
|-----|-----|
| Average | 23.42 |

Source: Own elaboration based on OECD Bank Statistics.

Notes: †Canada all banks chained with commercial banks for 1982-1987. Greece all banks chained with large commercial banks for 1979-1988. Mexico all banks chained with commercial banks for 1990-1999. US all banks chained with the sum of commercial, saving and cooperative banks for 1979.
Table 2: Number of Observations and Sample Period for Benchmark Regression by Country

| Country            | Observations | Sample Period  |
|--------------------|--------------|----------------|
| 1 Australia        | 13           | 1991 – 2003    |
| 2 Austria          | 2            | 1998 – 1999    |
| 3 Belgium          | 25           | 1983 – 2007    |
| 4 Canada           | 25           | 1984 – 2008    |
| 5 Chile            | 14           | 1996 – 2009    |
| 6 Czech Republic   | 5            | 2001 – 2005    |
| 7 Denmark          | 22           | 1981 – 2002    |
| 8 Finland          | 16           | 1988 – 2004    |
| 9 France           | 15           | 1990 – 2004    |
| 10 Germany         | 22           | 1981 – 2002    |
| 11 Greece          | 13           | 1986 – 2003    |
| 12 Hungary         | 8            | 2001 – 2008    |
| 13 Iceland         | 10           | 1994 – 2003    |
| 14 Ireland         | 9            | 1997 – 2005    |
| 15 Italy           | 24           | 1986 – 2009    |
| 16 Japan           | 18           | 1991 – 2008    |
| 17 Korea           | 17           | 1992 – 2008    |
| 18 Mexico          | 12           | 1995 – 2007    |
| 19 Netherlands     | 16           | 1994 – 2009    |
| 20 New Zealand     | 17           | 1992 – 2008    |
| 21 Norway          | 27           | 1981 – 2008    |
| 22 Poland          | 6            | 2001 – 2006    |
| 23 Portugal        | 11           | 1989 – 1999    |
| 24 Slovak Republic | 8            | 2000 – 2007    |
| 25 Spain           | 22           | 1981 – 2002    |
| 26 Sweden          | 25           | 1981 – 2005    |
| 27 Switzerland     | 28           | 1981 – 2008    |
| 28 United Kingdom  | 23           | 1986 – 2008    |
| 29 United States   | 27           | 1981 – 2007    |
| All                | 480          | 1981 – 2009    |

Average 16.55 1989.72 – 2005.55
Min 2 1981 – 1999
Max 28 2001 – 2009

Source: Own elaboration based on OECD Bank Statistics, OECD Main Economic Indicators, IFS, and National Sources.
Table 3: Bank Variables Means by Country

(in percents)

| Country          | $\Delta \ell_{it}$ | ROE$_{it-1}$ | CAP$_{it-1}$ | BSL$_{it-1}$ |
|------------------|--------------------|--------------|--------------|--------------|
| Australia        | 5.711              | 9.152        | 10.096       | 7.096        |
| Austria          | 5.990              | 8.003        | 4.621        | 16.025       |
| Belgium          | 3.976              | 9.267        | 3.071        | 29.528       |
| Canada           | 3.628              | 12.720       | 5.279        | 17.304       |
| Chile            | 7.093              | 13.011       | 8.517        | 16.060       |
| Czech Republic   | 2.011              | 9.744        | 8.483        | 23.766       |
| Denmark          | 5.244              | 6.774        | 7.628        | 24.411       |
| Finland          | 2.369              | 0.014        | 6.820        | 16.673       |
| France           | 1.255              | 6.150        | 4.260        | 16.710       |
| Germany          | 4.572              | 6.114        | 3.793        | 17.598       |
| Greece           | 13.733             | 14.109       | 5.732        | 33.412       |
| Hungary          | 13.757             | 15.414       | 9.326        | 16.430       |
| Iceland          | 13.134             | 8.737        | 7.321        | 13.562       |
| Ireland          | 21.998             | 13.356       | 5.911        | 23.902       |
| Italy            | 4.826              | 7.307        | 6.435        | 14.829       |
| Japan            | -1.056             | -1.992       | 3.951        | 19.669       |
| Korea            | 12.331             | -0.023       | 5.775        | 17.291       |
| Mexico           | -2.156             | 6.920        | 7.349        | 26.933       |
| Netherlands      | 6.768              | 10.864       | 3.878        | 21.291       |
| New Zealand      | 8.270              | 16.752       | 5.700        | 11.114       |
| Norway           | 7.509              | 5.033        | 5.457        | 15.747       |
| Poland           | 6.805              | 10.240       | 9.492        | 22.104       |
| Portugal         | 10.508             | 7.084        | 9.863        | 21.373       |
| Slovak Republic  | 4.234              | 12.174       | 7.325        | 25.821       |
| Spain            | 5.194              | 8.600        | 7.862        | 18.756       |
| Sweden           | 4.110              | 9.999        | 5.762        | 21.514       |
| Switzerland      | 3.289              | 8.415        | 5.904        | 14.995       |
| United Kingdom   | 9.240              | 13.102       | 4.560        | 14.950       |
| United States    | 2.575              | 9.698        | 6.730        | 19.119       |
| All              | 5.812              | 8.536        | 6.087        | 18.924       |

Source: Own elaboration based on OECD Bank Statistics and OECD Main Economic Indicators.
| Country          | DEPOSIT COSTS<sub>i,t−1</sub> | PROVISIONS<sub>i,t−1</sub> | LENDING RATE<sub>i</sub> | LONG-TERM RATE<sub>i</sub> | STOCK RETURNS<sub>i</sub> | Δ AGG. DEMAND<sub>i</sub> | ASSETS TO GDP<sub>i</sub> |
|-----------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Australia       | 8.758                         | 0.704                       | 7.060                       | 4.835                       | 3.236                       | 3.832                       | 105.178                     |
| Austria         | 8.607                         | 0.733                       | 5.284                       | 3.950                       | 0.214                       | 2.282                       | 247.809                     |
| Belgium         | 20.617                        | 0.638                       | 6.924                       | 4.449                       | 7.258                       | 2.014                       | 291.774                     |
| Canada          | 6.998                         | 0.549                       | 4.889                       | 4.466                       | 3.965                       | 3.038                       | 140.348                     |
| Chile           | 11.880                        | 1.111                       | 7.133                       | 4.571                       | 2.665                       | 4.576                       | 100.584                     |
| Czech Republic  | 4.129                         | -1.628                      | 4.066                       | 2.465                       | 14.235                      | 3.234                       | 109.361                     |
| Denmark         | 10.115                        | 1.959                       | 7.663                       | 5.749                       | 8.933                       | 1.893                       | 114.330                     |
| Finland         | 9.517                         | 0.172                       | 5.106                       | 5.466                       | 8.229                       | 1.692                       | 122.673                     |
| France          | 21.712                        | 0.870                       | 5.796                       | 4.361                       | 2.791                       | 1.865                       | 236.109                     |
| Germany         | 9.316                         | 0.618                       | 8.101                       | 4.326                       | 4.919                       | 1.722                       | 168.793                     |
| Greece          | 10.019                        | 1.186                       | 9.644                       | 3.662                       | 4.746                       | 2.999                       | 69.855                      |
| Hungary         | 8.298                         | 0.411                       | 4.165                       | 1.432                       | 4.473                       | 3.404                       | 73.632                      |
| Iceland         | 11.769                        | 1.490                       | 10.466                      | 5.591                       | 12.757                      | 4.088                       | 88.277                      |
| Ireland         | 9.511                         | 0.196                       | 0.997                       | 1.567                       | 7.517                       | 6.659                       | 337.898                     |
| Italy           | 11.190                        | 1.197                       | 6.517                       | 4.371                       | 1.165                       | 1.452                       | 155.749                     |
| Japan           | 2.907                         | 0.564                       | 2.450                       | 2.098                       | -3.807                      | 0.923                       | 166.883                     |
| Korea           | 6.984                         | 1.524                       | 4.358                       | 4.711                       | 1.083                       | 4.118                       | 94.198                      |
| Mexico          | 20.288                        | 1.962                       | 5.880                       | 4.845                       | 9.665                       | 2.929                       | 46.236                      |
| Netherlands     | 9.225                         | 0.305                       | 2.511                       | 2.704                       | 1.642                       | 2.213                       | 384.141                     |
| New Zealand     | 6.863                         | 0.198                       | 7.904                       | 4.535                       | 1.412                       | 3.609                       | 137.906                     |
| Norway          | 9.879                         | 0.924                       | 6.335                       | 4.179                       | 8.587                       | 2.689                       | 80.465                      |
| Poland          | 7.280                         | 1.881                       | 7.118                       | 4.382                       | 11.236                      | 2.945                       | 57.889                      |
| Portugal        | 11.265                        | 2.476                       | 8.424                       | 3.970                       | 3.381                       | 3.855                       | 148.646                     |
| Slovak Republic | 5.707                         | -0.395                      | 3.463                       | -0.349                      | 14.402                      | 4.507                       | 85.934                      |
| Spain           | 9.180                         | 1.406                       | 4.886                       | 4.523                       | 6.883                       | 3.146                       | 139.707                     |
| Sweden          | 12.141                        | 0.076                       | 6.546                       | 4.684                       | 10.666                      | 1.712                       | 97.837                      |
| Switzerland     | 7.339                         | 1.001                       | 2.759                       | 1.853                       | 5.185                       | 1.602                       | 409.050                     |
| United Kingdom  | 6.881                         | 0.912                       | 4.345                       | 4.206                       | 3.317                       | 2.844                       | 149.411                     |
| United States   | 6.870                         | 0.761                       | 5.194                       | 3.872                       | 6.194                       | 3.214                       | 93.180                      |
| All             | 9.991                         | 0.864                       | 5.725                       | 4.010                       | 5.427                       | 2.695                       | 160.274                     |

Source: Own elaboration based on OECD Bank Statistics, OECD Main Economic Indicators, IFS, and National Sources.
Table 5: Estimations by OLS, Fixed Effects and Difference GMM
(1 lag of Δℓit)

| Dependent Variable: Δℓit | (1)          | (2)          | (3)          | (4)          | (5)          | (6)          |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Δℓit−1                   | 0.318***     | 0.188**      | 0.182**      | 0.182**      | 0.106        | 0.148*       |
|                          | (0.0590)     | (0.0799)     | (0.0745)     | (0.0745)     | (0.0799)     | (0.0802)     |
| ROEit−1                  | 0.0505       | 0.0446       | 0.0446       | 0.0451       | -0.00231     | -0.00934     |
|                          | (0.0746)     | (0.0623)     | (0.0582)     | (0.0580)     | (0.0714)     | (0.0566)     |
| CAPit−1                  | -0.0741      | -0.178       | -0.203       | -0.198       | -0.434       | -0.508       |
|                          | (0.156)      | (0.145)      | (0.126)      | (0.128)      | (0.541)      | (0.392)      |
| CAPit−1                  | 0.00751      | 0.0384*      | 0.0373*      | 0.0382*      | 0.0312       | 0.0341       |
|                          | (0.0191)     | (0.0214)     | (0.0206)     | (0.0199)     | (0.0709)     | (0.0405)     |
| BSLit−1                  | 0.0759       | 0.177*       | 0.191*       | 0.194**      | 0.0149       | 0.0564       |
|                          | (0.0537)     | (0.0991)     | (0.0980)     | (0.0961)     | (0.398)      | (0.320)      |
| DEPOSIT COSTSit−1        | -0.243***    | -0.0519      | -0.0710      | -0.0674      | -0.222       | -0.314       |
|                          | (0.0695)     | (0.152)      | (0.147)      | (0.148)      | (0.236)      | (0.289)      |
| PROVISIONSit−1           | -0.0681      | -0.428       | -0.484       | -0.479       | -0.727       | -0.632       |
|                          | (0.488)      | (0.533)      | (0.499)      | (0.498)      | (1.154)      | (0.738)      |
| LENDING RATEit           | 0.424**      | 0.106        | 0.0875       | 0.0939       | 1.500*       | 0.913        |
|                          | (0.188)      | (0.271)      | (0.263)      | (0.261)      | (0.856)      | (0.731)      |
| LONG TERM RATEit         | 0.491*       | 1.068**      | 1.150***     | 1.148***     | -0.0499      | 0.573        |
|                          | (0.254)      | (0.390)      | (0.393)      | (0.393)      | (1.014)      | (0.837)      |
| STOCK RETURNSit          | 0.0436*      | 0.0269       | 0.0298       | 0.0303       | 0.205***     | 0.150***     |
|                          | (0.0245)     | (0.0201)     | (0.0186)     | (0.0187)     | (0.0600)     | (0.0484)     |
| ΔAGG. DEMANDit           | 1.250***     | 1.079***     | 1.101***     | 1.097***     | 0.694        | 0.515        |
|                          | (0.00389)    | (0.0111)     | (0.0113)     | (0.0110)     | (0.0463)     | (0.0291)     |
| ASSETS/GDPit−1           | 0.00548      | -0.0309***   | -0.0325***   | -0.0324***   | -0.103***    | -0.0761***   |
|                          | (0.0039)     | (0.0111)     | (0.0113)     | (0.0110)     | (0.0463)     | (0.0291)     |
| Year effects             | Yes          | Yes          | Yes          | Yes          | Yes          | Yes          |
| Country effects          | No           | Yes          | Yes          | Yes          | Yes          | Yes          |
| H0: CAPit−1 = CAPit−1 = 0| [0.882]      | [0.021]      | [0.004]      | [0.004]      | [0.059]      | [0.018]      |
| H0: joint validity of moment restrictions | Sargan test | [0.134] | [0.146] | [0.053] | [0.252] |
|                          | Hansen test  | [1.000]      | [1.000]      | [1.000]      | [1.000]      |
| H0: residuals are serially uncorrelated | Arellano-Bond for AR(2) | [0.004] | [0.004] | [0.013] | [0.014] |
|                          | Arellano-Bond for AR(3) | [0.054] | [0.054] | [0.235] | [0.170] |
| Number of instruments    | 444          | 446          | 52           | 100          |
| R²                        | 0.462        | 0.435        |
| Number observations      | 480          | 480          | 446          | 446          |
| Number countries         | 29           | 29           | 29           | 29           |

Notes: 1Fixed Effects (FE) and Difference GMM regressions eliminate country effects by taking differences. R² for FE corresponds to the within R². k lags means k lags are used to instrument each explanatory variable, i.e. xit−1, ..., xit−k are used as instruments for Δxit when xit is a predetermined variable and xit−2, ..., xit−k are used as instruments for Δxit when xit is an endogenous variable. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. *** , ** , * denote significant at 1%, 5% and 10%, respectively.
### Table 6: Estimations by OLS, Fixed Effects and GMM

(2 lags of $\Delta \ell_t$)

| Dependent Variable: $\Delta \ell_{it}$ | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------------------------|-----|-----|-----|-----|-----|-----|
|                                       | OLS | FE  | 2 collapsed | 6 collapsed | 2 collapsed | 6 collapsed |
| $\Delta \ell_{it-1}$                 | 0.215*** | 0.151** | 0.153** | 0.170** | 0.243*** | 0.232*** |
|                                       | (0.0632) | (0.0630) | (0.0742) | (0.0711) | (0.0603) | (0.0623) |
| $\Delta \ell_{it-2}$                 | 0.267*** | 0.208*** | 0.204*** | 0.213*** | 0.241*** | 0.241*** |
|                                       | (0.0629) | (0.0515) | (0.0634) | (0.0565) | (0.0618) | (0.0506) |
| ROE$_{it-1}$                         | 0.0519 | 0.0465 | 0.0296 | 0.0181 | 0.0598 | 0.0617 |
|                                       | (0.0614) | (0.0578) | (0.0815) | (0.0564) | (0.0651) | (0.0549) |
| CAP$_{it-1}$                         | -0.173 | -0.223* | -0.747 | -0.569** | -0.389* | -0.253 |
|                                       | (0.156) | (0.124) | (0.466) | (0.278) | (0.221) | (0.225) |
| CAP$_{it-1}$                         | 0.0127 | 0.0389** | 0.00241 | 0.0221 | 0.0521 | 0.0603** |
|                                       | (0.0191) | (0.0188) | (0.0642) | (0.0416) | (0.0355) | (0.0294) |
| BSL$_{it-1}$                         | 0.107* | 0.211** | 0.0661 | 0.168 | 0.0886 | 0.0703 |
|                                       | (0.0553) | (0.0950) | (0.421) | (0.274) | (0.185) | (0.153) |
| DEPOSIT COSTS$_{it-1}$               | -0.297*** | -0.113 | -0.367 | -0.467 | -0.486*** | -0.398*** |
|                                       | (0.0765) | (0.142) | (0.266) | (0.301) | (0.158) | (0.147) |
| PROVISIONS$_{it-1}$                  | -0.0787 | -0.334 | -0.0118 | -0.00792 | 0.288 | 0.335 |
|                                       | (0.453) | (0.495) | (1.025) | (0.672) | (0.678) | (0.463) |
| LENDING RATE$_{it}$                  | 0.410** | 0.0466 | 1.744 | 0.580 | 1.521* | 0.454 |
|                                       | (0.187) | (0.248) | (1.078) | (0.700) | (0.840) | (0.535) |
| LONG TERM RATE$_{it}$                | 0.548** | 1.163*** | -0.0436 | 0.755 | -0.405 | 0.826 |
|                                       | (0.269) | (0.370) | (1.191) | (0.754) | (0.895) | (0.614) |
| STOCK RETURNS$_{it}$                 | 0.0493** | 0.0347 | 0.225*** | 0.152*** | 0.243*** | 0.162*** |
|                                       | (0.0230) | (0.0208) | (0.0677) | (0.0460) | (0.0602) | (0.0416) |
| $\Delta$ AGG. DEMAND$_{it}$         | 1.193*** | 1.093*** | 0.560 | 0.462 | 0.723* | 0.551** |
|                                       | (0.164) | (0.215) | (0.434) | (0.304) | (0.380) | (0.229) |
| ASSETS/GDP$_{it-1}$                  | 0.00477 | -0.0291*** | -0.0702 | -0.0369 | 0.00939 | 0.00749 |
|                                       | (0.00399) | (0.0104) | (0.0549) | (0.0353) | (0.0138) | (0.0118) |
| Year effects                          | Yes | Yes | Yes | Yes | Yes | Yes |
| Country effects$^1$                   | No | Yes | Yes | Yes | Yes | Yes |
| $\Delta \ell_{it-1} + \Delta \ell_{it-2}$ | 0.482 | 0.359 | 0.356 | 0.383 | 0.483 | 0.473 |
| $H_0$: $\text{CAP}_{it-1} = \text{CAP}_{it-1}^2 = 0$ | [0.538] | [0.028] | [0.033] | [0.048] | [0.029] | [0.067] |
| $H_0$: joint validity of moment restrictions | Sargan test | [0.717] | [0.742] | [0.771] | [0.886] |
|                                          | Hansen test | [1.000] | [1.000] | [1.000] | [1.000] |
| $H_0$: residuals are serially uncorrelated | Arellano-Bond for AR(2) | [0.691] | [0.754] | [0.983] | [0.985] |
|                                          | Arellano-Bond for AR(3) | [0.611] | [0.642] | [0.701] | [0.700] |
| Number of instruments                   | 52 | 100 | 65 | 113 |
| $R^2$                                  | 0.510 | 0.467 |
| Number observations                    | 464 | 464 | 430 | 430 | 464 | 464 |
| Number countries                       | 29 | 29 | 29 | 29 | 29 | 29 |

Notes: $^1$Fixed Effects (FE) regressions eliminate country effects by taking first differences. $R^2$ for FE corresponds to the within $R^2$. $k$ lags means $k$ lags are used to instrument each explanatory variable, i.e. $x_{it-1}, \ldots, x_{it-k}$ are used as instruments for $\Delta x_{it}$ when $x_{it}$ is a predetermined variable and $x_{it-2}, \ldots, x_{it-1-k}$ are used as instruments for $\Delta x_{it}$ when $x_{it}$ is an endogenous variable. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table 7: Estimates of the Effect of Bank Financial Position on Credit Growth

| Dependent Variable: $\Delta \ell_{it}$ | (1)      | (2)       | (3)       | (4)       | (5)       | (6)       |
|--------------------------------------|----------|-----------|-----------|-----------|-----------|-----------|
| $\Delta \ell_{i,t-1}$                | 0.243*** | 0.233***  | 0.266***  | 0.247***  | 0.227***  | 0.235***  |
|                                      | (0.0603) | (0.0604)  | (0.0609)  | (0.0614)  | (0.0583)  | (0.0638)  |
| $\Delta \ell_{i,t-2}$                | 0.241*** | 0.241***  | 0.249***  | 0.235***  | 0.230***  | 0.235***  |
|                                      | (0.0618) | (0.0581)  | (0.0607)  | (0.0661)  | (0.0607)  | (0.0590)  |
| $\text{ROE}_{i,t-1}$                 | 0.0598   | 0.0554    |           | 0.165*    | 0.0568    |           |
|                                      | (0.0651) | (0.0649)  |           | (0.0997)  | (0.0631)  |           |
| $\text{ROE}^2_{i,t-1}$               |          |           |           | 0.00174*  |           |           |
|                                      |          |           |           | (0.00103) |           |           |
| $\text{CAP}_{i,t-1}$                 | -0.389*  | -0.295    | -0.465**  | -0.414*   |           |           |
|                                      | (0.221)  | (0.264)   | (0.230)   | (0.244)   |           |           |
| $\text{CAP}^2_{i,t-1}$               | 0.0521   | 0.0515    | 0.0558*   | 0.0453    |           |           |
|                                      | (0.0355) | (0.0398)  | (0.0331)  | (0.0349)  |           |           |
| $\text{BSL}_{i,t-1}$                 | 0.0886   | 0.0553    | 0.0957    | 0.116     |           |           |
|                                      | (0.185)  | (0.211)   | (0.184)   | (0.744)   |           |           |
| $\text{BSL}^2_{i,t-1}$               |          |           |           | -0.00152  |           |           |
|                                      |          |           |           | (0.0183)  |           |           |
| $\text{DEPOSIT COSTS}_{i,t-1}$        | -0.486***| -0.562*** | -0.479*** | -0.568*** | -0.486*** | -0.529*** |
|                                      | (0.158)  | (0.178)   | (0.184)   | (0.184)   | (0.150)   | (0.153)   |
| $\text{PROVISIONS}_{i,t-1}$          | 0.288    | 0.416     | -0.0590   | 0.0967    | 0.550     | 0.375     |
|                                      | (0.678)  | (0.658)   | (0.611)   | (0.638)   | (0.608)   | (0.638)   |
| $\text{LENDING RATE}_{it}$           | 1.521*   | 1.713*    | 1.770**   | 1.661**   | 1.339     | 1.802**   |
|                                      | (0.840)  | (0.890)   | (0.865)   | (0.846)   | (0.857)   | (0.789)   |
| $\text{LONG TERM RATE}_{it}$         | -0.405   | -0.737    | -0.611    | -0.921    | -0.319    | -0.652    |
|                                      | (0.895)  | (0.951)   | (0.879)   | (0.946)   | (0.867)   | (0.876)   |
| $\text{STOCK RETURNS}_{it}$          | 0.243*** | 0.224***  | 0.242***  | 0.239***  | 0.237***  | 0.258***  |
|                                      | (0.0602) | (0.0716)  | (0.0686)  | (0.0646)  | (0.0582)  | (0.0587)  |
| $\Delta \text{AGG. DEMAND}_{it}$     | 0.723*   | 0.833**   | 0.893**   | 0.858**   | 0.620     | 0.865**   |
|                                      | (0.380)  | (0.407)   | (0.402)   | (0.404)   | (0.384)   | (0.350)   |
| $\frac{\text{ASSETS}}{\text{GDP}}_{i,t-1}$ | 0.00939 | 0.00901 | 0.0106 | 0.00921 | 0.00892 | 0.0111 |
|                                      | (0.0138) | (0.0126) | (0.0140) | (0.0121) | (0.0129) | (0.0133) |
| $\Delta \ell_{i,t-1} + \Delta \ell_{i,t-2}$ | 0.483 | 0.473 | 0.515 | 0.482 | 0.457 | 0.470 |
| $H_0$: $\text{CAP}_{i,t-1} = \text{CAP}^2_{i,t-1} = 0$ | [0.029] | [0.076] | [0.019] | [0.023] |
| $H_0$: $\text{ROE}_{i,t-1} = \text{ROE}^2_{i,t-1} = 0$ | [0.189] |
| $H_0$: $\text{BSL}_{i,t-1} = \text{BSL}^2_{i,t-1} = 0$ | [0.950] |
| $H_0$: joint validity of moment restrictions |           |           |           |           |           |           |
| Sargan test                           | [0.771]  | [0.693]   | [0.638]   | [0.689]   | [0.869]   | [0.871]   |
| Hansen test                           | [1.000]  | [1.000]   | [1.000]   | [1.000]   | [1.000]   | [1.000]   |
| $H_0$: residuals are serially uncorrelated |           |           |           |           |           |           |
| Arellano-Bond for AR(2)               | [0.983]  | [0.972]   | [0.922]   | [0.967]   | [0.859]   | [0.985]   |
| Number of instruments                 | 65       | 56        | 59        | 56        | 68        | 71        |
| Number observations                   | 464      | 464       | 464       | 464       | 464       | 464       |
| Number countries                      | 29       | 29        | 29        | 29        | 29        | 29        |

Notes: System GMM estimates using 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table 8: Estimates Using Alternative Measures of Banks’ Profits

| Dependent Variable: $\Delta\ell_{it}$ | (1) | (2) | (3) | (4) |
|--------------------------------------|-----|-----|-----|-----|
|                                       | ROE even if $E < 0$ | ROA | ROA and LEVERAGE |
| $\Delta\ell_{i,t-1}$                 | 0.243*** | 0.243*** | 0.223*** | 0.233*** |
|                                       | (0.0603) | (0.0603) | (0.0542) | (0.0591) |
| $\Delta\ell_{i,t-2}$                 | 0.241*** | 0.241*** | 0.233*** | 0.236*** |
|                                       | (0.0618) | (0.0618) | (0.0599) | (0.0602) |
| ROE$_{i,t-1}$                        | 0.0598 | 0.0594 | (0.0651) | (0.0652) |
| ROA$_{i,t-1}$                        | 1.917 | 1.882 | (1.451) | (1.845) |
| LEVERAGE$_{i,t-1}$                   | -1.570 | (1.849) |
| CAP$_{i,t-1}$                        | -0.389* | -0.399* | -0.433* | -15.40 |
|                                       | (0.221) | (0.223) | (0.245) | (21.27) |
| CAP$_{i,t-1}^2$                      | 0.0521 | 0.0528 | 0.0505 | 0.799 |
|                                       | (0.0355) | (0.0357) | (0.0307) | (1.142) |
| BSL$_{i,t-1}$                        | 0.0886 | 0.0884 | 0.0655 | 0.0630 |
|                                       | (0.185) | (0.185) | (0.180) | (0.148) |
| DEPOSIT COSTS$_{i,t-1}$              | -0.486*** | -0.486*** | -0.506*** | -0.415* |
|                                       | (0.158) | (0.158) | (0.149) | (0.217) |
| PROVISIONS$_{i,t-1}$                 | 0.288 | 0.285 | 0.561 | 0.0378 |
|                                       | (0.678) | (0.677) | (0.829) | (1.095) |
| LENDING RATE$_{it}$                  | 1.521* | 1.522* | 1.484* | 1.475* |
|                                       | (0.840) | (0.840) | (0.841) | (0.864) |
| LONG TERM RATE$_{it}$                | -0.405 | -0.407 | -0.313 | -0.379 |
|                                       | (0.895) | (0.895) | (0.841) | (0.826) |
| STOCK RETURNS$_{it}$                 | 0.243*** | 0.243*** | 0.236*** | 0.264*** |
|                                       | (0.0602) | (0.0602) | (0.0595) | (0.0642) |
| AGG. DEMAND$_{it}$                   | 0.723* | 0.724* | 0.603 | 0.730* |
|                                       | (0.380) | (0.380) | (0.425) | (0.415) |
| ASSETS/GDP$_{i,t-1}$                 | 0.00939 | 0.00939 | 0.0112 | 0.00900 |
|                                       | (0.0138) | (0.0138) | (0.0144) | (0.0149) |
| $\Delta\ell_{i,t-1} + \Delta\ell_{i,t-2}$ | 0.483 | 0.483 | 0.457 | 0.469 |
| $H_0$: CAP$_{i,t-1} = CAP^2_{i,t-1} = 0$ | [0.029] | [0.029] | [0.025] | [0.692] |
| $H_0$: ROA$_{i,t-1} = LEVERAGE_{i,t-1} = 0$ | [0.490] |
| $H_0$: joint validity of moment restrictions | Sargan test | [0.771] | [0.771] | [0.629] | [0.810] |
| Hansen test | [1.000] | [1.000] | [1.000] | [1.000] |
| $H_0$: residuals are serially uncorrelated | Arellano-Bond for AR(2) | [0.983] | [0.983] | [0.984] | [0.947] |

Notes: System GMM estimates using 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table 9: Estimates Using Alternative Measures of Banks’ Liquidity

| Dependent Variable: \( \Delta \ell_{it} \) | (1)       | (2)       | (3)       | (4)       | (5)       |
|------------------------------------------|-----------|-----------|-----------|-----------|-----------|
| \( \Delta \ell_{i,t-1} \)              | 0.243***  | 0.358***  | 0.405***  | 0.228***  | 0.243***  |
|                                          | (0.0603)  | (0.0713)  | (0.0925)  | (0.0628)  | (0.0599)  |
| \( \Delta \ell_{i,t-2} \)              | 0.241***  | 0.0558    | 0.227***  | 0.232***  | 0.265***  |
|                                          | (0.0618)  | (0.0858)  | (0.0819)  | (0.0577)  | (0.0477)  |
| ROE\(_{i,t-1} \)                        | 0.0598    | 0.414**   | -0.291*** | 0.0681    | 0.0874    |
|                                          | (0.0651)  | (0.175)   | (0.0987)  | (0.0650)  | (0.0661)  |
| CAP\(_{i,t-1} \)                        | -0.389*   | -0.963*** | -0.674*   | -0.392*   | -0.358    |
|                                          | (0.221)   | (0.348)   | (0.394)   | (0.235)   | (0.250)   |
| CAP\(_{i,t-1}^2 \)                      | 0.0521    | 0.0145    | 0.0292    | 0.0491    | 0.0472    |
|                                          | (0.0355)  | (0.0363)  | (0.0357)  | (0.0338)  | (0.0332)  |
| BSL\(_{i,t-1} \)                        | 0.0886    | 0.191     |           |           |           |
|                                          | (0.185)   | (0.183)   |           |           |           |
| BSL\(_{i,t-1} \) * Small\(_{i,t-1} \)  |           |           | 0.00874*  |           |           |
|                                          |           |           | (0.00526) |           |           |
| (SEC+RES)/ASSETS\(_{i,t-1} \)          |           |           | -0.0588   |           |           |
|                                          |           |           | (0.131)   |           |           |
| DEPOSIT COSTS\(_{i,t-1} \)             | -0.486*** | -0.241    | -0.644**  | -0.489*** | -0.563*** |
|                                          | (0.158)   | (0.251)   | (0.313)   | (0.152)   | (0.171)   |
| PROVISIONS\(_{i,t-1} \)                | 0.288     | -0.00191  | -1.859*   | 0.289     | 0.593     |
|                                          | (0.678)   | (1.138)   | (1.037)   | (0.659)   | (0.582)   |
| LENDING RATE\(_{it} \)                 | 1.521*    | -0.531    | 0.0682    | 1.833**   | 1.824*    |
|                                          | (0.840)   | (0.541)   | (0.531)   | (0.911)   | (0.952)   |
| LONG TERM RATE\(_{it} \)               | -0.405    | 0.556     | 1.279     | -0.462    | -0.405    |
|                                          | (0.895)   | (1.107)   | (0.819)   | (0.893)   | (0.818)   |
| STOCK RETURNS\(_{it} \)                | 0.243***  | -0.0357   | 0.122     | 0.233***  | 0.207***  |
|                                          | (0.0602)  | (0.0887)  | (0.0814)  | (0.0606)  | (0.0682)  |
| \( \Delta \text{AGG. DEMAND}_{it} \)   | 0.723*    | -0.271    | -0.771    | 0.868**   | 0.802**   |
|                                          | (0.380)   | (0.785)   | (0.863)   | (0.379)   | (0.395)   |
| ASSETS/GDP\(_{i,t-1} \)                | 0.00939   | -0.0233** | -0.0205   | 0.0113    | -0.00333  |
|                                          | (0.0138)  | (0.0116)  | (0.0166)  | (0.0150)  | (0.0143)  |
| \( \Delta \ell_{i,t-1} + \Delta \ell_{i,t-2} \) | 0.483     | 0.414     | 0.632     | 0.460     | 0.508     |
| \( H_0: \ CAP_{i,t-1} = \text{CAP}_{i,t-1}^2 = 0 \) | [0.029]   | [0.00008] | [0.046]   | [0.022]   | [0.068]   |
| \( H_0: \) joint validity of moment restrictions | Sargan test | [0.771]   | [0.002]   | [0.002]   | [0.779]   | [0.423]   |
|                                          | Hansen test | [1.000]   | [1.000]   | [1.000]   | [1.000]   |
| \( H_0: \) residuals are serially uncorrelated | Arellano-Bond for AR(2) | [0.983]   | [0.940]   | [0.171]   | [0.970]   | [0.992]   |
| Number of instruments                    | 65        | 65        | 65        | 65        | 65        |
| Number observations                     | 464       | 249       | 249       | 464       | 464       |
| Number countries                        | 29        | 18        | 18        | 29        | 29        |

Notes: System GMM estimates using, 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Table 10: Estimates Using Alternative Measures of Banks’ Capital

| Dependent Variable: Δℓ_{it} | (1)         | (2)         | (3)         | (4)         |
|------------------------------|-------------|-------------|-------------|-------------|
| Δℓ_{i,t-1}                  | 0.243***    | 0.240***    | 0.237***    | 0.232***    |
|                             | (0.0603)    | (0.0586)    | (0.0635)    | (0.0625)    |
| Δℓ_{i,t-2}                  | 0.241***    | 0.240***    | 0.244***    | 0.236***    |
|                             | (0.0618)    | (0.0626)    | (0.0619)    | (0.0605)    |
| ROE_{i,t-1}                | 0.0598      | 0.0474      | 0.0555      | 0.0591      |
|                             | (0.0651)    | (0.0660)    | (0.0628)    | (0.0644)    |
| CAP_{i,t-1}                | -0.389*     |             |             |             |
|                             | (0.221)     |             |             |             |
| CAP_{i,t-1}^2              | 0.0521      |             |             |             |
|                             | (0.0355)    |             |             |             |
| CAP_{i,t-1} * (CAP_{i,t-1} ≥ P25) | 0.0754    |             |             |             |
|                             | (0.807)     |             |             |             |
| CAP_{i,t-1} * (CAP_{i,t-1} ≥ 4%)         | 0.292      |             |             |             |
|                             | (0.363)     |             |             |             |
| CAP_{i,t-1} * (CAP_{i,t-1} ≥ 6%)         | 0.258        |             |             |             |
|                             | (0.218)     |             |             |             |
| BSL_{i,t-1}                | 0.0886      | 0.105       | 0.0919      | 0.0753      |
|                             | (0.185)     | (0.212)     | (0.185)     | (0.177)     |
| DEPOSIT COSTS_{i,t-1}      | -0.486***   | -0.478***   | -0.509***   | -0.551***   |
|                             | (0.158)     | (0.174)     | (0.168)     | (0.171)     |
| PROVISIONS_{i,t-1}         | 0.288       | 0.198       | 0.427       | 0.504       |
|                             | (0.678)     | (0.671)     | (0.708)     | (0.715)     |
| LENDING RATE_{it}          | 1.521*      | 1.404*      | 1.561*      | 1.707***    |
|                             | (0.840)     | (0.798)     | (0.869)     | (0.861)     |
| LONG TERM RATE_{it}        | -0.405      | -0.476      | -0.464      | -0.544      |
|                             | (0.895)     | (0.889)     | (0.931)     | (0.933)     |
| STOCK RETURNS_{it}         | 0.243***    | 0.210***    | 0.233***    | 0.241***    |
|                             | (0.0602)    | (0.0551)    | (0.0640)    | (0.0650)    |
| ΔAGG. DEMAND_{it}          | 0.723*      | 0.669*      | 0.740*      | 0.883***    |
|                             | (0.380)     | (0.368)     | (0.400)     | (0.375)     |
| ASSETS/GDP_{i,t-1}         | 0.00939     | 0.00550     | 0.00917     | 0.0128      |
|                             | (0.0138)    | (0.0112)    | (0.0133)    | (0.0146)    |
| Δℓ_{i,t-1} + Δℓ_{i,t-2}    | 0.483       | 0.479       | 0.482       | 0.467       |
| H0: CAP_{i,t-1} = CAP_{i,t-1}^2 = 0 | [0.029]    |             |             |             |
| H0: joint validity of moment restrictions |           |             |             |             |
| Sargan test                 | [0.771]     | [0.542]     | [0.767]     | [0.700]     |
| Hansen test                 | [1.000]     | [1.000]     | [1.000]     | [1.000]     |
| H0: residuals are serially uncorrelated |           |             |             |             |
| Arellano-Bond for AR(2)    | [0.983]     | [0.985]     | [0.947]     | [0.998]     |
| Number of instruments      | 65          | 62          | 62          | 62          |
| Number observations        | 464         | 464         | 464         | 464         |
| Number countries           | 29          | 29          | 29          | 29          |

Notes: System GMM estimates using, 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
### Table 11: Robustness Checks I: Definition of Deposit Costs, Provisions and Organization of Bank Sector

| Dependent Variable: \( \Delta \ell_{it} \) | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | DEPOSIT RATE | LARGE | restricted sample | LOAN PROVISIONS | restricted sample | |
| \( \Delta \ell_{i,t-1} \) | 0.243*** | 0.300*** | 0.350*** | 0.350*** | 0.247*** | 0.225*** |
| | (0.0603) | (0.0708) | (0.0709) | (0.106) | (0.0757) | (0.0732) |
| \( \Delta \ell_{i,t-2} \) | 0.241*** | 0.265*** | 0.0783 | -0.301*** | -0.0339 | 0.0414 |
| | (0.0618) | (0.0477) | (0.0841) | (0.0825) | (0.0533) | (0.0551) |
| ROE\( i_{t-1} \) | 0.0598 | 0.0607 | 0.407** | -0.301*** | -0.0339 | 0.0414 |
| | (0.0651) | (0.0633) | (0.183) | (0.0730) | (0.0594) | (0.0614) |
| CAP\( i_{t-1} \) | -0.389* | -0.110 | -0.876*** | -0.648* | -0.135 | -0.256 |
| | (0.221) | (0.186) | (0.310) | (0.358) | (0.234) | (0.287) |
| CAP\( ^2 \)\( i_{t-1} \) | 0.0521 | 0.0790*** | 0.0243 | 0.0409 | 0.0347 | 0.0377 |
| | (0.0355) | (0.0317) | (0.0367) | (0.0409) | (0.0347) | (0.0377) |
| BSL\( i_{t-1} \) | 0.0886 | 0.395** | 0.163 | 0.204 | 0.538*** | 0.453** |
| | (0.185) | (0.186) | (0.190) | (0.178) | (0.179) | (0.201) |
| DEPOSIT COSTS\( i_{t-1} \) | -0.486*** | -0.370 | -0.297 | -0.388*** | -0.506*** |
| | (0.158) | (0.228) | (0.208) | (0.140) | (0.116) |
| DEPOSIT RATE\( it \) | 1.280 | 0.823 |
| | | |
| PROVISIONS\( i_{t-1} \) | 0.288 | -0.0816 | 0.155 | -1.972** | 0.324 |
| | (0.678) | (0.859) | (1.105) | (0.854) | (0.754) |
| LOAN PROVISIONS\( i_{t-1} \) | | | | | | -1.476* |
| | | | | | | (0.819) |
| LENDING RATE\( it \) | 1.521* | 0.471 | -0.330 | 0.0128 | 1.366*** | 1.711** |
| | (0.840) | (0.794) | (0.470) | (0.471) | (0.652) | (0.840) |
| LONG TERM RATE\( it \) | -0.405 | -0.284 | 0.634 | 1.184 | -0.252 | -0.0590 |
| | (0.895) | (1.250) | (0.714) | (0.876) | (0.676) | (0.773) |
| STOCK RETURNS\( it \) | 0.243*** | 0.225*** | -0.00534 | 0.0745 | 0.228*** | 0.231*** |
| | (0.0602) | (0.0463) | (0.0797) | (0.0960) | (0.0686) | (0.0695) |
| \( \Delta \)A\( G\)G. DEMAND\( it \) | 0.723* | 0.928*** | -0.178 | -0.599 | 0.746*** | 0.721** |
| | (0.380) | (0.356) | (0.735) | (0.797) | (0.242) | (0.315) |
| ASSETS/GDP\( i_{t-1} \) | 0.00939 | 0.00618 | -0.0196** | -0.0221* | 0.0151 | 0.0189 |
| | (0.0138) | (0.0134) | (0.00992) | (0.0132) | (0.0104) | (0.0145) |
| LARGE\( i_{t-1} \) | 0.0645 | 0.0585 |
| | | |
| \( \Delta \ell_{i,t-1} + \Delta \ell_{i,t-2} \) | 0.483 | 0.565 | 0.429 | 0.562 | 0.549 | 0.530 |
| | | | | | | |
| \( H_0: \) CAP\( i_{t-1} = \) CAP\( ^2 \)\( i_{t-1} = 0 \) | [0.029] | [0.031] | [0.000] | [0.079] | [0.00002] | [0.000001] |
| \( H_0: \) joint validity of moment restrictions | Sargan test | [0.771] | [0.648] | [0.002] | [0.0005] | [0.317] | [0.206] |
| | Hansen test | [1.000] | [1.000] | [1.000] | [1.000] | [1.000] | [1.000] |
| \( H_0: \) residuals are serially uncorrelated | Arellano-Bond for AR(2) | [0.983] | [0.433] | [0.894] | [0.223] | [0.669] | [0.664] |
| Number of instruments | 65 | 65 | 68 | 65 | 65 | 65 |
| Number observations | 464 | 443 | 254 | 254 | 354 | 354 |
| Number countries | 29 | 29 | 29 | 29 | 29 | 29 |

Notes: System GMM estimates using 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
## Table 12: Robustness Checks II: Controls for Real Activity

| Dependent Variable: $\Delta \ell_{it}$ | (1) | (2) | (3) | (4) |
|----------------------------------------|-----|-----|-----|-----|
| $\Delta \ell_{it-1}$                   | 0.243*** | 0.266*** | 0.254*** | 0.216*** |
|                                        | (0.0603) | (0.0629) | (0.0636) | (0.0605) |
| $\Delta \ell_{it-2}$                   | 0.241*** | 0.243*** | 0.219*** | 0.253*** |
|                                        | (0.0618) | (0.0635) | (0.0724) | (0.0614) |
| $\text{ROE}_{it-1}$                    | 0.0598  | 0.0804  | 0.0333  | 0.0694  |
|                                        | (0.0651) | (0.0658) | (0.0710) | (0.0684) |
| $\text{CAP}_{it-1}$                    | -0.389* | -0.490** | -0.547* | -0.343  |
|                                        | (0.221)  | (0.200)  | (0.314)  | (0.217)  |
| $\text{CAP}_{it-1}^2$                  | 0.0521  | 0.0608  | 0.0354  | 0.0598** |
|                                        | (0.0355) | (0.0388) | (0.0338) | (0.0296) |
| $\text{BSL}_{it-1}$                    | 0.0886  | 0.140   | 0.256   | 0.299*  |
|                                        | (0.185)  | (0.219)  | (0.235)  | (0.182)  |
| $\text{DEPOSIT COSTS}_{it-1}$          | -0.486*** | -0.481*** | -0.402 | -0.266  |
|                                        | (0.158)  | (0.166)  | (0.248)  | (0.225)  |
| $\text{PROVISIONS}_{it-1}$             | 0.288   | 0.362   | -0.0184 | 0.498   |
|                                        | (0.678)  | (0.702)  | (0.624)  | (0.666)  |
| $\text{LENDING RATE}_{it}$             | 1.521*  | 1.081   | 1.629*  | 1.317*  |
|                                        | (0.840)  | (0.861)  | (0.890)  | (0.766)  |
| $\text{LONG TERM RATE}_{it}$           | -0.405  | -0.187  | -0.892  | -0.626  |
|                                        | (0.895)  | (0.947)  | (0.916)  | (0.865)  |
| $\text{STOCK RETURNS}_{it}$            | 0.243*** | 0.280*** | 0.251*** | 0.242*** |
|                                        | (0.0602) | (0.0733) | (0.0702) | (0.0482) |
| $\text{ASSETS/GDP}_{it-1}$             | 0.00939 | 0.00526 | 0.00311 | 0.00264 |
|                                        | (0.0138) | (0.0145) | (0.0114) | (0.0120) |
| $\Delta \text{AGG. DEMAND}_{it}$      | 0.723*  | 0.771*  |          |          |
|                                        | (0.380)  |          |          |          |
| $\Delta \text{GDP}_{it}$               | 0.340   |          |          |          |
|                                        | (0.600)  |          |          |          |
| $\Delta \text{CONSUMPTION}_{it}$       | -0.0997 |          |          |          |
|                                        | (1.062)  |          |          |          |
| $\Delta \text{INVESTMENT}_{it}$        | 0.236   |          |          |          |
|                                        | (0.402)  |          |          |          |
| $\Delta \text{GOVERNMENT}_{it}$        | 1.395*  |          |          |          |
|                                        | (0.785)  |          |          |          |
| $\text{INFLATION}_{it-1}$              | -0.404  |          |          |          |
|                                        | (0.287)  |          |          |          |
| $\text{UNEMPLOYMENT}_{it}$             | -0.398  |          |          |          |
|                                        | (0.344)  |          |          |          |
| $\Delta \ell_{it-1} + \Delta \ell_{it-2}$| 0.483 | 0.509 | 0.474 | 0.469 |
| $H_0: \text{CAP}_{it-1} = \text{CAP}_{it-1}^2 = 0$ | [0.029] | [0.003] | [0.093] | [0.011] |
| $H_0: \Delta \text{CONSUMPTION}_{it} = \Delta \text{INVESTMENT}_{it} = \Delta \text{GOVERNMENT}_{it} = 0$ | [0.028] |
| $H_0$: joint validity of moment restrictions |          |          |          |          |
| Sargan test                            | [0.771] | [0.889] | [0.942] | [0.676] |
| Hansen test                            | [1.000] | [1.000] | [1.000] | [1.000] |
| $H_0$: residuals are serially uncorrelated |          |          |          |          |
| Arellano-Bond for AR(2)                | [0.983] | [0.986] | [0.728] | [0.898] |
| Number of instruments                   | 65      | 65      | 71      | 71      |
| Number observations                    | 464     | 464     | 464     | 462     |
| Number countries                       | 29      | 29      | 29      | 29      |

Notes: System GMM estimates using, 2 collapsed lags of explanatory variables as instruments. All models consider country and year effects. Heteroskedasticity robust standard errors in parentheses. P-values in brackets. ***, **, * denote significant at 1%, 5% and 10%, respectively.
Figure 1: Predicted Credit Growth by CAP.

(a) Fixed Effects

Based on point estimates from FE estimation, Table 6 column 2: $-0.223 \text{ CAP} + 0.0389 \text{ CAP}^2$.

(b) System GMM

Based on point estimates from system GMM estimation, Table 6 column 5: $-0.389 \text{ CAP} + 0.0521 \text{ CAP}^2$. 

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