

C DELEVERAGING AND RESILIENCE AMONG LARGE AND COMPLEX BANKING GROUPS IN THE EURO AREA

This special feature attempts to evaluate the resilience of lending by euro area large and complex banking groups to the financial turmoil, using recent quarterly balance sheet data. The analysis suggests that loans to customers will decline in the coming quarters. While a further drop in the value of assets in the financial sector would accentuate and prolong this process of deleveraging until the end of 2009, efforts to raise bank capital would help mitigate the expected decline in customer loan growth.

INTRODUCTION

The tensions in global credit markets in recent months, which led to significant disruptions in banks' wholesale funding and to write-downs of major banks' trading book assets, have seriously tested the resilience of euro area banks. The heightened difficulties in raising funds in the wholesale and securitisation markets and the mounting pressure on banks' capital positions may, in turn, adversely affect banks' ability to extend loans. This could be the case, in particular, for those banks that have expanded their lending more aggressively in the past years, often funding that lending via non-deposit sources.

Using data from the quarterly financial reports of 11 large and complex banking groups (LCBGs) in the euro area, this special feature examines the relationship between two basic indicators of bank resilience (measured by the customer deposit-to-loan ratio and the Tier 1 capital ratio) and the growth of lending over the past three years.¹ The main underlying idea is that those banks that have, in recent years, leveraged themselves up most aggressively in the sense of expanding their lending primarily by relying on wholesale funding and tightening their capital positions are most vulnerable to liquidity and solvency risks, and are also most likely to cut back on lending in the period ahead. Hence, on the basis of bank-level quarterly data, the present analysis aims to detect the potential

and scope for balance sheet retrenchment (or de-leveraging) among the large euro area banks, which could amplify the projected downturn in lending to the non-financial private sector over the coming quarters.

INDICATORS OF BANK RESILIENCE

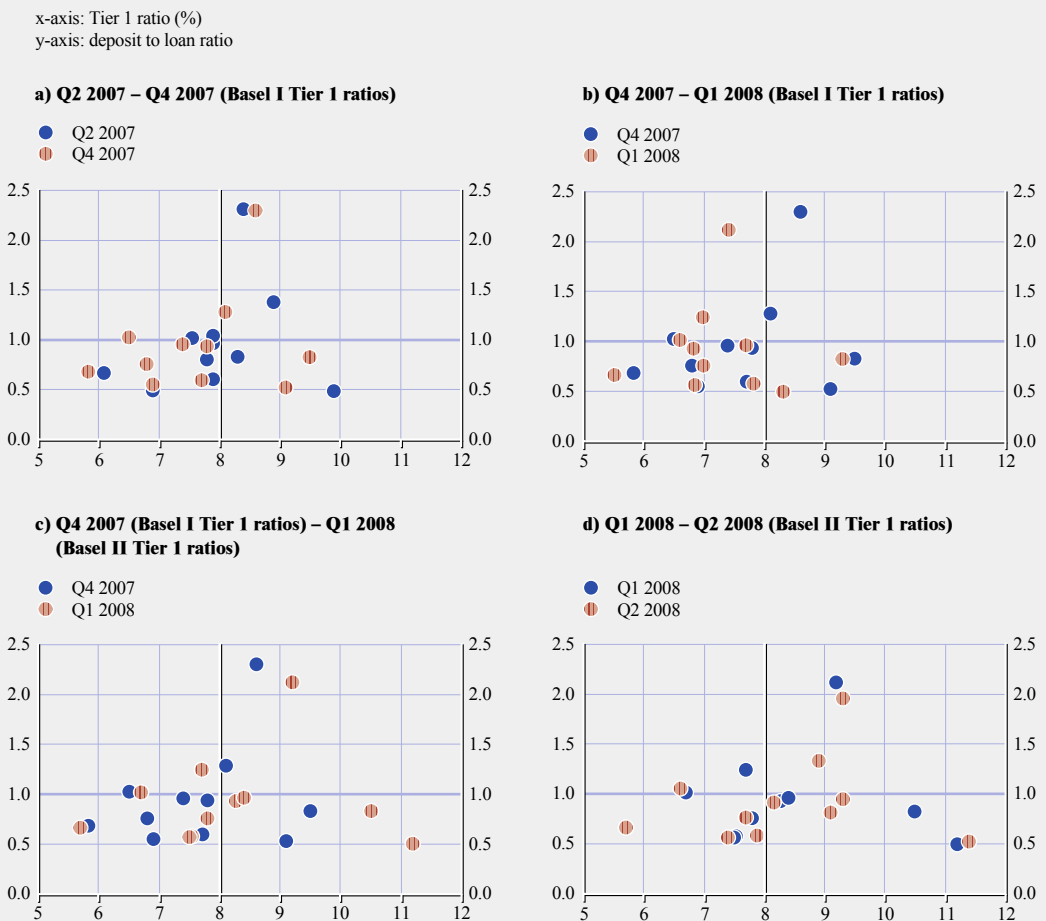
Against this background, Chart C.1, panels a-d, presents the distributions of banks across two measures of bank resilience between the second quarter of 2007 and the second quarter of 2008. On the one hand, the ratio of customer deposits to customer loans (y-axis), which is also referred to as the "deposit gap", provides an indication of the bank's external financing capacity. It measures the degree to which the bank structurally relies on non-core deposits to finance its retail lending, or – in other words – the bank's sensitivity to refinancing risk and disruptions in the wholesale funding market. The events that have hit the global credit markets over the past few years clearly illustrate that wholesale funding risk is an important parameter in assessing the supply-side lending position of banks. On the other hand, the Tier 1 capital-adequacy ratio (x-axis), which has been determined by regulation, reflects the pressure that the adverse effects of last year's write-downs (and losses) have put on a bank's profitability and capital position.²

In the second quarter of 2007 (i.e. immediately before the turmoil broke out), all banks in the sample had capital ratios well above the regulatory minimum of 4% – and also above the lower limit of 6% for classification as a "well-capitalised" bank (as defined by US federal regulatory agencies). The dispersion in terms of capital positions, however, was quite wide, with seven banks displaying Tier 1 ratios

1 These 11 banks are those that issued quarterly interim financial reports for a sufficiently long period up until the second quarter of 2008. Total loans to euro area residents by the 11 banks in the sample account for around 20-25% of the total loans granted by euro area MFIs to the private sector in the euro area.

2 According to Bloomberg data, by late November 2008, euro area LCBGs had incurred about USD 90 billion in losses/write-downs since early 2007, while they had raised new capital of USD 125 billion over the same period.

Chart C.1 Euro area large and complex banking groups' deposit-to-loan and Tier I ratios



Sources: Banks' quarterly financial reports and ECB calculations.

Note: The charts show the distribution of Tier 1 ratios and customer deposit-to-customer loan ratios across 11 large euro area banks. Panels a and b show Tier 1 ratios as calculated under Basel I rules. For Q1 2008, the Tier 1 ratio corresponds either to the Basel I definition when they were disclosed by the banks, or to proxies of the Basel I definition. These proxies are the updates of the Basel I Tier 1 ratio of Q4 2007 using the growth rates of the Tier 1 capital to total assets ratio between Q4 2007 and Q1 2008. Panel c reports the Basel II Tier 1 ratios for Q4 2007 and the Basel II Tier 1 ratios for Q1 2008. Panel d reports the Basel II Tier 1 ratios as disclosed by the banks in their financial reports.

below 8%. With respect to reliance on wholesale funding, most banks had a deposit-to-loan ratio below unity. In fact, only two banks had a deposit-to-loan ratio significantly above unity. On average, banks financed 15% of their credit supply through wholesale markets and, if one outlier is excluded, this proportion goes up to 30%. This may point to a widespread potential vulnerability of large banks to disruptions in the wholesale funding market.

The comparison of these indicators before and after the turmoil broke out (see Chart C.1,

panel a) yields two main conclusions. First, the banks' capital positions tightened for most of the banks in the second half of 2007, especially for those banks with a capital ratio that was below the 8% threshold before the turmoil (visually, the banks moved to the left). Second, the turmoil did not hit all banks in the same way and increased heterogeneity in the banking system, with some banks apparently being more resilient than others. The main reason for the deterioration of banks' balance sheets was presumably the negative effects of write-downs (fair-value adjustments) of banks' tradable credit

portfolios, warehousing costs, liquidity back-up lines for special-purpose vehicles (SPVs) and the disappearance of income flows stemming from underwriting activities in the secondary loan and securitisation markets. In terms of the deposit gap, the distribution remained more or less unchanged, which is not surprising given the more structural nature of this indicator (changes in banks' funding structures tend to take place only gradually over time).

Chart C.1, panels b-d, show the latest evolution of the indicators of bank resilience, four quarters into the turmoil. This comparison is delicate in view of the change in reported capital requirements from Basel I to Basel II in the first quarter of 2008. Chart C.1, panel c, shows that Tier 1 capital ratios increased for eight of the 11 banks of the sample from the fourth quarter 2007 to the first quarter of 2008. The comparison of Chart C.1, panel b, with Chart C.1, panel c, indicates that, for most of the banks, this evolution is imputable to the transition to capital requirements based on Basel II. The latter resulted in a decline in risk-weighted assets and, all other things being equal, thus in a relaxation of the capital requirements. Taken at face value, Basel II may therefore have somewhat eased the pressure on banks to deleverage. On the other hand, however, discounting this change in regulatory capital requirements yields a different picture, with a further deterioration of Basel I Tier 1 ratios for most of the banks (Chart C.1, panel b).³ Chart C.1, panel d, shows that Tier 1 ratios continued to decrease in the second quarter of this year. In this context, how should one expect the recent evolution of banks' financial situation to affect retail lending?

BANK DELEVERAGING

To answer this question, a loan growth model was first estimated on the basis of the two resilience ratios (the deposit-to-loan ratio and the Tier 1 capital ratio) and then simulated to obtain a forecast of retail lending growth up to the first quarter of 2009.

Table C.1 Euro area large and complex banking groups' loan growth regression

Dep. Variable: QoQ loan growth (i,t)	
Constant	0.27 <i>11.57</i>
QoQ loan growth (i,t-1)	-0.25 <i>0.14</i>
YoY GDP growth (t-1)	0.45 <i>1.76</i>
Tier 1 ratio (i,t-2)	2.62** <i>0.87</i>
Tier 1 ratio (i,t-3)	0.53** <i>0.20</i>
Loan to deposit ratio (i,t-3)	-0.14* <i>0.06</i>
N	79
R2	0.32

Sources: Banks' quarterly financial reports and ECB calculations.
Note: The table shows the estimates of a standard loan growth equation estimated on the basis of a panel of 11 large banks over the period Q4 2005 – Q2 2008, using OLS. The model includes bank-specific fixed effects. The Tier 1 ratio is corrected for the change in regulatory capital requirements after Q1 2008. Robust standard errors are reported in italics.
* and ** refer to statistical significants at the 5% and 1% thresholds respectively.

The sample is a quarterly panel of 11 LCBGs over the period from the fourth quarter of 2005 to the second quarter of 2008. Both resilience indicators have statistically significant effects with the expected signs (see Table C.1). Loans from well-capitalised banks increase faster than loans from other banks, and an increase of 1 percentage point in the Tier 1 ratio, for example, would yield a total increase of 3.15% in the credit supply after three quarters. Reliance on wholesale finance, too, seems to be an important determinant of the loan supply. An increase of 1 percentage point in the loan-to-deposit ratio (i.e. a higher funding gap) would imply a reduction of 0.14 percentage point in loan growth after three quarters. As control variables, the model also includes bank-specific fixed effects, the lagged quarter-on-quarter loan growth, and the lagged year-on-year euro

³ Although EU banks now have to comply with Basel II capital requirements, also considering measures based on Basel I is still relevant. The reason is that, in the transition period 2007-09, "regulatory floors" are imposed (and may be binding in some cases) in the sense that banks' risk-weighted assets are not allowed to fall below a certain threshold in comparison with the level based on Basel I.

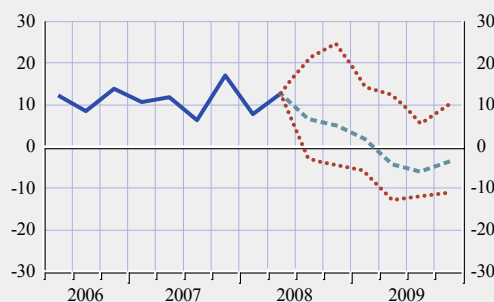
area real GDP growth. The negative effect of lagged loan growth is somewhat unusual but not statistically significant. The lagged year-on-year GDP growth aims at controlling for the effects of demand-side factors on loan growth. As expected, it enters the model with a positive sign, although it is not significant either.

In a second step of the analysis, the estimates reported in Table C.1 were used to forecast the growth rates of retail lending by euro area LCBGs. Since the Tier 1 capital and loan-to-deposit ratios could not, as yet, be observed over the forecasting horizon, the loan growth model was complemented with two bridge equations to forecast these two variables. These two equations take the form of an order-three auto-regressive model augmented with the lagged nominal three-month Euribor and the real euro area GDP growth rate. These two factors capture the effects of macroeconomic developments on the credit supply and, thereby, potential bank lending channel effects. The bridge equations do not incorporate the measures taken by banks and governments to replenish bank capital in the recent months. The whole model was simulated to obtain, for each bank, forecasts of loan growth. The simulations are based on the October 2008 Consensus Economics' forecast for GDP growth over the forecasting horizon, and on the assumption of a steady decline in the three-month EURIBOR from the third quarter of 2008 until the third quarter of 2009. The latter assumption is in line with the interest rate path underlying the Eurosystem staff macroeconomic projections of December 2008. Chart C.2 summarises the results of these baseline simulations at the aggregate level.

Customer loan growth is expected to slow down until the first quarter of next year, and to deteriorate further in the second and third quarters, before slowly recovering in the fourth quarter. The negative credit growth in the second and third quarters of 2009 can be explained by the second-round effects of developments in the real sector on the financial sector. It reflects the

Chart C.2 Loan growth forecast for euro area large and complex banking groups – baseline scenario

(annualised figures)



Sources: Banks' quarterly financial reports and ECB calculations.

Notes: The dashed line corresponds to the average forecast of annualised quarterly growth rates of loans and the dotted lines correspond, for each point in time, to the extreme point forecasts among the 11 banks in the sample. To obtain this forecast, the model in Table C.1 was first simulated for each bank, the implied quarterly growth rates were weighted averaged using banks' market shares as weights, and finally multiplied by 4 to obtain annual values. The Tier 1 and loan-to-deposit ratios used in the model are updated using AR(3) models as bridge equations. These bridge equations also include the lagged three-month nominal Euribor and euro area real GDP growth.

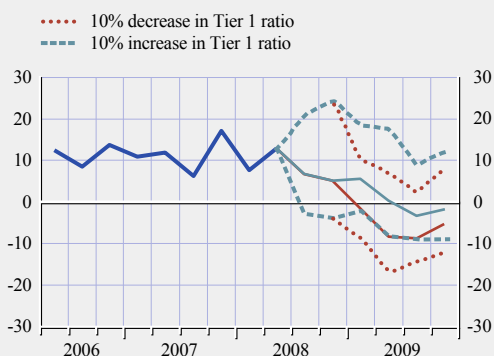
impact of the deceleration in GDP growth (down to 0.2% in the first quarter of 2009, as forecasted by Consensus Economics), not only on credit demand (direct effect in the model), but also on the credit supply, through the deterioration of banks balance sheets and, in particular, the Tier 1 ratios. One would expect this general deleveraging movement to come primarily from those banks that rely the most on wholesale finance and that had a Tier 1 capital ratio which remained low in the first half of this year. The forecasted loan growth varies widely across banks, with some banks even displaying a fall in customer loan growth by more than 10% in the second quarter of 2009.

SENSITIVITY ANALYSIS

In the baseline scenario presented above, a bank's Tier 1 capital ratio is assumed to depend only on its own auto-regressive dynamics and on the forecasts of future GDP growth and interest rates. This scenario does not feature any further depreciation of assets, nor any unexpected decrease in banks' Tier 1 capital ratios over the forecasting horizon.

Chart C.3 Loan growth forecast for euro area large and complex banking groups – scenarios based on a decrease or an increase of 10% in the Tier 1 capital ratios

(annualised figures)



Sources: Banks' quarterly financial reports and ECB calculations.
 Note: The solid lines correspond to the average forecasts of annualised quarterly growth rates of loans. The figures are computed the same way as in Chart C.2, except that the simulations are made assuming either two successive additional unexpected declines of 5% in the Tier 1 ratio in Q3 2008 and Q4 2008 (pessimistic scenario: red lines), or two successive additional unexpected increases of 5% in the Tier 1 ratio in Q3 2008 and Q4 2008 (optimistic scenario: green lines).

To analyse the sensitivity of loan growth to turmoil-related effects over the coming quarters, the simulation exercise was replicated assuming one pessimistic and one optimistic scenario. The pessimistic scenario features two additional exogenous 5% decreases in banks' Tier 1 capital ratios in both the third and the fourth quarter of 2008. Under this scenario, the loan-growth slowdown is more pronounced (and prolonged) over the next two years. The optimistic scenario, by contrast, features two additional exogenous 5% increases in banks' Tier 1 capital ratios in both the third and the fourth quarter of 2008. Under this scenario, customer loan growth remains negative in the second half of next year, but the slowdown is less pronounced.

CONCLUDING REMARKS

This special feature attempts to evaluate the resilience of large euro area banking groups in the current environment of financial turmoil. This resilience is important to assess the potential effects of the financial turmoil on bank lending to the non-financial sector. The analysis suggests that, owing to the ongoing pressure on banks' solvency positions and their restrained

ability to refinance, euro area banks are likely to enhance their efforts to deleverage, which would be expected, in turn, to lead to more moderate credit growth over the coming quarters. At the same time, the analysis underlines the potential positive effects of the ongoing efforts to replenish banks' capital buffers.