

Research Report

The Stability of German Banks – A Pre-Crisis Analysis

THE CURRENT FINANCIAL CRISIS CALLS FOR A THOROUGH ANALYSIS OF BANKING SYSTEM STABILITY. WE ANALYZE GERMAN BANKS FROM A LIQUIDITY PERSPECTIVE TO ANSWER HOW FRAGILE THE GERMAN BANKING SYSTEM IS AND HOW WELL IT CAN COPE WITH SUDDEN ILLIQUIDITY SHOCKS. RESULTS SHOW THAT ALTHOUGH BANKS CREATE LIQUIDITY FOR THE GERMAN ECONOMY AND THEREBY EXPOSE THEMSELVES TO ILLIQUIDITY RISK, THE AGGREGATE BALANCE SHEET STRUCTURES ARE SAFE AND STABLE.

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Introduction

The current financial crisis forces practitioners and researchers to reconsider bank system stability. The importance of a safe and sound banking system had been largely ignored – and quite understandably so – over the past decade since there were hardly any significant bank failures which could have had a negative impact on the economy or jeopardized the banking system as a whole. Yet, the failures of Bear Stearns and Lehman Brothers in 2008 reminded us again of what the systemic consequences of big and unexpected bank failures can be.

But why is it “good” when practitioners and researchers investigate and analyze bank stability? The major problem is that banks are fragile per se: by holding illiquid monetary

items for the general public and providing the public with liquid monetary means – a process referred to as “maturity transformation” – banks exhibit a so-called “balance sheet fragility”. In case of a sudden liquidity demand by a bank’s lenders, a bank might not be able to turn enough illiquid assets into liquid assets (e.g. cash) to meet the liquidity demand. This can either happen on an institutional and inter-bank basis, for example Bear Stearns, or on a public basis with retail depositors, as in the case of Northern Rock in the UK. The fact that banks exhibit this fragility and are so closely intertwined in today’s markets calls for thorough stability supervision even in non-crisis times. One example is the case of the German “Bankhaus Herstatt” which in 1974 suddenly became insolvent due to currency speculations. Although it was a minor bank with only

few retail clients, the unexpected illiquidity shock almost triggered a worldwide banking system instability. The examples of Lehman, Bear Stearns, Herstatt and many other cases thus call for a thorough analysis of banking system stability.

How can banking system stability be investigated? One possibility is to analyze the fragility of banks’ balance sheets to determine how well a bank could withstand a sudden illiquidity shock. There are two relevant questions which have to be answered: first, to what extent does a bank create liquidity for the economy or withhold liquidity for itself? And second, how flexible could a bank create liquid assets to meet a sudden liquidity demand? Our study tries to answer these questions and thereby to assess the stability of the German banking system. We thereby deliberately neglect the current crisis and instead focus on the years 1997-2006 to provide an unbiased picture of the German banking system stability.

Model

To analyze bank balance sheet fragility, we apply two measures: an absolute value method of total liquidity created by the bank (as developed by Berger and Bouwman, 2009) and a relative value of liquid deposits to liquid assets (as developed by Deep and Schaefer, 2004). Both methods enable us to determine the fragility of each bank’s balance sheet in two ways. First, we know how much liquidity a bank either creates for the economy or retains for itself in an absolute EUR-denominated amount. Second,

we know what percentage of deposits a bank turns into assets with longer maturities than the deposits. The underlying notion of the methods is to measure the amount of maturity transformation a bank performs. Both values therefore show to which extent a bank could withstand a sudden illiquidity shock. Taking the values of all banks together, we can draw conclusions about the stability of the overall German banking system.

Data

For our analyses we use standard balance sheet items, profit and loss accounts as well as off-balance sheet items. We perform the analysis for all German savings banks as well as for the five largest German private banks Deutsche Bank, Dresdner Bank, Commerzbank, Postbank and Bayerische Hypo- und Vereinsbank (all banks are observed separately, i.e. prior to the current mergers) and all seven German Landesbanken over the period 1997-2006. The balance sheet and profit and loss account data is publicly available for the private banks and the Landesbanken, for the savings banks we use a proprietary dataset provided to us exclusively by the Deutsche Sparkassen- und Giroverband (DSGV), covering all 457 active German savings banks.

Results

Our analyses reveal two major findings: first, all observed banks create liquidity for the German economy, meaning that banks perform maturity transformation. Second, relative fragility of banks’ balance sheets is very

	Savings Banks	Private Banks	Landesbanken	Average
Total Liquidity 1997¹⁾	120.7	350.8	138.8	203.4
Total Liquidity 2006¹⁾	182.1	359.3	86.7	209.4
Mean¹⁾	152.4	347.3	103.7	201.1
LT Gap 1997²⁾	0.13	0.07	-0.05	0.05
LT Gap 2006²⁾	0.14	-0.14	-0.05	-0.02
Mean²⁾	0.13	-0.01	-0.07	0.02
Liquidity as % of Assets	19%	7%	3%	9.7%
Equity as % of Liquidity	25%	38%	112%	58.3%

1) Values are in bn EUR

2) Values are LT Gap values, varying between +1 and -1

Table 1: Bank Liquidity in Germany 1997-2006

small, meaning that the amount of maturity transformation is not very large. How can these findings be interpreted? In terms of stability, banks can either provide liquidity for the economy or retain liquidity for themselves. A higher liquidity creation for a given economy decreases the stability of a bank. By choosing to hold illiquid monetary items and providing the economy with liquid monetary items, banks are prone to illiquidity risk in times of strong liquidity demand. As can be seen in Table 1, our results show that German banks

create a total amount of over 610 billion EUR in 1997 which increases to over 628 billion EUR in 2006. Broken down to the three different banking groups, savings banks create on average 152 billion EUR, private banks 347 billion EUR and Landesbanken 103 billion EUR over the observation period. These volumes seem rather large and could hint at the fact that banks tend to be relatively fragile. After all, banks create large amounts of liquidity for the economy – these amounts might be missing in case of a sudden liquidity demand.

However, looking at the relative amount of maturity transformation, we find that aggregate balance sheets are by far more stable than the total liquidity figures suggest. The relative amount of deposits to liquid assets is on average not larger than 0.1, meaning that banks transform the maturities of only 10% of all deposits. As bank instability is the direct result of illiquidity due to maturity transformation, bank balance sheets are stable whenever a bank chooses not to transform large amounts of liquidity. The fact that, on average, banks show maturity transformation of only 10% of total deposits, banks can be regarded as relatively safe. The large absolute numbers therefore seem to be not that large anymore, as they are only the result of a very minor maturity transformation. Looking at the relative amount of maturity transformation for each banking group, we find an average amount of 13% for savings banks and negative values of -1% and -7% for private and Landesbanken respectively. This is another interesting finding, indicating that private banks and Landesbanken use the maturity transformation process to retain more liquidity for themselves than to create for the economy. These results are supported when we analyze the relative amount of total liquidity to total assets. Savings banks – banks which are per se more stable than e.g. private banks due to the savings banks network – also create the largest amount of liquidity relative to their size: the ratio of liquidity to total assets is 19%, whereas the same ratio is only 7% for private banks and 3% for Landesbanken.

Conclusion

The purpose of our analysis is to investigate the stability of German banks in the pre-crisis period 1997-2006. Our stability proxy is the amount of created liquidity through the maturity transformation process. We believe this to be a valid stability proxy since, especially in the current financial crisis, banks' stability is mostly jeopardized by liquidity shortages. Our results show that although German savings banks, private banks and Landesbanken create large amounts of absolute liquidity for the German economy, their relative balance sheet fragility, as represented by the amount of maturity transformation, is limited: on average, banks transform the maturities of less than 10% of their total deposits. The interpretation is thus straightforward: although banks provide the economy with liquid monetary means, they still exhibit very stable balance sheets. Coming back to the initial research question it can be said that German banks are relatively stable and seem to be capable of coping well with sudden illiquidity shocks over the observation period 1997-2006.

References

- Berger, A.; Bouwman, C.:** "Bank Liquidity Creation". Forthcoming in: Review of Financial Studies (2009).
- Deep, A.; Schaefer, G.:** "Are Banks Liquidity Transformers?", Working Paper (available at SSRN), 2004.