Flight to Where?

Evidence from Bank Investments During the Financial Crisis

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This paper analyzes how banks react to the financial crisis and a deteriorating solvency and liquidity condition in their investment decisions and the composition of their financial assets. We use a novel dataset, which comprises *all* security investments by *all* German banks on a security-by-security basis between 2006 and 2011, and analyze whether and how banks use sales and purchases of these securities as the most direct and immediate way to change their overall asset structure. We find that banks substantially change their investment strategies with the beginning of the financial crisis. In particular, they shift their investments towards securities that are eligible as collateral in central bank credit operations and towards domestic securities. These patterns hold in particular for less healthy, lowly rated and large banks. Furthermore, banks with substantial exposure to troubled assets as for example Greek government bonds are particularly active in this perspective. Our results highlight the substantial changes in bank portfolios following the financial crisis, which constitute a major part of their assets, and have important implications for the current regulatory as well as policy debate on banks' investment decisions.

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1. Introduction

The recent financial and sovereign debt crisis has created a substantial shock to individual banks and the financial system as a whole. A significantly deteriorating quality in a variety of asset classes has led to questions about many banks' solvency and liquidity situation, as evidenced for example by a stalling interbank lending market and a vastly growing demand for intermediation and injections by governments and central banks around the world. A growing literature examines how banks have reacted to this situation in their lending to corporate and retail customers. For example, Ivashina and Scharfstein (2010) as well as Jimenez, Ongena, Peydro, and Saurina (2011) show that banks reduce their lending to corporate customers during the financial crisis and worse economic situations. Puri, Rocholl, and Steffen (2011) document that, during the financial crisis, banks also reduce their loan supply to retail customers. In contrast to the growing evidence on the lending channel, much less is known about how banks react to a deteriorating solvency and liquidity condition in their investment decisions and the composition of their financial assets. This is due to the fact that banks are required even less to publicly disclose their investment than their loan decisions and that these data are thus regularly not available for academic research.[1] This holds in particular on a disaggregated level, which makes it hard or even impossible to analyze over time the individual portfolio decisions by a single or even a broad cross-section of banks. Yet, this is an important question as financial assets constitute a major part of banks' balance sheets, with sales and purchases of these assets being the most direct and immediate way in which a bank can change its overall asset structure. An analysis of banks' portfolio decisions can thus provide important insights, which are of relevance not only for banks themselves, but also for the issuers of securities as well as regulators.

We address this question by using a unique new dataset with individual security holdings by a large cross-section of banks. This dataset has detailed information on *all* security investments by *all* German banks on a security-by-security basis between 2006 and 2011

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[1] Loan decisions are at least partially publicly documented, e.g. in research databases on syndicated loans. An exception, at least for the large banks, is the evidence from the recent banking stress tests with information on aggregate holdings of certain securities for this set of banks.

and thus before as well as during the financial crisis. It comprises 113,376 different securities with an average total nominal value of one trillion Euro that are held by almost 1,800 German banks over this time period. This dataset allows us to track on a security-by-security level and on a quarterly basis how banks change their portfolio composition through time and how they react to the shocks in the financial system that start in the second half of 2007 and intensify in the second half of 2008. In particular, we can link banks' portfolio decisions as a reaction to the crisis to several of their key characteristics such as for example their liquidity and solvency situation, their capital structure, and their holdings of specific assets, in particular those with a potentially high depreciation need as in the case of Greek government bonds.

This unique dataset thus allows us to address a number of open questions: Where do banks go and where do they invest their money following deterioration in their situation. In particular, which dimensions such as liquidity, quality, or home bias are the main drivers of their decisions? In the cross-section, which banks behaved in which way? To what extent does a bank's behavior depend on its characteristics such as the strength of its deposit base, its capital structure, and its health? The answers to these questions are of particular relevance in light of the recent financial and sovereign debt crisis and the consideration of the appropriate regulatory reactions.

In our analysis, we consider as dependent variables six different ways in which banks can change their investment policies through time and the crisis. First, we consider whether banks shift their investments more towards securities that are eligible for open market transaction in central bank operations and can thus be used to achieve additional liquidity (flight to liquidity). Second, we analyze whether banks buy more securities that are issued in the country in which they are headquartered (flight home). Next, we focus on the types of issuers whose securities banks purchase. In particular, third and fourth, we analyze whether banks engage more in securities issued by the German financial and the German non-financial sector. Finally, we consider how banks change their investment behavior in sovereign debt. So, fifth, we look at the holdings of banks in German government bonds, and, sixth, we take into account holdings of banks in non-German government bonds.

As our variables of interest, we analyze whether and to what extent these changes in investment are driven by bank type and characteristics. These characteristics comprise for example bank size, bank health as evidenced by its return on assets and the level of its write-offs and provisions, bank capital structure, and bank funding status as measured by the ratio of deposits and total assets. Finally, we analyze in more detail savings banks and cooperatives for which we have supervisory rating information.

We find that banks' investments change substantially with the beginning of the financial crisis. First, banks change their investments towards securities that are eligible as collateral in central bank credit operations. This is due to the increasing importance of financial intermediation and liquidity by central banks during the financial crisis. Overall, big banks and Landesbanken have comparatively large holdings of eligible securities, while savings banks, which have rather large and stable deposit financing, do not focus on these securities. We show that, as a reaction to the financial crisis, less healthy institutions tend to seek rescue in liquidity in the form of eligible securities. Also large banks – particularly those about 20 banks that account for half of the sector's security investment – tend to flee more to liquidity than smaller banks do. Investments in sovereign bonds from the European periphery taken together do not affect the decision of banks to go for these securities, while this happens for banks with high investment in the Greek state.

Second, banks change their investments towards domestic securities. Overall, banks that follow a narrow-banking concept and rely more on deposit financing as well as financially less sound institutions are more invested in domestic securities. In contrast, larger banks tend to have both larger portfolios relative to total assets and a more international portfolio composition. With the beginning of the financial crisis, banks strongly reallocate their portfolios towards the domestic market. Investments in European periphery sovereign bonds in general appear not to be of importance for this flight to home. However, investments in Greek government debt do matter.

Finally, we exploit in more detail the heterogeneity of the German banking system to obtain a better understanding of the importance of solvency for investment policy. We focus on savings banks and credit cooperatives, which form a homogenous group of small banks to which most German banks belong. For these institutions, we obtain supervisory rating information. Although these banks have a comparatively large and stable deposit base, the beginning of the financial crisis induces less well rated banks to start a flight to liquidity and flight to quality.

Our paper is related to different strands of the literature. First, it relates to the work on the effect of bank characteristics, such as the composition and strength of its balance sheet, on credit availability. Prominent papers in this context comprise Bernanke and Gertler (1987), Bernanke and Blinder (1988), Holmstrom and Tirole (1997), and Diamond and Rajan (2011). Second, and related to the work above, our paper relates to the literature that deals with banks' lending behavior in reaction to the financial crisis and a worsening economic situation. Ivashina and Scharfstein (2010) show that reductions in lending to corporate customers were particularly pronounced for banks with less access to deposit-financing and a higher likelihood of credit-line drawdowns. Jimenez, Ongena, Peydro, and Saurina (2011) find that loan granting is substantially reduced under tighter monetary and worse economic conditions, in particular by banks with less capital or less liquidity. Puri, Rocholl, and Steffen (2011) provide evidence that banks with substantial indirect exposure to the U.S. subprime market reject substantially more retail loan applications than other banks. This effect is shown to be stronger for smaller and more liquidity-constrained banks. Our paper provides evidence on banks' investments and portfolio choices during the financial crisis and links this evidence to the characteristics of these banks. Third, the paper relates to the literature on investors' portfolio rebalancing during times of economic distress such as for example Beber, Brandt, and Kavajecz (2009) who analyze the development of European sovereign bond markets and find that investors value both credit quality and liquidity. While their work observes market patters, we consider banks' aggregate portfolios and their rebalancing through time and the financial crisis.

The rest of the paper is organized as follows. The next section describes the institutional setting and the data. Section 3 presents our empirical methodology. Section 4 presents the analysis and the results, section 5 concludes.

2. Data and descriptive statistics

2.1. Data sources and sample construction

The data is compiled from various sources. We obtain a unique dataset with detailed quarterly information on the composition of *all* German banks' portfolios in terms of volume (i.e. total Euro) from the Securities Deposits Statistics (Depotstatistik) of Deutsche Bundesbank. In this unique original dataset, the unit of observation is the amount (in Euro) that bank i holds from security j issued by issuer k at time t. Data is available both on the nominal value and on the market value.[2] We therefore possess 21 complete snapshots of *all* securities in *all* German banks' securities portfolios, (i.e. on average 1792 portfolios per quarter, such that for each portfolio we have a security by security breakdown) for the quarters from 2006Q1 until 2011Q1.

We add information on type and issuer of the securities as well as the collateral framework, which we obtain from Wertpapiermitteilungen Datenservice, the agency responsible for the allocation of ISINs in Germany.

Quarterly data on the eligibility of securities for European System of Central Banks (ESCB) operations are obtained from Deutsche Bundesbank. Further bank-specific information such as asset size, equity ratio and profit / loss items are obtained from the Bundesbank banking statistics. For the German savings banks and the credit cooperatives, we also obtain detailed data on supervisory ratings from Deutsche Bundesbank.

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[2] We mostly use nominal values for our analysis, since we are more interested in portfolio reallocation than in price effects. This has the disadvantage, that shares are practically eliminated from the analysis as they are recorded with a nominal value of one euro. However, shares are only of minor importance in the banks' security holdings.

For the purpose of our analysis, we restrict the sample to those observations that the banks hold in their own portfolio, eliminating the observations they hold for their customers. We also drop those observations where the holder is equivalent to the issuer. We use the classification of the Deutsche Bundesbank and categorize banks into six groups: big banks, regional banks and other commercial banks, Landesbanken, savings banks, regional institutions of credit cooperatives, and credit cooperatives. Put differently, we eliminate branches of foreign banks, mortgage banks, special purpose banks and building and loan associations from our sample. Finally, we drop from the sample retail investment certificates, as they are of minor aggregate value.[3]

2.2. Descriptive statistics

Table 1 provides aggregate summary statistics on the resulting final dataset which has more than 3 million unique bank-ISIN observations over the 21 quarters of our sample period. Panel A shows that the total nominal volume (in Euro) under consideration amounts to 1.04 trillion Euro per quarter. About 80 % of this volume is eligible for ESCB operations, as indicated in Panel B. Figure 1 shows the development of this volume over time: While there is an upward trend for both the overall volume of securities eligible for ESCB operations and the overall volume of securities non-eligible for ESCB operations, there is a remarkable increase in the former, accompanied by a decrease in the latter, after the beginning of the financial crisis in the third quarter of 2008.

Panel C of Table 1 shows the breakdown by issuer country: 60.5 % of the overall volume are securities issued in Germany, 15.5 % are issued by the PIIGS countries and 12.5 % are issued from the remaining Euro area. The development over time for the German and the non-German overall volume is shown in Figure 2. After the third quarter of 2008, there is a strong increase in the volume of securities issued in Germany, accompanied by a strong decrease of foreign securities.

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[3] These retail investment certificates are mainly held by banks to provide some liquidity for their own issues to retail customers on the secondary market.

Panel D describes the breakdown by sector of the securities. The financial sector represents by far the most important share of the total volume. Securities issued by the financial sector account for some 80 % of German banks' securities holding. Thus the main function of security investments is not to provide credit to the real economy, households, or the government. These securities are rather held for the purpose of risk sharing or liquidity management. The German government sector amounts to another 11.3 % and the foreign government sector to another 7.0 % of the volume. The real sector only plays a minor role in our dataset.[4] The development of the financial and the government sectors are shown in Figure 3.

Panel E presents the breakdown by eight different asset classes. The three most important asset classes are Floating Rate Notes (30.4 %), Pfandbriefe / Covered Bonds (19.4 %) and Government Bonds (15.7 %).

For a better comprehensibility of this very complex data set, we show descriptive statistics aggregated by bank groups (see Tables 2 and 3). In the detailed regression analyses later on the individual bank will be the panel unit. Table 2 provides an overview of the composition of the (weighted) average securities portfolio by bank group. Panel A shows that on average the big banks (46,080 million Euro), the regional institutions of credit cooperatives (43,707 million Euro) and the Landesbanken (29,749 million Euro) have by far the largest portfolios, whereas savings banks (437 million Euro) and in particular credit cooperatives (108 million Euro) are much smaller market participants with respect to portfolio size. This, however, is well reflected by the average total asset volume of the corresponding institutions and stresses the heterogeneity not only of our sample but of the German banking system as a whole. Panel B shows the average volume of securities eligible and non-eligible for ESCB operations. From Panel C one can see that all bank types invest most of their money in securities issued in Germany. In particular, savings banks are almost inactive outside the Euro area. Panel D presents the breakdown by sector. The regional institutions of credit cooperatives (20,849 million Euro) and the Landesbanken (12,694 million Euro) are particularly active in the non-

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[4] This result does not change significantly if one considers market values instead of nominal values.

German financial sector – not only in absolute terms but also relative to their total portfolio size.

Since banks of different bank groups are so different with respect to size in terms of both overall assets and securities portfolio volume, Table 3 compares the composition of different portfolios across bank groups in terms of percentages. Panel A shows that relative to total portfolio size, big banks have by far the smallest (61.4 %) and credit cooperatives the largest (75.8 %) share of volume eligible for ESCB operations. From Panel B the different investment models in the different bank groups become obvious: Credit cooperatives (73.0 %) and savings banks (87.7 %) hold a much higher share of their portfolios in securities issued in Germany than the big banks (54.1 %), the Landesbanken (51.7 %) or the regional institutions of credit cooperatives (50.5 %). Similarly, from Panel C it can be found that savings banks (79.3 %) and credit cooperatives (68.0 %) invest relatively more in the German financial sector than big banks (33.9 %) or the Landesbanken (38.9 %). Panel D shows the composition of the portfolio according to the different asset classes. Savings banks invest especially into Pfandbriefe / Covered Bonds (42.0 %). For credit cooperatives, Other Bonds (29.9 %) and Medium Term Notes (28.9 %) are particularly important. The Landesbanken have a particularly high share (50.9 %) of Floating Rate Notes in their portfolios. For the big banks, government bonds play a particularly important role (30.3 %). Finally, for the big banks, the Landesbanken and the regional institutions of credit cooperatives, Asset Backed Securities make up a considerable share of more than 10 % of the corresponding portfolios.

Panel F of Table 3 shows average Herfindahl-Hirschman Indices of the banks' portfolios in terms of the issuers of the ISINs, the composition by sectors and the composition by asset classes. These three measures are highest for savings banks, credit cooperatives and regional banks / other commercial banks. This shows that those banks with the larger portfolio size, i.e. the big banks, the Landesbanken and the regional institutions of credit cooperatives diversify more their securities portfolio.

Finally, Panel G presents additional information on the banks such as the equity ratio, the return on assets and write-offs and provisions. The equity ratio is particularly high for regional banks / other commercial banks (11.4 %). The return on assets also differs across bank groups: the big banks (7.5 %) and regional banks / other commercial banks (14.2 %) exhibit particularly high values here. Finally, the share of deposits over total assets is particularly high for savings banks (66.4 %) and cooperative banks (73.1 %). This again highlights the different business models in the German banking system.

3. Methodology

We use a difference-in-difference approach to estimate the effects of various bank-specific characteristics at the beginning of the financial crisis on the dependent variables. Following Bertrand et al. (2004), throughout our paper we consider the following main econometric specification:

$$y_{it} = a_t + x_{it}\gamma + I_{it}\beta + \epsilon_{it} \ (1)$$

where y_{it} is the dependent variable of interest of bank i in time period t. More precisely, we consider the following six variables of interest:

1. Share of volume of securities in the portfolio of bank i at time t that are eligible for ESCB operations as percent of total volume of the securities portfolio of bank i at time t.[5]
2. Share of volume of securities in the portfolio of bank i at time t that are issued in Germany as percent of total volume of the securities portfolio of bank i at time t.
3. Share of volume of securities in the portfolio of bank i at time t that are issued by the German financial sector as percent of total volume of the securities portfolio of bank i at time t.

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[5] In contrast to the other five dependent variables, this variable relates to values in Euro at market value, rather than to nominal values. The reason for this choice is that eligibility for ESCB operations is based on market values, as well.

4. Share of volume of securities in the portfolio of bank i at time t that are issued by the non-German financial sector as percent of total volume of the securities portfolio of bank i at time t.

5. Share of volume of securities in the portfolio of bank i at time t that are issued by the German government sector as percent of total volume of the securities portfolio of bank i at time t.

6. Share of volume of securities in the portfolio of bank i at time t that are issued by the non-German government sector as percent of total volume of the securities portfolio of bank i at time t.

Furthermore, a_t are time-fixed effects, x_{it} is a set of individual covariates of bank i at time t, and ϵ_{it} is an error term.[6] I_{it} is a dummy variable equal to 1 if bank i belongs in period t to the group of "treated" banks and 0 otherwise. For our analysis, this is typically the case if bank i exceeds the median of a certain variable at the origination of the Lehman episode, i.e. in the third quarter of 2008. For example, all banks with an equity ratio in 2008Q3 which is higher than the median equity ratio in 2008Q3 are considered as "treated" in the equity ratio specification. The corresponding estimate of β then tells us whether banks with a high equity ratio in 2008Q3 show a different pattern with respect to the dependent variable under consideration than banks with a smaller equity ratio in 2008Q3.

Following Bertrand et al. (2004) we cluster the standard errors by bank.

To get a robust understanding of our dataset and in particular of the main effects of our explanatory variables, we begin our analysis with the following simple cross-sectional regression of the means, which is derived from equation (1):

$$y_{i\cdot} = x_{i\cdot}\gamma + \epsilon_{i\cdot}$$

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[6] We do not use bank-fixed effects in this specification. Instead, we run random-effects regressions. The results do not differ significantly from the fixed-effects regressions.

That is, in this first step we regress the mean (over time) of the dependent variable on the means (over time) of the explanatory variables, ignoring the panel structure of our data and also the treatment effects.

4. Analysis and results

4.1. Cross-sectional regression analysis

The results of the cross-sectional analysis are shown in Table 4. In specification (1), the dependent variable is the share (in %) of the volume eligible for ESCB operations in the total volume of the bank's securities portfolio. We find that all bank groups except regional institutions of credit cooperatives have a significantly higher share of securities eligible for ESCB operations than the savings banks which represent the reference group in all the regression tables. In particular, for the big banks this share is more than 14 percentage points, and for the Landesbanken it is even more than 20 percentage points higher than for the savings banks. Concerning the main effects of the bank characteristics, we find that a one percentage point increase in the share of securities induces a 0.64 percentage point increase in the share of securities eligible for ESCB operations. We also find that a higher deposit ratio, a lower equity ratio, a lower return on assets and lower write-offs and provisions are associated with a higher share of securities which are eligible for ESCB operations. Finally, asset size is negatively associated with the share of securities eligible for ESCB operations.[7]

Specification (2) presents the cross-sectional regression results for the share of securities issued in Germany. In line with the descriptive statistics we find that savings banks have the highest share of securities issued in Germany: the regression estimates for all other bank groups – except for the regional institutions of credit cooperatives – are significantly smaller, up to 22.4 percentage points less for the big banks. In terms of the main effects of the bank characteristics we find that a smaller overall share of securities in total assets,

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[7] This effect of total assets is conditional on the different bank groups, since the bank group is also in the group of explaining variables.

a higher deposit ratio and a higher total assets size are associated with a higher share of securities issued in Germany. Furthermore, a lower equity ratio and higher write-offs and provisions – i.e. worse overall financial health – are associated with a higher share of securities issued in Germany.

In specification (3), the dependent variable is the share of securities issued in Germany and from the financial sector. All the corresponding regression estimates – except for the one of total assets – have the same signs as in specification (2). This is not surprising as we know from the descriptive statistics that the German financial sector makes up the most important part of the dataset and in particular of the overall German sector analyzed in specification (2).

Specification (4) shows the cross-sectional regression results for the share of securities that are issued in the financial sector, but from outside Germany. It is therefore not surprising that the resulting estimates have the opposite signs compared to specification (3), for the most part.

In specification (5), the dependent variable is the share of securities issued in the German government sector. Big banks and regional banks / other commercial banks hold a share in the German government sector that is about 10 percentage points larger than the corresponding share of savings banks. By contrast, credit cooperatives have a significantly lower share of securities issued from the German government sector. From the main effects, only the equity ratio and the return on assets are significant, banks with a lower equity ratio and a higher return on assets exhibit a higher share of securities issued from the German government sector.

Specification (6) shows the cross-sectional results for the share of securities issued from the non-German government sector. Big banks are particularly active in this sector as shown by the regression coefficient of 13.753. Furthermore, a higher equity ratio and smaller return on assets also lead to a higher share of securities issued from the non-German government sector.

In sum, the cross-sectional regressions in Table 4 confirm the results from the descriptive statistics, in particular in terms of the activity of banks from different bank groups. Secondly, the main effects give a first idea of how the variables describing the bank characteristics influence the six dependent variables under consideration.

4.2. Panel regression analysis

As outlined in the methodology section, we now turn to the panel regression analysis. Tables 5 to 10 present the results for the different dependent variables. All specifications in these tables include random effects and time dummies, which are omitted from the tables for better readability.

While we are particularly interested in the interaction effects, the time dummies presented in Figure 4 show us the overall trend of the dependent variables. For all six graphs in this figure, the reference point is the third quarter of 2008. First, we find that after the beginning of the financial crisis in 2008Q3, the share of securities eligible for ESCB operations strongly increases. Second, for the share of securities issued in Germany, we find an overall decreasing trend. This is in contrast to Figure 2, where we found that the overall volume of German securities increases after the beginning of the financial crisis, indicating a type of "home bias". The reason for these contradicting results is that in Figure 4, the results are unweighted by banks, i.e. all banks count equally here, regardless of their portfolio size. Thus, it remains to be seen in the panel regressions whether the overall home bias is at the origin of the investment policies of only a few banks with a very large portfolio size. Moreover, from Figure 4 we see a strong decrease of securities from the German financial sector, as well as an increase of the share of securities in the German government sector. Finally, the non-German financial sector shows an upward trend over the whole sample period.

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Eligibility for ESCB operations

In Table 5 the dependent variable is the share of securities eligible for ESCB operations as a percentage of the total volume of securities of the bank. Specification (1) does not include any interaction or treatment effects and can therefore be regarded as a reference for the other specifications (2) to (13) in the table. In line with the cross-sectional regressions, the reference bank group (savings banks) has the lowest share of securities eligible for ESCB operations. The big banks (about 10 percentage points) and in particular the Landesbanken (about 16 percentage points) exhibit higher shares of securities eligible for ESCB operations. In terms of the main effects of the bank characteristics, we find that a one percentage point higher overall share of securities induces a 0.729 percentage point higher share of securities eligible for ESCB operations. Furthermore, a 1 percentage point higher equity ratio leads to a 0.286 percentage point lower share of securities eligible for ESCB operations. Finally, also the asset size is negatively associated with the share of securities eligible for ESCB operations. All these results are systematically robust not only with respect to the cross-sectional regressions discussed in section 4.1., but also over all specifications (1) to (13) of Table 5.

More important for the purpose of our study are the treatment / interaction effects in specifications (2) to (13), which are shown in the second half of table. As outlined before, the treatment group is defined by those banks which in the third quarter of 2008 are above the median with respect to the treatment variable of interest. Thus, the interaction effect in specification (2) signifies the following result: Those banks which in the third quarter of 2008 have a higher share of securities as percent of total assets than the median value, on average have a 3.589 percentage point lower share of securities eligible for ESCB operations after the beginning of the financial crisis. Put differently, those banks for which the securities portfolio plays a comparably less important role in the third quarter of 2008 tend to have a higher share of securities eligible for ESCB operations after the beginning of the financial crisis. Technically, the other specifications can be interpreted in a similar way.

Specification (3) shows that banks with a lower deposit ratio in 2008Q3 have a higher share of eligible securities after the beginning of the financial crisis than those with a higher deposit ratio. This is in line with our expectation of a stronger flight to liquidity for banks with lower deposit ratios.

Concerning the financial health variables equity ratio and write-offs and provisions, specifications (4) and (6) show that a lower equity ratio and higher write-offs and provisions in 2008Q3 induce a stronger flight to liquidity, since these banks have a higher share of securities eligible for ESCB operations after the beginning of the financial crisis. Return on assets, by contrast, does not have a significant impact as indicated in specification (5). In terms of total asset volume, specification (7) shows that larger banks have a higher share of securities eligible for ESCB operations than smaller banks after the beginning of the financial crisis. Put differently, in terms of asset size larger banks flee more to liquidity than smaller banks do. In specification (8), we consider jointly the treatment effects analyzed in specifications (2) to (7). All effects keep their signs, significance and order of magnitude.

In specifications (9) to (13) we exploit further the full power and granularity of our dataset. In particular, in specification (9) the treatment comprises those banks which in 2008Q3 together sum up to more than 50 % of the total banks' securities portfolio. Given the asymmetry in the size of the banks' securities portfolios, this treatment sample comprises less than 20 banks. The result from this specification is somewhat similar to, yet much stronger than specification (7): The main effect of such a top 50 % bank is negative, but after the beginning of the financial crisis, they flee much more to liquidity than the other banks, as indicated by the treatment effect of 8.384 in specification (9).

Specification (10) shows that the share that banks hold in securities issued by the PIIGS countries does not play a significant role for the flight to liquidity. In sharp contrast to that, specification (11) signifies a strong effect of the share of Greek government bonds in a bank's portfolio in the government sector. More precisely, those banks with a share of Greek government bonds higher than the median in 2008Q3 on average have a

2.846 percentage points higher share of securities eligible for ESCB operations after the beginning of the financial crisis. A similar flight to liquidity can be observed for banks with a high share of Asset Backed Securities and a high share of certain troubled German and US securities in the third quarter of 2008Q3, as indicated by specifications (12) and (13), respectively.

In sum, we conclude from Table 5 that larger banks as well as banks with lower equity ratios, higher write-offs and provisions, a larger exposure to Greek government bonds and troubled German and US securities exhibit a particular pronounced flight to liquidity after the beginning of the financial crisis.

Home bias: securities issued in vs. outside Germany

Table 6 shows the panel regression results with random effects for the dependent variable "Share of nominal volume of securities issued in Germany". This table is structured exactly the same way as Table 5. Specification (1) does not include any treatment effect and can therefore be considered as a benchmark for all other specifications in Table 6. We find that the reference bank group – savings banks – has by far the highest share of securities issued from the German sector. For all other bank groups, the corresponding share is about 20 percentage points lower. This result is robust across all specifications of Table 6 and well in line with both the cross-sectional regression results and the descriptive statistics.

Those banks for which the portfolio is more important in terms of its size relative to overall asset volume have a lower share of securities issued in Germany. Similarly, the larger a bank in terms of overall assets, the smaller the share of securities issued in Germany. By contrast, the deposit ratio has a positive effect on the dependent variable: banks with a larger deposit ratio tend to have a higher share of securities issued in Germany.

As for the share of securities eligible for ESCB operations, we now again turn to the interaction effects presented in the second half of Table 6. From specification (2) we see, that a high share of securities at the beginning of the financial crisis in 2008Q3 induces a smaller share of securities issued in securities in the aftermath of the crisis. The regression coefficient of -2.940 in specification (3) signifies that banks with a higher deposit ratio in 2008Q3 have a smaller share of securities issued in Germany than banks with a smaller deposit ratio. In terms of the financial health variables we find that a lower equity ratio and higher write-offs and provisions in 2008Q3 lead to a higher share of securities issued in Germany, see specifications (4) and (6). All these single interaction effects keep their signs and remain significant when they are considered together in specification (8).

One crucial result that can be derived from Table 6 is that in terms of the home bias, large banks behave differently after the beginning of the financial crisis than smaller banks do. This can be observed from specification (7) and in particular from specification (9). More precisely, both specifications (7) and (9) show that over the whole sample period these large banks have a smaller share of securities issued in Germany (main effects of -2.501 for ln(Assets) and of -14.050 for top 50 % bank, respectively). However, banks with higher overall assets in 2008Q3 tend to strongly invest into German securities after the beginning of the financial crisis, as shown by the interaction effect of 5.242 in specification (7). Specification (9) shows that this effect is even stronger (interaction effect of 16.601) when one considers those largest banks in terms of portfolio size which in the third quarter of 2008 together make up 50 % of the total volume under consideration.

Again, specifications (10) to (13) exploit the full power of our dataset even more. Here we find that a high share of PIIGS securities in 2008Q3 does not lead banks to an increased investment into German securities after the beginning of the financial crisis, the effect in specification (10) is even slightly positive. As soon as one only considers Greek government securities, however, the picture completely changes: Banks with a higher share of Greek government securities in 2008Q3 strongly flee into the German sector

after the beginning of the crisis, as indicated by the interaction effect of 6.037 in specification (11) of Table 6. The same holds true for banks with a high share of Asset Backed Securities as shown by the positive and significant treatment effect of 1.620 in specification (12).

In sum, Table 6 shows that banks with a smaller deposit ratio, a lower equity ratio, higher write-offs and provisions, a higher share of Greek government bonds or a higher share of Asset Backed Securities tend to flee more into German securities after the beginning of the financial crisis. The same holds true for banks that are large either in terms of their overall assets or with respect to their overall securities portfolio size.

The financial sector

Table 7, which is again structured exactly like Tables 5 and 6, shows the results for the share of volume issued from the German financial sector. This share is highest for savings banks as indicated by the negative coefficients of all other bank groups in Table 7.

The main effects of the share of securities, the deposit ratio and the asset size work into the same direction as in Table 6 described in the section on the home bias, where the dependent variable was the share of securities issued in Germany. This is not surprising because as discussed before the financial sector plays by far the most important role in our dataset.

In terms of the interaction effects displayed in the second half of the table, specifications (2) and (3) indicate that banks with a higher share of securities or with a higher deposit ratio in 2008Q3, after the beginning of the financial crisis have a lower share of securities issued in the German financial sector. Specifications (4) to (6) show that banks with a lower equity ratio, a lower return on assets or higher write-offs and provisions in 2008Q3 – i.e. "unhealthier" banks at the beginning of the financial crisis – invest more in the German financial sector after 2008Q3. All these interaction effects

remain significant and keep their signs when they are considered together in specification (8). Specifications (7) and (9) show that larger banks invest more in the German financial sector in the aftermath of the financial crisis. Finally, while banks with a high share of PIIGS-securities invest less in the German financial sector after 2008Q3 (regression coefficient of -1.523), the opposite holds true if only Greek government securities are considered (regression coefficient of 5.639).

Table 8, in which the dependent variable is the share of securities issued by the non-German financial sector, shows more or less mirror-inverted results compared to Table 7. In particular, the bank group effects are all positive, and also the main effects and the interaction effects show the opposite signs compared to Table 7. One additional result, however, is that banks with a high share of Asset Backed Securities in the third quarter of 2008 strongly disinvest in the non-German financial sector after this quarter, as indicated by the interaction regression coefficient of -1.203 in specification (12) – an intuitive result.

Together, Tables 7 and 8 show that larger banks and in particular those with lower equity ratios, higher write-offs and provisions or a larger exposure to Greek government bonds increase their investment in the German financial sector more than the other banks do. At the same time, banks with the same characteristics also particularly decrease their investment in the non-German financial sector.

The government sector

In Tables 9 and 10 we analyze the share of securities issued from the German and the non-German government sector, respectively. Table 9 confirms the result from the descriptive statistics and from the cross-sectional regressions that big banks and regional banks have the significantly highest share of securities issued from the German government sector, while credit cooperatives invest even less in this sector than the reference group, savings banks. However, banks' investment behavior in the German government sector is not driven by the other main effects such as share of securities,

deposit ratio or equity ratio. Also, in terms of the interaction effects we do not find many significant influences. One exception is specification (9), which shows that the top 50 % banks as defined above invest much more into the German government sector after 2008Q3 than the rest of the banks of our sample do. Before this quarter, these banks had invested considerably less than the others as indicated by the corresponding main effects of -11.564 in the same specification (9). Finally, we find that a high share of PIIGS securities or of Asset Backed Securities in 2008Q3 leads to a lower share of securities issued from the German government sector after the beginning of the financial crisis as shown by the interaction coefficients in specifications (10) and (12), respectively.

Table 10 shows that big banks and regional banks are also those that invest the most into the non-German government sector – which again confirms the corresponding finding from the cross-sectional regression in Table 4. In terms of the interaction effects, we only find that banks with a low deposit ratio (regression coefficient of 0.516) or a high share of Greek government securities (regression coefficient of -1.524) in 2008Q3 invest significantly less into the non-German government sector after the beginning of the crisis.

Taken together, Tables 9 and 10 show that the general financial health characteristics we analyze – in particular equity ratio, write-offs and provisions, and return on assets – are not decisive to explain banks' flight into German vs. non-German government bonds. By contrast, large banks and banks with a higher share of PIIGS or Asset Backed Securities are those which particularly increase their investment in German government bonds after the beginning of the financial crisis in 2008Q3.

Further analysis: the ratings of savings banks and credit cooperatives

In a complementary analysis we analyze the impact of ratings at the beginning of the third quarter of 2008 on our six variables of interest. For this purpose, the sample is reduced to savings banks and credit cooperatives, because ratings were only available for this homogenous group.[8] Therefore, Table 11 reports just one bank group effect.

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[8] A lower number implies a better rating.

Furthermore, the rating is susceptible to capture the financial health variables equity ratio, return on assets as well as write-offs, which therefore are omitted from the model as well. Instead we include the rating into the model. The coefficient of interest is the interaction effect "After x Rating: 3/4". It analyzes whether savings banks and credit cooperatives with ratings in category 3 or 4 (a large part of the sample) react differently with respect to our six dependent variables of interest after the crisis.

We find that this is only the case for the share of securities eligible for ESCB operations and the share of securities issued in the German government sector. Indeed, specification (1) of Table 11 shows that banks with a rating 3 or 4 in the third quarter of 2008 tend to flee more into eligible securities after the beginning of the financial crisis as indicated by the positive and significant regression coefficient of 2.039. Correspondingly, specification (5) shows that these banks also tend to invest more into the German government sector in the aftermath of the financial crisis, i.e. into securities that are supposed to be very reliable.

5. Conclusion

The recent financial and sovereign debt crisis and the resulting shock to banks and the financial system have raised many questions on how banks react in their investment and portfolio decisions. While there is growing evidence on the lending channel, the evidence on these decisions is scarce, mainly due to the lack of security-by-security data for individual banks. This is an important question as financial assets constitute a major part of banks' balance sheets and they constitute the most direct and immediate way in which a bank can change its overall asset structure. We address this open question by using a novel dataset, which comprises *all* security investments by *all* German banks on a security-by-security basis between 2006 and 2011.

Our results suggest that the financial crisis induces banks to substantially change their investment strategies. In particular, banks invest more in securities that can be used as

collateral in central bank liquidity operations and in domestic securities. This change in investment behavior is most pronounced for banks that are closest to financial distress and that have low ratings. Furthermore, this behavior is more pronounced for larger banks with more liquidity needs. Specifically, banks with large exposure to government bonds from the European periphery are not affected, while specifically banks with exposure to Greek government bonds are significantly affected. Overall, the results suggest that banks significantly and substantially change their investment strategies with the beginning of the financial crisis. Their portfolios as a major part of their assets are rebalanced towards more liquidity and a larger home bias. These results have important implications for the current academic, policy, and regulatory debate on banks' investment strategies and are of relevance for banks as well as for the issuers of securities.

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Figure 1: Overall Volume of Securities Eligible and Non-Eligible for ESCB Operations
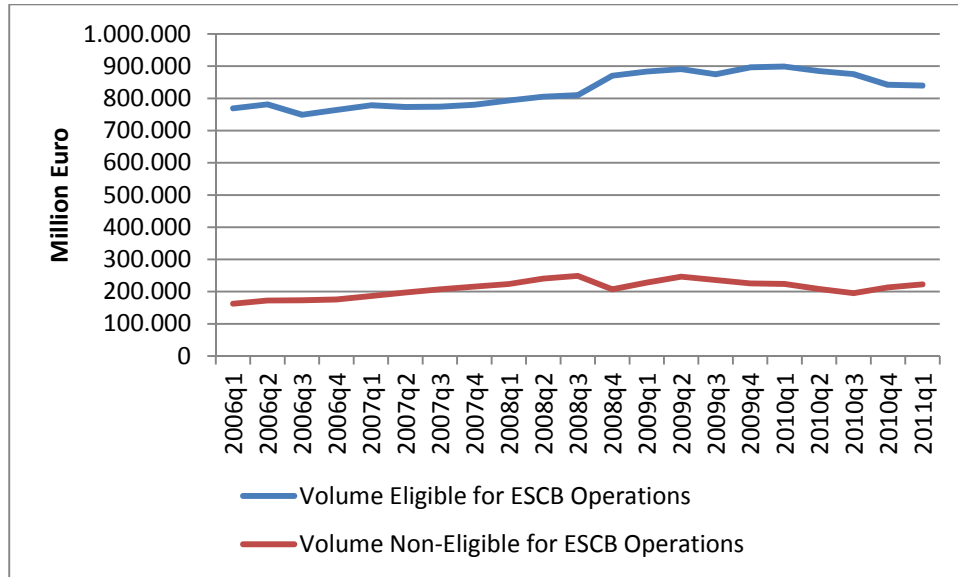
Figure 2: Overall Volume of German and Non-German Securities
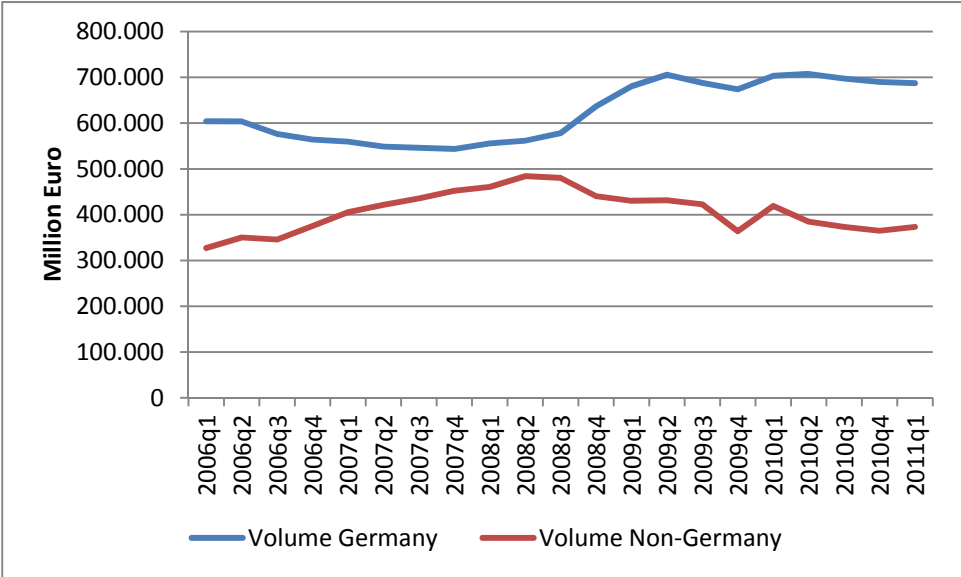
Figure 3: Overall Volume in the German and Non-German Financial and Government Sectors
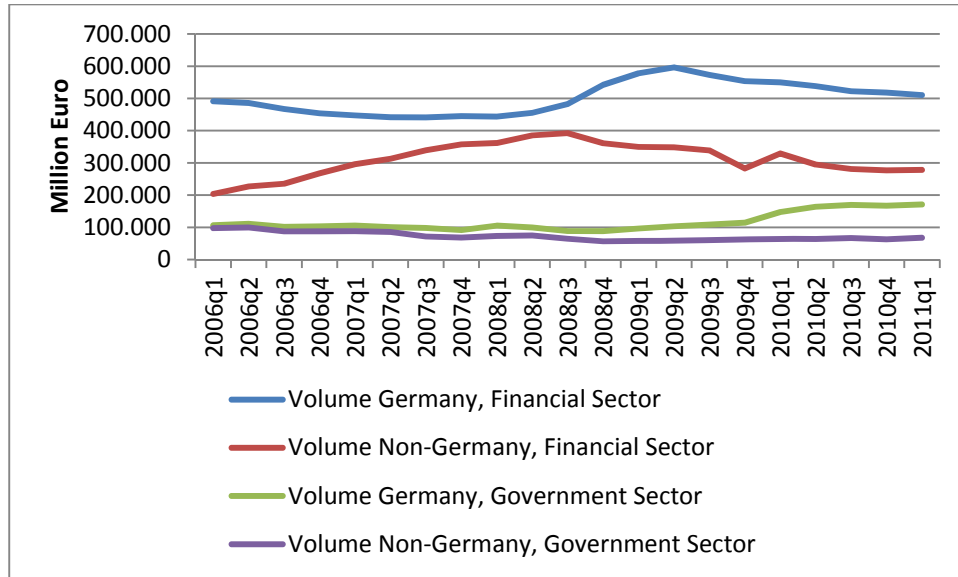
Figure 4: Time Dummies of the Panel Regressions
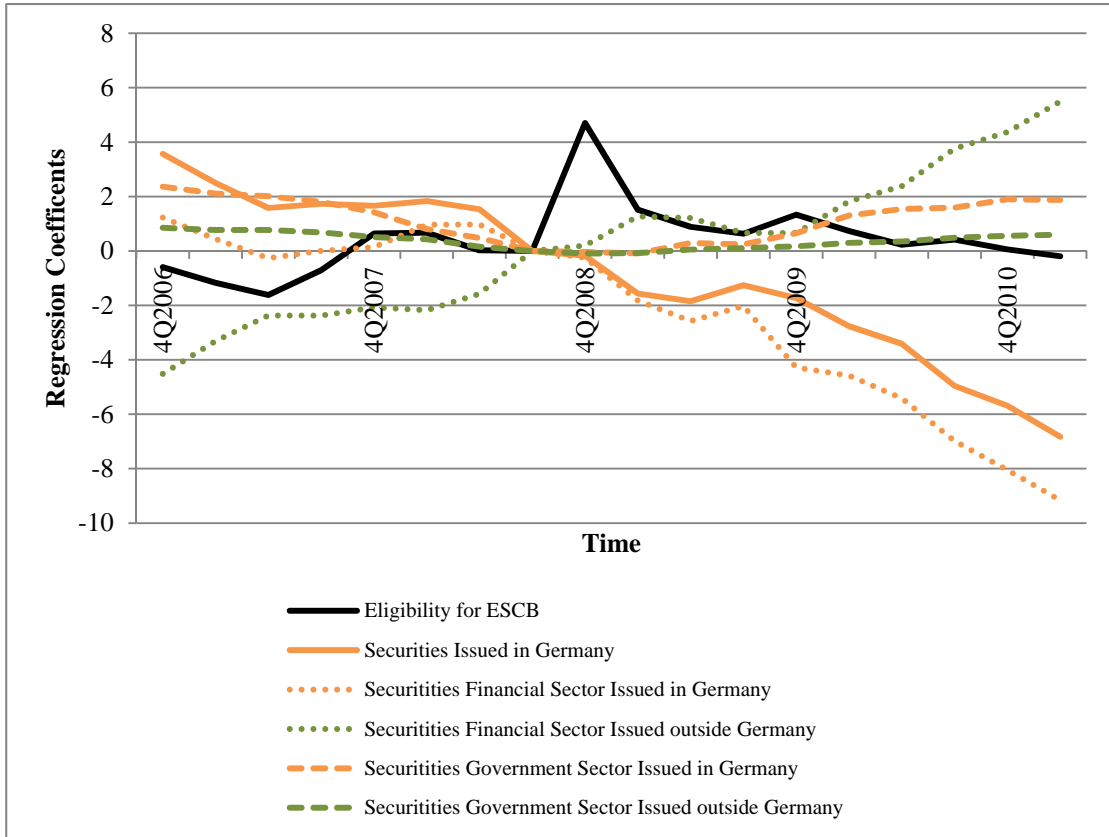
Table 1: Summary Statistics (Total Volume)

In this table we report summary statistics on the total nominal volume of our dataset in an average time period, i.e. all numbers in this table related to the volume are aggregated over banks and averaged over time. The rightmost column shows the corresponding percentages.

		Volume (in mn €)	Share (in %)
Panel A: Size			
Securities		1,040,000	
Total Assets		4,770,000	
Panel B: Eligibility for ESCB operations			
Volume of eligible securities		825,000	79.7%
Volume of non-eligible securities		210,000	20.3%
Total		1,035,000	100.0%
Panel C: Issuer country			
Germany		624,000	60.5%
Euro-area (without PIIGS)		126,000	12.2%
PIIGS		160,000	15.5%
Other EU		48,700	4.7%
USA		28,200	2.7%
Rest of world		44,500	4.3%
Total		1,031,400	100.0%
Panel D: Sector			
Financial sector	Germany	502,000	48.9%
	Non-Germany	310,000	30.2%
Government sector	Germany	116,000	11.3%
	Non-Germany	72,300	7.0%
Real sector	Germany	6,460	0.6%
	Non-Germany	18,900	1.8%
Total		1,025,66	100.0%
Panel E: Asset classes			
Asset Backed Securities		119,000	11.5%
Government Bonds		162,000	15.7%
Other Bonds		110,000	10.6%
Pfandbriefe (Covered Bonds)		201,000	19.4%
Shares		6,630	0.6%
Floating Rate Notes		314,000	30.4%
Medium Term Notes		85,000	8.2%
Other		36,500	3.5%
Total		1,034,130	100.0%
Panel G: Further breakdown			
Greek government bonds		6,730	
Particular US and German bonds		83,800	

Table 2: Summary Statistics (Average Volume)

In this table we report the composition (in total nominal volume) of an average bank's securities portfolio across the different bank groups in an average time period, i.e. all numbers in this table are the weighted averages of banks in the different bank groups, averaged over time.

Mean (Average period)		Big banks	Regional banks / other commercial banks	Landes-banken	Savings banks	Regional institutions of credit cooperatives	Credit cooperatives
Average N° of banks		5	128	11	440	2	1207
Panel A: Size (in mn €)							
Securities		46,080	894	29,749	437	43,707	108
Total assets		315,477	5,168	141,207	2,412	128,865	549
Panel B: Eligibility for ESCB operations (in mn €)							
Volume of eligible securities		33,974	730	21,635	391	30,143	89
Volume of non-eligible securities		10,657	141	7,353	42	13,292	15
Panel C: Issuer country (in mn €)							
Germany		25,485	530	14,801	368	19,188	74
Euro-area (without PIIGS)		7,116	111	3,886	25	6,752	13
PIIGS		8,057	161	6,288	22	8,367	9
Other EU		1,810	43	1,931	10	2,916	5
USA		1,317	18	972	5	2,499	3
Rest of world		1,994	24	1,697	6	3,803	4
Panel D: Sector (in mn €)							
Financial sector	Germany	16,465	415	11,372	326	15,466	68
	Non-Germany	11,342	269	12,694	54	20,849	31
Government sector	Germany	8,767	109	3,250	40	3,433	5
	Non-Germany	7,626	78	1,154	11	1,878	2
Real sector	Germany	253	6	178	2	289	1
	Non-Germany	989	5	747	3	1,464	1
Panel E: Asset classes (in mn €)							
Asset Backed Securities		6,544	263	4,020	10	7,715	5
Government Bonds		13,510	173	3,403	47	4,641	6
Other Bonds		3,045	38	2,623	84	2,840	25
Pfandbriefe (Covered Bonds)		6,641	168	2,472	181	5,682	23
Shares		604	5	155	0	306	1
Floating Rate Notes		11,572	194	13,847	83	18,500	24
Medium Term Notes		2,846	47	2,168	30	3,559	23
Other		1,317	5	1,060	4	464	2
Panel F: Further breakdown (in mn €)							
Greek government bonds		474	10	110	2	122	0
Particular US and German bonds		1,534	100	2,514	71	2,153	6

Table 3: Summary Statistics (Shares)

In this table we report the composition (in %) of an (unweighted) average bank's securities portfolio across the different bank groups in an average time period, i.e. all numbers in panels A to F of this table are the unweighted averages of banks in the different bank groups, averaged over time. Panel F provides portfolio concentration indices. Panel G provides additional bank-specific performance information.

Mean (% per period)		Big banks	Regional banks / other commercial banks	Landes-banken	Savings banks	Regional institutions of credit cooperatives	Credit cooperatives
Average N° of banks		5	128	11	440	2	1207
Panel A: Eligibility for ESCB operations (% of total portfolio size)							
Volume of eligible securities		75.7 %	75.5 %	78.2 %	89.3 %	72.4 %	84.7 %
Volume of non-eligible securities		24.3 %	24.5 %	21.8 %	10.7 %	27.6 %	15.3 %
Panel B: Issuer country (% of total portfolio size)							
Germany		54.1 %	67.4 %	51.7 %	87.7 %	50.5 %	73.0 %
Euro-area (without PIIGS)		15.7 %	14.0 %	14.5 %	5.1 %	15.9 %	12.3 %
PIIGS		18.2 %	7.1 %	18.6 %	3.5 %	15.7 %	4.3 %
Other EU		4.2 %	3.1 %	6.4 %	1.6 %	6.4 %	3.9 %
USA		3.1 %	3.2 %	3.1 %	1.0 %	4.2 %	3.3 %
Rest of world		4.6 %	5.2 %	5.8 %	1.2 %	7.3 %	3.2 %
Panel C: Sector (% of total portfolio size)							
Financial sector	Germany	33.9 %	45.4 %	38.9 %	79.3 %	34.3 %	68.0 %
	Non-Germany	25.4 %	24.3 %	41.3 %	8.9 %	41.9 %	24.1 %
Government sector	Germany	19.3 %	17.6 %	11.8 %	7.5 %	15.1 %	3.4 %
	Non-Germany	17.2 %	4.9 %	3.4 %	2.4 %	3.2 %	1.4 %
Real sector	Germany	0.6 %	4.2 %	0.8 %	0.8 %	0.9 %	1.5 %
	Non-Germany	2.2 %	2.8 %	2.9 %	0.9 %	3.9 %	1.4 %
Panel D: Asset classes (% of total portfolio size)							
Asset Backed Securities		13.0 %	3.5 %	10.2 %	1.3 %	14.4 %	2.4 %
Government Bonds		30.3 %	20.8 %	11.9 %	9.4 %	15.8 %	4.5 %
Other Bonds		6.7 %	9.5 %	7.7 %	23.5 %	7.8 %	29.9 %
Pfandbriefe (Covered Bonds)		14.9 %	20.0 %	8.4 %	42.0 %	14.2 %	13.7 %
Shares		1.5 %	4.0 %	0.5 %	0.1 %	0.8 %	2.1 %
Floating Rate Notes		24.6 %	25.7 %	50.9 %	13.9 %	37.7 %	17.1 %
Medium Term Notes		6.1 %	9.4 %	8.2 %	8.2 %	8.6 %	28.9 %
Other		2.9 %	7.1 %	2.3 %	1.7 %	0.7 %	1.4 %
Panel E: Further breakdown							
Greek government bonds (% of government sector)		2.8 %	2.1 %	2.4 %	3.3 %	1.8 %	1.8 %
Particular US and German bonds (% of total portfolio size)		3.7 %	7.2 %	9.6 %	20.8 %	3.6 %	9.1 %
Panel F: Herfindahl-Hirschman Index							
Issuers		0.049	0.315	0.041	0.168	0.019	0.167
Sectors of issuers		0.290	0.633	0.388	0.709	0.342	0.611
Asset classes		0.252	0.587	0.371	0.437	0.240	0.383
Panel G: Key bank information							
Equity Ratio		4.2 %	11.4 %	3.4 %	5.0 %	3.3 %	5.9 %
Return on Assets		7.5 %	14.2 %	5.8 %	5.4 %	4.1 %	5.7 %
Write-offs & provisions (% of total assets)		0.4 %	0.5 %	0.3 %	0.5 %	0.2 %	0.5 %
Deposits (% of total assets)		39.5 %	56.6 %	25.0 %	66.4 %	12.0 %	73.1 %
Securities (% of total assets)		17.2 %	17.1 %	23.3 %	18.8 %	31.8 %	20.1 %

Table 4: Cross-Sectional Regression (Between Effects)

In this table we report cross-sectional (between effects) regressions of 6 different dependent variables. That is, for both the dependent and the explanatory variables, means over time are taken. In specification (1), the dependent variable is the share (in %) of the volume eligible for ESCB operations. Specification (2) reports the cross-sectional results for the share (in %) of securities in the portfolio that were issued in Germany. In specifications (3) and (4), the dependent variables are the shares (in %) of the volume issued in the German financial sector and in the non-German financial sector, respectively. Specifications (5) and (6) report the between effects regression results for the shares (in %) of the volume issued in the German government sector and in the non-German government sector, respectively. The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Eligibility for ESCB operations (in %)	Issued in Germany (in %)	Issued in Germany, Financial Sector (in %)	Issued outside Germany, Financial Sector (in %)	Issued in Germany, Government Sector (in %)	Issued outside Germany, Government Sector (in %)
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Bank Group						
Big Bank	14.262*	-22.402***	-35.172***	5.971	10.564**	13.753***
	(1.75)	(-2.76)	(-4.08)	(0.83)	(2.46)	(5.15)
Regional Bank	8.747***	-21.284***	-33.11***	17.768***	10.127***	2.591***
	(4.79)	(-11.68)	(-17.11)	(11.04)	(10.49)	(4.32)
Landesbank	20.787***	-16.472***	-20.517***	15.345***	2.502	-0.945
	(3.75)	(-2.97)	(-3.49)	(3.14)	(0.85)	(-0.52)
Reg. Inst. of Credit Cooperatives	15.089	-11.648	-20.253	11.270	7.050	-2.132
	(1.19)	(-0.92)	(-1.50)	(1.01)	(1.05)	(-0.51)
Credit Cooperative	4.420***	-17.830***	-13.787***	18.278***	-3.923***	-0.757**
	(3.86)	(-15.60)	(-11.36)	(18.12)	(-6.48)	(-2.01)
Main Effects						
Share of Securities (%)	0.640***	-0.341***	-0.334***	0.287***	0.026	0.032**
	(16.17)	(-8.64)	(-7.96)	(8.22)	(1.26)	(2.48)
Deposit Ratio (%)	0.113***	0.315***	0.326***	-0.250***	0.020	-0.037***
	(2.80)	(7.82)	(7.60)	(-7.01)	(0.92)	(-2.75)
Equity Ratio (%)	-0.404***	-0.210**	-0.174*	-0.110	-0.183***	0.171***
	(-4.22)	(-2.20)	(-1.72)	(-1.31)	(-3.62)	(5.44)
Return on Assets (%)	-0.334***	0.230***	0.125*	-0.111**	0.112***	-0.110***
	(-5.28)	(3.65)	(1.86)	(-1.99)	(3.35)	(-5.29)
Write-offs & provisions (%)	-0.720***	-0.022	0.053	-0.094	-0.175	0.123
	(-2.86)	(-0.09)	(0.20)	(-0.42)	(-1.31)	(1.48)
ln(Assets)	-2.850***	1.006***	-0.672*	1.029***	0.211	0.149
	(-7.67)	(-2.71)	(-1.70)	(3.14)	(1.07)	(1.22)
Constant	110.293***	94.365***	78.322***	-0.655	1.808	0.868
	(12.14)	(10.40)	(8.13)	(-0.08)	(0.38)	(0.29)
N	31,947	31,937	31,947	31,947	31,947	31,947
N_g	1,884	1,884	1,884	1,884	1,884	1,884
R^2 (within)	0.12	0.02	0.02	0.02	0.00	0.00
R^2 (between)	0.26	0.21	0.25	0.20	0.16	0.09
R^2 (overall)	0.23	0.15	0.17	0.16	0.12	0.05

Table 5: Eligibility for ESCB Operations (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is eligible for ESCB operations. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of -3.589 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a significantly lower share of securities eligible for ESCB operations in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Eligible securities	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Top 50% Bank	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	9.529*	9.067*	8.875	9.589*	9.185	9.235	10.700*	9.753*	8.037	9.262	7.899	9.274	9.566*
	(1.68)	(1.69)	(1.57)	(1.71)	(1.64)	(1.61)	(1.89)	(1.81)	(0.98)	(1.64)	(1.39)	(1.64)	(1.69)
Regional Bank	4.137	4.381	4.531*	4.739*	5.390**	5.967**	4.879*	6.140**	5.634**	4.747*	4.824*	4.843*	5.037*
	(1.61)	(1.64)	(1.70)	(1.80)	(2.01)	(2.24)	(1.85)	(2.30)	(2.13)	(1.78)	(1.81)	(1.82)	(1.89)
Landesbank	15.506***	15.646***	14.696***	15.520***	15.684***	16.204***	16.038***	15.815***	14.517***	15.618***	14.217***	15.550***	15.770***
	(3.85)	(3.55)	(3.27)	(3.47)	(3.51)	(3.64)	(3.56)	(3.55)	(2.82)	(3.51)	(3.20)	(3.51)	(3.55)
Reg. Inst. of Credit Coop.	8.730	8.336	7.050	8.161	8.498	8.886	8.174	7.879	6.644	8.359	7.497	8.323	8.727
	(1.47)	(1.41)	(1.19)	(1.38)	(1.43)	(1.50)	(1.43)	(1.38)	(1.64)	(1.41)	(1.16)	(1.41)	(1.47)
Credit Cooperative	5.341***	5.165***	5.374***	5.197***	4.856***	5.147***	5.477***	5.892***	9.091***	5.031***	5.251***	4.75***	5.270***
	(4.03)	(3.89)	(4.01)	(3.90)	(3.65)	(3.89)	(4.12)	(4.35)	(9.47)	(3.80)	(3.98)	(3.59)	(3.97)
Main Effects													
Share of Securities (%)	0.729***	0.753***	0.750***	0.739***	0.742***	0.742***	0.752***	0.771***	0.742***	0.740***	0.745***	0.740***	0.738***
	(16.48)	(16.80)	(16.80)	(16.66)	(16.49)	(16.58)	(16.82)	(17.19)	(16.60)	(16.56)	(16.70)	(16.61)	(16.53)
Deposit Ratio (%)	0.036	0.012	0.016	0.029	0.031	0.031	0.006	-0.017	0.061	0.035	0.031	0.038	0.034
	(0.88)	(0.29)	(0.39)	(0.69)	(0.73)	(0.73)	(0.15)	(-0.41)	(1.46)	(0.84)	(0.75)	(0.91)	(0.8)
Equity Ratio (%)	-0.286***	-0.300***	-0.315***	-0.302***	-0.262**	-0.259**	-0.325***	-0.288***	-0.186*	-0.295***	-0.303***	-0.295***	-0.290***
	(-2.98)	(-2.97)	(-2.94)	(-2.96)	(-2.56)	(-2.55)	(-3.09)	(-2.87)	(-1.91)	(-2.85)	(-2.89)	(-2.86)	(-2.82)
Return on Assets (%)	-0.033	-0.030	-0.034	-0.034	-0.002	-0.026	-0.044	-0.045	-0.011	-0.027	-0.025	-0.028	-0.030
	(-1.07)	(-0.95)	(-1.17)	(-1.14)	(-0.75)	(-0.96)	(-1.40)	(-1.51)	(-0.43)	(-0.95)	(-0.88)	(-0.99)	(-1.03)
Write-offs & provisions (%)	0.179	0.420	0.384	0.512	0.532	0.651	0.442	0.423	0.453	0.512	0.483	0.513	0.516
	(0.59)	(1.22)	(1.18)	(1.41)	(1.34)	(1.45)	(1.28)	(1.18)	(1.27)	(1.38)	(1.34)	(1.39)	(1.40)
ln(Assets)	-2.409***	-2.488***	-2.513***	-2.504***	-2.447***	-2.417***	-2.834***	-2.840***		-2.411***	-2.405***	-2.498***	-2.377***
	(-4.41)	(-4.61)	(-4.54)	(-4.58)	(-4.53)	(-4.48)	(-5.1)	(-5.18)		(-4.48)	(-4.46)	(-4.66)	(-4.40)
Top 50%-Bank									-17.795***				
									(-2.69)				

Interaction Effects: After x …

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
High Share of Securities		-3.589***						-3.295***					
		(-6.59)						(-5.96)					
High Deposit Ratio			-2.941***					-1.709***					
			(-5.40)					(-3.03)					
High Equity Ratio				-1.786***				-1.429**					
				(-3.32)				(-2.45)					
High ROA					0.822			0.250					
					(1.53)			(0.44)					
High Write-offs & provisions						1.790***		1.751***					
						(3.33)		(3.41)					
High ln(Assets)							3.080***	1.977***					
							(5.64)	(3.14)					
Top 50%-Bank									8.384***				
									(3.22)				
High Share PIIGS										0.165			
										(0.31)			
High Share Greek Sec.											2.846***		
											(2.60)		
High Share ABS												1.591***	
												(3.04)	
High Share Troubled Assets													1.267**
													(2.35)
Constant	101.414***	104.326***	104.545***	103.664***	102.288***	101.439***	111.610***	112.497***	48.116***	101.417***	101.376***	103.136***	100.682***
	(8.12)	(8.39)	(8.25)	(8.25)	(8.27)	(8.19)	(8.77)	(8.97)	(15.82)	(8.18)	(8.19)	(8.36)	(8.10)
N	31,947	31,482	31,581	31,581	31,416	31,416	31,581	31,416	31,466	31,482	31,482	31,482	31,482
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.16	0.18	0.17	0.17	0.17	0.17	0.17	0.19	0.17	0.17	0.17	0.17	0.17
R^2 (between)	0.23	0.23	0.22	0.22	0.23	0.23	0.22	0.22	0.22	0.24	0.24	0.23	0.24
R^2 (overall)	0.22	0.22	0.22	0.22	0.22	0.21	0.22	0.21	0.20	0.22	0.22	0.21	0.22

Table 6: Securities Issued in Germany (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is issued in Germany. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of -2.040 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a significantly lower share of securities issued in Germany in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Issued in Germany	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Big Bank (1 of approx. 20)	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	-21.234***	-21.373***	-21.303***	-20.473***	-21.205***	-21.255***	-18.435***	-19.342***	-25.969***	-21.808***	-24.139***	-21.486***	-21.111***
	(-4.88)	(-4.94)	(-4.91)	(-4.56)	(-4.84)	(-4.94)	(-4.28)	(-4.47)	(-3.93)	(-5.27)	(-5.76)	(-5.01)	(-4.87)
Regional Bank	-21.020***	-18.414***	-19.523***	-19.108***	-17.955***	-17.880***	-18.882***	-16.956***	-17.691***	-18.267***	-18.051***	-18.146***	-18.071***
	(-7.42)	(-6.69)	(-6.84)	(-6.67)	(-6.60)	(-6.53)	(-6.53)	(-6.17)	(-6.43)	(-6.76)	(-6.55)	(-6.58)	(-6.58)
Landesbank	-21.067***	-21.589***	-22.255***	-21.614***	-21.687***	-20.926***	-20.560***	-20.919***	-25.440***	-21.857***	-24.588***	-21.865***	-21.545***
	(-4.73)	(-4.96)	(-5.07)	(-4.95)	(-4.98)	(-4.82)	(-4.65)	(-4.78)	(-5.04)	(-5.18)	(-5.53)	(-5.05)	(-4.96)
Reg. Inst. of Credit Coop.	-19.689***	-19.777***	-20.819***	-19.961***	-19.949***	-19.078***	-19.749***	-20.142***	-23.703***	-19.87***	-21.6***	-19.968***	-19.594***
	(-3.11)	(-3.11)	(-3.3)	(-3.19)	(-3.11)	(-3)	(-3.29)	(-3.33)	(-3.8)	(-3.13)	(-2.91)	(-3.16)	(-3.07)
Credit Cooperative	-18.437***	-18.474***	-18.242***	-18.239***	-18.435***	-18.489***	-17.831***	-17.314***	-15.709***	-18.124***	-18.137***	-18.776***	-18.422***
	(-15.05)	(-14.76)	(-14.41)	(-14.36)	(-14.68)	(-14.81)	(-13.95)	(-13.64)	(-17.46)	(-15.69)	(-14.38)	(-15.27)	(-14.77)
Main Effects													
Share of Securities (%)	-0.086**	-0.074*	-0.069	-0.080*	-0.080*	-0.081*	-0.057	-0.046	-0.076*	-0.090**	-0.073*	-0.084*	-0.083*
	(-2.00)	(-1.68)	(-1.59)	(-1.85)	(-1.83)	(-1.84)	(-1.32)	(-1.07)	(-1.75)	(-2.10)	(-1.67)	(-1.93)	(-1.91)
Deposit Ratio (%)	0.172***	0.159***	0.154***	0.163***	0.175***	0.174***	0.126**	0.124**	0.184***	0.174***	0.164***	0.175***	0.171***
	(3.63)	(3.17)	(3.18)	(3.32)	(3.45)	(3.44)	(2.53)	(2.43)	(3.78)	(3.63)	(3.3)	(3.53)	(3.41)
Equity Ratio (%)	-0.08	-0.046	-0.081	-0.065	-0.040	-0.041	-0.108	-0.080	0.028	-0.034	-0.061	-0.040	-0.040
	(-0.51)	(-0.24)	(-0.46)	(-0.36)	(-0.20)	(-0.20)	(-0.58)	(-0.39)	(0.15)	(-0.19)	(-0.33)	(-0.21)	(-0.21)
Return on Assets (%)	-0.049	-0.052	-0.056	-0.060	-0.059	-0.060	-0.077	-0.092	-0.039	-0.041	-0.046	-0.050	-0.052
	(-0.88)	(-0.90)	(-1.02)	(-1.04)	(-0.95)	(-0.98)	(-1.27)	(-1.36)	(-0.73)	(-0.75)	(-0.89)	(-0.91)	(-0.92)
Write-offs & provisions (%)	0.101	-0.006	-0.072	0.053	-0.007	0.095	-0.067	-0.142	-0.033	0.030	-0.016	0.045	0.048
	(0.50)	(-0.02)	(-0.28)	(0.21)	(-0.03)	(0.37)	(-0.26)	(-0.53)	(-0.13)	(0.12)	(-0.06)	(0.18)	(0.19)
ln(Assets)	-1.725***	-1.754***	-1.882***	-1.920***	-1.671***	-1.709***	-2.501***	-2.368***		-1.525***	-1.718***	-1.762***	-1.696***
	(-3.07)	(-3.09)	(-3.25)	(-3.33)	(-2.94)	(-3.02)	(-4.34)	(-4.21)		(-3.07)	(-3.05)	(-3.21)	(-3.00)
Top 50%-Bank									-14.050***				
									(-3.00)				

Interaction Effects: After x …

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
High Share of Securities		-2.040***						-1.890***					
		(-3.13)						(-2.77)					
High Deposit Ratio			-2.940***					-1.642**					
			(-4.53)					(-2.39)					
High Equity Ratio				-3.194***				-2.033***					
				(-4.93)				(-3.02)					
High ROA					-0.747			-0.666					
					(-1.15)			(-0.98)					
High Write-offs & provisions						1.837***		1.703***					
						(2.83)		(2.63)					
High ln(Assets)							5.242***	3.930***					
							(8.03)	(5.43)					
Top 50%-Bank									16.601***				
									(4.31)				
High Share PIIGS										-1.231*			
										(-1.90)			
High Share Greek Sec.											6.037***		
											(4.95)		
High Share ABS												1.620**	
												(2.45)	
High Share Troubled Assets													0.667
													(1.02)
Constant	115.759***	116.851***	119.781***	119.986***	114.173***	114.999***	133.840***	130.687***	77.870***	111.160***	115.631***	116.233***	114.948***
	(8.84)	(8.79)	(8.87)	(8.92)	(8.58)	(8.66)	(9.92)	(9.87)	(24.64)	(9.47)	(8.77)	(9.01)	(8.68)
N	31,937	31,473	31,571	31,571	31,407	31,407	31,571	31,407	31,457	31,473	31,473	31,473	31,473
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.10	0.10	0.1	0.11	0.10	0.10	0.12	0.12	0.10	0.10	0.10	0.10	0.10
R^2 (between)	0.18	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.18	0.15	0.15	0.16
R^2 (overall)	0.15	0.15	0.15	0.14	0.15	0.14	0.15	0.15	0.15	0.16	0.14	0.14	0.15

Table 7: Securities from the Financial Sector Issued in Germany (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is issued in Germany and is from the financial sector. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of -1.595 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a significantly lower share of securities issued in Germany and from the financial sector in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Fin. Sect. - Germany	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Big Bank (1 of approx. 20)	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	-34.423***	-34.570***	-34.625***	-33.709***	-34.237***	-34.364***	-31.113***	-31.748***	-46.219***	-34.869***	-37.158***	-34.647***	-34.259***
	(-7.46)	(-7.38)	(-7.53)	(-7.08)	(-7.38)	(-7.64)	(-6.84)	(-7.01)	(-7.10)	(-7.71)	(-8.18)	(-7.54)	(-7.39)
Regional Bank	-32.105***	-30.475***	-30.986***	-30.489***	-30.113***	-30.280***	-30.197***	-28.980***	-29.928***	-30.388***	-30.173***	-30.312***	-30.135***
	(-11.13)	(-10.64)	(-10.80)	(-10.52)	(-10.42)	(-10.51)	(-10.43)	(-9.92)	(-10.43)	(-10.74)	(-10.53)	(-10.59)	(-10.48)
Landesbank	-26.523***	-28.070***	-28.947***	-28.348***	-28.204***	-27.318***	-26.974***	-27.125***	-37.116***	-28.183***	-30.857***	-28.236***	-27.984***
	(-5.90)	(-6.71)	(-6.93)	(-6.79)	(-6.78)	(-6.55)	(-6.47)	(-6.59)	(-6.66)	(-6.9)	(-7.20)	(-6.78)	(-6.71)
Reg. Inst. of Credit Coop.	-30.022***	-29.756***	-31.098***	-30.305***	-30.125***	-29.006***	-29.957***	-30.150***	-37.931***	-29.715***	-31.445***	-29.866***	-29.512***
	(-7.47)	(-7.25)	(-7.66)	(-7.41)	(-7.36)	(-7.14)	(-7.19)	(-7.28)	(-7.54)	(-7.54)	(-8.28)	(-7.36)	(-7.24)
Credit Cooperative	-14.381***	-14.451***	-14.222***	-14.155***	-14.288***	-14.506***	-13.679***	-13.080***	-11.854***	-14.087***	-14.132***	-14.556***	-14.366***
	(-10.78)	(-10.63)	(-10.43)	(-10.3)	(-10.35)	(-10.62)	(-9.93)	(-9.41)	(-11.07)	(-10.9)	(-10.25)	(-10.83)	(-10.52)
Main Effects													
Share of Securities (%)	-0.071*	-0.062	-0.057	-0.068*	-0.067*	-0.067*	-0.039	-0.029	-0.063	-0.075*	-0.060	-0.070*	-0.070*
	(-1.78)	(-1.52)	(-1.41)	(-1.71)	(-1.66)	(-1.65)	(-1.00)	(-0.73)	(-1.56)	(-1.88)	(-1.49)	(-1.73)	(-1.73)
Deposit Ratio (%)	0.139**	0.140**	0.125**	0.132**	0.151***	0.149***	0.088	0.094*	0.163***	0.152***	0.142**	0.15***	0.148**
	(2.47)	(2.42)	(2.24)	(2.35)	(2.63)	(2.60)	(1.60)	(1.69)	(2.87)	(2.69)	(2.49)	(2.63)	(2.56)
Equity Ratio (%)	-0.360*	-0.344	-0.379*	-0.361*	-0.339	-0.341	-0.415**	-0.388*	-0.273	-0.327	-0.358*	-0.338	-0.339
	(-1.90)	(-1.58)	(-1.84)	(-1.70)	(-1.48)	(-1.48)	(-2.13)	(-1.76)	(-1.27)	(-1.52)	(-1.68)	(-1.56)	(-1.56)
Return on Assets (%)	-0.018	-0.015	-0.021	-0.027	-0.023	-0.022	-0.048	-0.062	-0.002	-0.007	-0.009	-0.013	-0.015
	(-0.39)	(-0.32)	(-0.47)	(-0.58)	(-0.46)	(-0.46)	(-0.95)	(-1.11)	(-0.06)	(-0.15)	(-0.22)	(-0.29)	(-0.34)
Write-offs & provisions (%)	0.181	0.139	-0.009	0.121	0.180	0.277	-0.026	0.027	0.116	0.156	0.121	0.177	0.183
	(0.80)	(0.46)	(-0.03)	(0.38)	(0.58)	(0.92)	(-0.08)	(0.08)	(0.37)	(0.52)	(0.39)	(0.59)	(0.61)
ln(Assets)	-1.663***	-1.643***	-1.797***	-1.858***	-1.576***	-1.643***	-2.587***	-2.436***		-1.431***	-1.618***	-1.609***	-1.598***
	(-2.82)	(-2.77)	(-3.01)	(-3.12)	(-2.65)	(-2.77)	(-4.26)	(-4.06)		(-2.63)	(-2.74)	(-2.77)	(-2.69)
Top 50%-Bank									-1.850				
									(-0.36)				

Interaction Effects: After x …

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
High Share of Securities		-1.595**						-1.524**					
		(-2.26)						(-2.10)					
High Deposit Ratio			-3.082***					-1.681**					
			(-4.35)					(-2.24)					
High Equity Ratio				-3.862***				-2.278***					
				(-5.45)				(-3.02)					
High ROA					-1.553**			-1.234*					
					(-2.18)			(-1.69)					
High Write-offs & provisions						1.921***		1.772**					
						(2.71)		(2.53)					
High ln(Assets)							6.421***	4.942***					
							(8.96)	(6.08)					
Top 50%-Bank									11.684***				
									(2.77)				
High Share PIIGS										-1.523**			
										(-2.16)			
High Share Greek Sec.											5.639***		
											(3.86)		
High Share ABS												0.569	
												(0.81)	
High Share Troubled Assets													0.850
													(1.19)
Constant	110.527***	109.852***	113.960***	114.685***	107.719***	109.266***	131.974***	127.780***	73.305***	104.618***	109.032***	108.578***	108.415***
	(7.65)	(7.52)	(7.79)	(7.86)	(7.39)	(7.47)	(8.93)	(8.70)	(16.52)	(7.70)	(7.54)	(7.56)	(7.43)
N	31,947	31,482	31,581	31,581	31,416	31,416	31,581	31,416	31,466	31,482	31,482	31,482	31,482
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.09	0.10	0.10	0.10	0.10	0.10	0.11	0.12	0.10	0.09	0.10	0.10	0.10
R^2 (between)	0.23	0.20	0.21	0.20	0.19	0.18	0.21	0.18	0.19	0.21	0.18	0.19	0.20
R^2 (overall)	0.18	0.17	0.17	0.16	0.17	0.16	0.17	0.16	0.17	0.18	0.16	0.17	0.17

Table 8: Securities from the Financial Sector Issued outside Germany (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is issued outside Germany and is from the financial sector. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of 1.797 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a significantly higher share of securities issued outside Germany and from the financial sector in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Fin. Sect. - Non-Germ.	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Big Bank (1 of approx. 20)	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	5.355	5.947	5.759	5.043	5.745	5.792	3.090	3.842	7.24	6.006	7.913*	5.972	5.730
	(1.27)	(1.43)	(1.36)	(1.19)	(1.35)	(1.34)	(0.73)	(0.92)	(1.32)	(1.50)	(1.88)	(1.44)	(1.36)
Regional Bank	14.782***	13.184***	14.336***	13.969***	13.167***	13.116***	13.735***	12.310***	12.565***	13.196***	12.895***	13.007***	12.909***
	(5.43)	(5.23)	(5.31)	(5.14)	(5.50)	(5.44)	(5.00)	(5.07)	(5.02)	(5.35)	(5.13)	(5.17)	(5.14)
Landesbank	18.675***	19.589***	20.007***	19.501***	19.612***	18.987***	18.480***	18.780***	20.895***	19.607***	21.763***	19.774***	19.562***
	(4.19)	(4.51)	(4.57)	(4.47)	(4.51)	(4.39)	(4.19)	(4.30)	(4.53)	(4.65)	(4.94)	(4.59)	(4.52)
Reg. Inst. of Credit Coop.	16.577***	16.907***	17.621***	16.949***	16.975***	16.254***	16.708***	17.004***	18.564***	16.830***	18.223***	17.034***	16.769***
	(2.87)	(2.88)	(3.02)	(2.93)	(2.86)	(2.76)	(3.01)	(3.04)	(3.75)	(2.89)	(2.74)	(2.92)	(2.86)
Credit Cooperative	18.418***	18.266***	18.109***	18.083***	18.192***	18.241***	17.702***	17.227***	16.093***	18.059***	18.043***	18.517***	18.230***
	(16.89)	(16.42)	(15.98)	(15.93)	(16.27)	(16.41)	(15.43)	(15.17)	(20.56)	(17.68)	(16.15)	(17.01)	(16.53)
Main Effects													
Share of Securities (%)	0.110***	0.100**	0.095**	0.104***	0.105***	0.105***	0.083**	0.074*	0.102***	0.113***	0.100**	0.109***	0.108***
	(2.85)	(2.51)	(2.42)	(2.68)	(2.67)	(2.69)	(2.14)	(1.91)	(2.62)	(2.95)	(2.54)	(2.8)	(2.76)
Deposit Ratio (%)	-0.169***	-0.162***	-0.160***	-0.167***	-0.177***	-0.177***	-0.133***	-0.132***	-0.183***	-0.172***	-0.166***	-0.174***	-0.172***
	(-3.56)	(-3.25)	(-3.31)	(-3.39)	(-3.53)	(-3.52)	(-2.65)	(-2.59)	(-3.77)	(-3.60)	(-3.35)	(-3.54)	(-3.45)
Equity Ratio (%)	0.108	0.117	0.142	0.128	0.147	0.147	0.168	0.184	0.059	0.096	0.128	0.109	0.112
	(0.58)	(0.55)	(0.69)	(0.61)	(0.68)	(0.68)	(0.79)	(0.83)	(0.27)	(0.45)	(0.61)	(0.51)	(0.52)
Return on Assets (%)	0.058	0.054	0.059	0.063	0.058	0.059	0.079	0.088	0.043	0.046	0.05	0.052	0.054
	(0.97)	(0.90)	(1.00)	(1.03)	(0.88)	(0.91)	(1.22)	(1.23)	(0.77)	(0.81)	(0.89)	(0.91)	(0.91)
Write-offs & provisions (%)	0.020	0.164	0.220	0.114	0.155	0.073	0.227	0.286	0.185	0.130	0.163	0.119	0.116
	(0.10)	(0.63)	(0.80)	(0.44)	(0.58)	(0.30)	(0.82)	(0.97)	(0.69)	(0.50)	(0.61)	(0.46)	(0.45)
ln(Assets)	1.463***	1.384***	1.500***	1.541***	1.315**	1.346**	2.092***	1.983***		1.251***	1.362**	1.397***	1.336**
	(2.77)	(2.59)	(2.74)	(2.82)	(2.46)	(2.53)	(3.80)	(3.70)		(2.68)	(2.56)	(2.72)	(2.53)
Top 50%-Bank									14.967***				
									(3.83)				

Interaction Effects: After x …

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
High Share of Securities		1.797***						1.658***					
		(3.00)						(2.66)					
High Deposit Ratio			2.490***					1.261**					
			(4.17)					(1.99)					
High Equity Ratio				2.882***				1.767***					
				(4.85)				(2.88)					
High ROA					0.641			0.478					
					(1.07)			(0.76)					
High Write-offs & provisions						-1.507**		-1.351**					
						(-2.54)		(-2.28)					
High ln(Assets)							-4.894***	-3.830***					
							(-8.14)	(-5.79)					
Top 50%-Bank									-14.898***				
									(-4.37)				
High Share PIIGS										1.184**			
										(2.00)			
High Share Greek Sec.											-4.427***		
											(-4.65)		
High Share ABS												-1.203**	
												(-1.98)	
High Share Troubled Assets													-0.532
													(-0.89)
Constant	-13.912	-12.543	-14.974	-15.389	-10.3	-10.987	-28.452**	-25.992**	18.242***	-9.133	-11.685	-12.206	-10.977
	(-1.12)	(-0.99)	(-1.16)	(-1.20)	(-0.81)	(-0.87)	(-2.19)	(-2.04)	(5.92)	(-0.82)	(-0.93)	(-1.00)	(-0.88)
N	31,947	31,482	31,581	31,581	31,416	31,416	31,581	31,416	31,466	31,482	31,482	31,482	31,482
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.10	0.10	0.11	0.11	0.10	0.11	0.12	0.13	0.11	0.10	0.11	0.10	0.10
R^2 (between)	0.19	0.19	0.17	0.17	0.19	0.18	0.18	0.18	0.18	0.20	0.18	0.18	0.18
R^2 (overall)	0.17	0.17	0.17	0.16	0.17	0.17	0.17	0.17	0.17	0.18	0.17	0.16	0.17

Table 9: Securities from the Government Sector Issued in Germany (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is issued in Germany and is from the financial sector. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of -0.092 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a (yet insignificantly) lower share of securities issued in Germany and from the government sector in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Gov. sector - Germany	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Big Bank (1 of approx. 20)	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	10.922***	11.049***	10.871***	10.807***	11.08***	11.167***	10.525***	10.786***	19.882***	10.975***	10.732***	11.03***	11.111***
	(3.52)	(3.59)	(3.54)	(3.51)	(3.62)	(3.61)	(3.43)	(3.54)	(5.34)	(3.55)	(3.47)	(3.55)	(3.60)
Regional Bank	8.327***	9.046***	8.670***	8.624***	9.528***	9.716***	8.586***	9.484***	9.003***	9.057***	9.073***	9.112***	9.102***
	(3.96)	(4.30)	(4.14)	(4.12)	(4.47)	(4.58)	(4.08)	(4.40)	(4.27)	(4.31)	(4.32)	(4.33)	(4.30)
Landesbank	3.494	4.752	4.563	4.552	4.916*	4.900*	4.396	4.805*	11.371***	4.629	4.413	4.659	4.778
	(1.20)	(1.59)	(1.55)	(1.54)	(1.66)	(1.65)	(1.50)	(1.65)	(3.09)	(1.55)	(1.48)	(1.56)	(1.60)
Reg. Inst. of Credit Coop.	8.173	8.153	7.933	7.923	8.409	8.303	7.864	8.379	13.78***	8.026	7.952	8.081	8.212
	(1.06)	(1.06)	(1.03)	(1.03)	(1.10)	(1.08)	(1.02)	(1.09)	(2.78)	(1.05)	(1.01)	(1.05)	(1.07)
Credit Cooperative	-4.043***	-4.003***	-3.954***	-3.976***	-4.150***	-4.038***	-4.023***	-4.207***	-4.610***	-4.115***	-3.965***	-4.228***	-3.976***
	(-6.39)	(-6.32)	(-6.36)	(-6.36)	(-6.45)	(-6.34)	(-6.29)	(-6.53)	(-7.86)	(-6.42)	(-6.28)	(-6.58)	(-6.27)
Main Effects													
Share of Securities (%)	0.024	0.027	0.027	0.027	0.027	0.027	0.024	0.025	0.027	0.026	0.027	0.026	0.026
	(0.92)	(0.99)	(0.99)	(1.02)	(1.01)	(1.00)	(0.90)	(0.87)	(1.00)	(0.99)	(1.03)	(0.98)	(0.98)
Deposit Ratio (%)	0.043	0.039	0.037	0.037	0.040	0.040	0.041	0.043	0.035	0.040	0.039	0.041	0.039
	(0.95)	(0.86)	(0.83)	(0.84)	(0.90)	(0.90)	(0.91)	(0.95)	(0.79)	(0.88)	(0.85)	(0.92)	(0.87)
Equity Ratio (%)	0.201	0.224	0.222	0.221	0.259	0.26	0.227	0.263	0.200	0.224	0.222	0.225	0.224
	(1.13)	(1.13)	(1.14)	(1.13)	(1.22)	(1.22)	(1.17)	(1.23)	(1.02)	(1.12)	(1.11)	(1.13)	(1.13)
Return on Assets (%)	0.000	-0.004	-0.004	-0.003	-0.004	-0.005	-0.001	-0.001	-0.006	-0.005	-0.003	-0.004	-0.004
	(-0.01)	(-0.19)	(-0.17)	(-0.13)	(-0.17)	(-0.25)	(-0.03)	(-0.05)	(-0.27)	(-0.24)	(-0.16)	(-0.21)	(-0.2)
Write-offs & provisions (%)	-0.044	-0.075	-0.018	-0.022	-0.071	-0.059	-0.007	-0.051	-0.084	-0.072	-0.080	-0.072	-0.073
	(-0.31)	(-0.36)	(-0.09)	(-0.11)	(-0.32)	(-0.28)	(-0.03)	(-0.25)	(-0.39)	(-0.34)	(-0.38)	(-0.34)	(-0.34)
ln(Assets)	0.392	0.375	0.401	0.412	0.353	0.365	0.488	0.436		0.348	0.372	0.309	0.378
	(1.30)	(1.32)	(1.37)	(1.42)	(1.25)	(1.29)	(1.56)	(1.45)		(1.22)	(1.31)	(1.08)	(1.34)
Top 50%-Bank									-11.564***				
									(-3.87)				

continued on next page

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Interaction Effects: After x …													
High Share of Securities	-0.092 (-0.22)						-0.032 (-0.08)						
High Deposit Ratio		0.110 (0.27)					0.026 (0.06)						
High Equity Ratio			0.333 (0.82)				0.089 (0.19)						
High ROA				0.564 (1.43)			0.463 (1.05)						
High Write-offs & provisions					0.075 (0.19)		0.049 (0.12)						
High ln(Assets)						-0.633 (-1.42)	-0.546 (-1.08)						
Top 50%-Bank									5.126*** (2.99)				
High Share PIIGS										0.723* (1.82)			
High Share Greek Sec.											0.717 (0.92)		
High Share ABS												1.182*** (3.18)	
High Share Troubled Assets													0.199 (0.50)
Constant	-6.057 (-0.72)	-5.680 (-0.71)	-6.108 (-0.74)	-6.325 (-0.77)	-5.387 (-0.68)	-5.715 (-0.72)	-8.079 (-0.92)	-7.280 (-0.86)	2.653 (0.74)	-5.105 (-0.63)	-5.613 (-0.70)	-4.371 (-0.54)	-5.763 (-0.72)
N	31,947	31,482	31,581	31,581	31,416	31,416	31,581	31,416	31,466	31,482	31,482	31,482	31,482
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
R^2 (between)	0.14	0.15	0.15	0.14	0.17	0.17	0.14	0.16	0.15	0.15	0.15	0.15	0.15
R^2 (overall)	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12

Table 10: Securities from the Government Sector Issued outside Germany (Random Effects)

In this table we report random effects regressions. The dependent variable in all 13 specifications is the share (in %) of a bank's securities portfolio that is issued in Germany and is from the financial sector. All 13 specifications include time dummies (omitted from the table). In specification (1), there is no interaction (or treatment) effect. Specifications (2) to (7) show regression results when one interaction (or treatment) effect is added. For example, the interaction effect of 0.197 in specification (2) signifies that banks which have a share of securities (as percent of total assets) higher than the median in III/2008, have a (yet insignificantly) higher share of securities issued outside Germany and from the government sector in the aftermath of the financial crisis. In specification (8), all of the interaction effects of specifications (1) to (7) are included simultaneously. Specifications (9) to (13) present some additional results with single interactions – similar to specifications (1) to (7). The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Gov. Sect. - Non-Germ.	No Interaction Effect	After x High Share of Securities	After x High Deposit Ratio	After x High Equity Ratio	After x High Return on Assets	After x High Write-offs & Provisions	After x High ln(Assets)	Multiple Interaction Effects	After x Big Bank (1 of approx. 20)	After x High Share of PIIGS Securities	After x High Share of Greek Securities	After x High Share of ABS	After x High Share of Certain US + DE Securities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bank Group													
Big Bank	12.939***	13.012***	13.038***	12.967***	13.101***	13.076***	12.907***	13.110***	15.563***	13.040***	13.769***	13.007***	13.067***
	(3.07)	(3.12)	(3.12)	(3.09)	(3.15)	(3.15)	(3.08)	(3.15)	(4.18)	(3.13)	(3.30)	(3.12)	(3.14)
Regional Bank	3.674***	2.802**	2.984**	2.985**	2.923**	2.840**	2.987**	2.813**	2.669**	2.781**	2.730**	2.775**	2.832**
	(2.73)	(2.19)	(2.25)	(2.25)	(2.25)	(2.19)	(2.25)	(2.15)	(2.10)	(2.17)	(2.13)	(2.17)	(2.2)
Landesbank	-0.454	-0.574	-0.407	-0.520	-0.511	-0.582	-0.560	-0.477	1.408	-0.534	0.198	-0.553	-0.536
	(-0.36)	(-0.46)	(-0.32)	(-0.41)	(-0.41)	(-0.46)	(-0.43)	(-0.38)	(1.03)	(-0.43)	(0.15)	(-0.44)	(-0.43)
Reg. Inst. of Credit Coop.	-0.628	-0.461	-0.210	-0.368	-0.423	-0.470	-0.384	-0.330	1.357	-0.426	0.003	-0.445	-0.390
	(-0.41)	(-0.32)	(-0.14)	(-0.25)	(-0.29)	(-0.32)	(-0.26)	(-0.23)	(0.76)	(-0.29)	(0)	(-0.31)	(-0.27)
Credit Cooperative	-0.385	-0.368	-0.417	-0.376	-0.309	-0.349	-0.381	-0.404	-1.065***	-0.352	-0.478	-0.324	-0.334
	(-0.91)	(-0.94)	(-1.02)	(-0.92)	(-0.77)	(-0.89)	(-0.93)	(-1.02)	(-4.36)	(-0.9)	(-1.24)	(-0.81)	(-0.83)
Main Effects													
Share of Securities (%)	-0.008	-0.012	-0.013	-0.011	-0.011	-0.011	-0.012	-0.014	-0.012	-0.011	-0.013	-0.011	-0.012
	(-0.52)	(-0.85)	(-0.93)	(-0.77)	(-0.79)	(-0.78)	(-0.82)	(-0.96)	(-0.84)	(-0.79)	(-0.94)	(-0.79)	(-0.82)
Deposit Ratio (%)	0.007	0.010	0.014	0.012	0.009	0.010	0.013	0.012	0.006	0.009	0.011	0.009	0.009
	(0.44)	(0.65)	(0.88)	(0.77)	(0.59)	(0.60)	(0.85)	(0.72)	(0.35)	(0.58)	(0.68)	(0.57)	(0.58)
Equity Ratio (%)	0.000	-0.029	-0.016	-0.018	-0.03	-0.03	-0.017	-0.028	-0.05	-0.03	-0.024	-0.03	-0.029
	(-0.01)	(-0.73)	(-0.38)	(-0.44)	(-0.68)	(-0.69)	(-0.41)	(-0.64)	(-1.19)	(-0.74)	(-0.63)	(-0.73)	(-0.72)
Return on Assets (%)	-0.007	-0.003	-0.003	-0.004	-0.004	-0.003	-0.004	-0.002	-0.006	-0.003	-0.005	-0.003	-0.004
	(-0.69)	(-0.35)	(-0.35)	(-0.40)	(-0.40)	(-0.32)	(-0.37)	(-0.21)	(-0.60)	(-0.35)	(-0.51)	(-0.35)	(-0.41)
Write-offs & provisions (%)	-0.078	-0.111	-0.099	-0.122	-0.119	-0.134	-0.119	-0.108	-0.106	-0.116	-0.099	-0.116	-0.116
	(-1.07)	(-1.11)	(-0.99)	(-1.17)	(-1.12)	(-1.19)	(-1.15)	(-1.04)	(-1.05)	(-1.14)	(-1.06)	(-1.14)	(-1.12)
ln(Assets)	0.432**	0.433**	0.462**	0.453**	0.425**	0.423**	0.470**	0.445**		0.428**	0.419**	0.440**	0.430**
	(2.02)	(2.26)	(2.26)	(2.22)	(2.22)	(2.23)	(2.23)	(2.22)		(2.27)	(2.29)	(2.29)	(2.26)
Top 50%-Bank									0.250				
									(0.12)				

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Interaction Effects: After x …

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
High Share of Securities		0.197						0.113					
		(0.95)						(0.58)					
High Deposit Ratio			0.516**					0.466**					
			(2.53)					(2.19)					
High Equity Ratio				0.152				0.182					
				(0.74)				(0.91)					
High ROA					-0.143			-0.063					
					(-0.70)			(-0.29)					
High Write-offs & provisions						-0.223		-0.212					
						(-1.09)		(-1.01)					
High ln(Assets)							-0.161	0.026					
							(-0.76)	(0.11)					
Top 50%-Bank									-1.400				
									(-0.89)				
High Share PIIGS										-0.123			
										(-0.61)			
High Share Greek Sec.											-1.524**		
											(-2.12)		
High Share ABS												-0.205	
												(-0.99)	
High Share Troubled Assets													0.206
													(1.02)
Constant	-7.246	-7.297*	-8.146*	-7.889*	-7.147	-7.078	-8.291*	-7.591*	2.255**	-7.138*	-6.973*	-7.393*	-7.182*
	(-1.50)	(-1.66)	(-1.75)	(-1.71)	(-1.63)	(-1.63)	(-1.74)	(-1.66)	(2.01)	(-1.65)	(-1.67)	(-1.68)	(-1.65)
N	31,947	31,482	31,581	31,581	31,416	31,416	31,581	31,416	31,466	31,482	31,482	31,482	31,482
N_g	1,884	1,789	1,805	1,805	1,781	1,781	1,805	1,781	1,789	1,789	1,789	1,789	1,789
R^2 (within)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
R^2 (between)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.05	0.05
R^2 (overall)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.04

Table 11: Impact of Ratings of Savings Banks and Cooperative Banks (Random Effects)

In this table we report random effects regressions of 6 different dependent variables. In specification (1), the dependent variable is the share (in %) of the volume eligible for ESCB operations. Specification (2) reports the results for the share (in %) of securities in the portfolio that were issued in Germany. In specifications (3) and (4), the dependent variables are the shares (in %) of the volume issued in the German financial sector and in the non-German financial sector, respectively. Specifications (5) and (6) report the regression results for the shares (in %) of the volume issued in the German government sector and in the non-German government sector, respectively. The reference group in all specifications is savings banks. T-statistics are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

	Eligibility for ESCB operations (in %)	Issued in Germany (in %)	Issued in Germany, Fin. Sector (in %)	Issued outside Germany, Fin. Sector (in %)	Issued in Germany, Gov. Sector (in %)	Issued outside Germany, Gov. Sector (in %)
	(1)	(2)	(3)	(4)	(5)	(6)
Bank Group						
Cooperative Bank	4.410***	-17.931***	-14.084***	18.704***	-3.773***	-1.274***
	(3.35)	(-14.84)	(-10.55)	(17.97)	(-7.57)	(-4.43)
Main Effects						
Share of Securities (%)	0.761***	-0.066	-0.024	0.088**	0.004	-0.018
	(16.73)	(-1.56)	(-0.54)	(2.29)	(0.23)	(-1.48)
Deposit Ratio (%)	0.082*	0.214***	0.207***	-0.199***	0.046**	-0.008
	(1.74)	(4.11)	(3.67)	(-4.07)	(2.03)	(-0.57)
ln(Assets)	-2.487***	-1.357***	-1.161**	1.609***	0.412**	-0.168
	(-4.95)	(-2.71)	(-2.13)	(3.62)	(1.99)	(-1.59)
Rating						
1	0.953***	0.513	0.510	-0.390	0.001	-0.021
	(3.27)	(1.42)	(1.28)	(-1.14)	(0.00)	(-0.23)
2	1.717***	1.123**	0.732	-0.867*	0.333	0.014
	(3.65)	(2.20)	(1.29)	(-1.83)	(1.22)	(0.10)
3	1.531**	0.333	-0.24	-0.348	0.613	0.324
	(2.39)	(0.48)	(-0.31)	(-0.54)	(1.53)	(1.58)
4	3.302***	0.228	-0.484	0.139	0.738	0.057
	(3.41)	(0.23)	(-0.46)	(0.15)	(1.42)	(0.22)
Interaction Effect: After x …						
Rating: 3/4	2.039***	0.231	-0.467	-0.265	0.645**	0.102
	(3.73)	(0.36)	(-0.65)	(-0.45)	(2.00)	(0.53)
Constant	96.806***	103.433***	92.376***	-12.932	-5.776	6.301**
	(8.45)	(9.08)	(7.28)	(-1.27)	(-1.18)	(2.57)
N	27,094	27,086	27,094	27,094	27,094	27,094
N_g	1,625	1,625	1,625	1,625	1,625	1,625
R^2 **(within)**	0.19	0.1	0.09	0.11	0.03	0.01
R^2 **(between)**	0.25	0.15	0.09	0.19	0.08	0.01
R^2 **(overall)**	0.24	0.14	0.09	0.17	0.06	0.01