Internal Capital Markets and Corporate Politics in a Banking Group

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This study looks inside a large retail-banking group to understand how influence within the group affects internal capital allocations and lending at the member bank level. The group consists of 181 member banks and a jointly-owned headquarters. We find that more influential members are allocated more capital from the headquarters. They are less likely to decrease lending after negative deposit shocks or to surge lending following positive deposit shocks. These effects are stronger in situations where information asymmetry between member banks and the headquarters seems greater. The evidence suggests that influence can be useful in overcoming such information asymmetry.

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1. Introduction

Capital allocation within a firm, while central to corporate finance, has not been widely studied, partly because data are hard to come by.[1] In this paper, we analyze a proprietary dataset from a large retail-banking group to shed light on how the distribution of influence within this group is related to the allocation of group resources and the lending behavior of its member banks.

The banking group consists of 181 member banks and a headquarters organization. The headquarters is jointly-owned by the member banks and coordinates marketing activities among the banks. Moreover, the headquarters is responsible for channeling internal funding surpluses and deficits among its member banks and is their only window to the external capital market. The member banks operate in a highly developed and competitive banking market which is homogenous in terms of economic, social, and geographical particulars.[2]

Our data are from the group's internal managerial accounting system and allow us to directly observe not only the lending and deposits of each member bank, but also all capital transfers between the group headquarters and the banks. Most important, the data allow us to create a measure of each bank's influence within the group. Using this measure, we study how influence relates to (i) the capital transfers from the headquarters to the member banks; and (ii) the sensitivity of a bank's loan growth to its local deposit growth.[3]

The influence measure uses information on the voting and ownership rights of each bank in the headquarters and is measured as the ratio of a bank's share of voting rights divided by its share of ownership rights in the headquarters.[4] Therefore, a bank's relative influence in the group is measured by the divergence from one-share-one-vote. A member bank with more voting rights relative to its ownership rights is perceived as more influential because it can bargain for more favors *relative* to its ownership share. The ratio of voting rights to ownership rights is arguably exogenous to recent changes in investment opportunities or performance, as both voting and ownership rights were determined decades ago and did not change during the sample period.

[1] Two recent exceptions are Gopalan et al. (2007) considering intragroup loans in Indian business groups, and Glaser et al. (2009) studying the distribution of cash windfalls inside an industrial conglomerate.

[2] The name of the banking groups and the country of operation cannot be disclosed because of a confidentiality agreement.

[3] In creating a measure of the sensitivity of loan growth to internal cash flow (i.e., deposit growth), we follow the recent literature (e.g., Campello, 2002, Houston et al., 1997, and Shin and Stulz, 1998). We are agnostic on whether a correlation of loan growth and deposit growth suggests any inefficiency in the internal capital market and only focus on only focus on how the sensitivity of loan growth to the local funding position of a bank varies with the influence of a bank.

[4] We will explain the measure in detail in Section 2.2. Similar measures have been used in the corporate governance literature. See, for example, Claessens et al. (2000), Doidge et al. (2005), Faccio and Lang (2002), Harvey et al. (2001), Kim (2004), La Porta et al. (1999), La Porta et al. (2002), Lemmon and Lins (2003), Lins (2003), and Leuz et al. (2006).

Moreover, the ratio's variation across banks is also caused by discontinuities in the voting rights allocations (e.g., the number of votes can only be an integer between one and ten, while the number of shares is basically continuous). Banks exercise influence at the headquarters primarily by voting on the composition of the group's supervisory board, which elects the banking group's executive board and sets the general strategy of the banking group. Moreover, more influential banks are more likely to be represented in important committees at the headquarters, which decide on group policies and internal relations.

Influence within the banking group may affect internal capital allocations and member bank lending through two different mechanisms. Influence can be used (1) to overcome information asymmetries between individual banks and the headquarters, and/or (2) to facilitate empire building by local member bank managers. We call the first mechanism the 'information asymmetry' hypothesis, and the second the 'empire building' hypothesis. These two hypotheses are not mutually exclusive. In many organizations both mechanisms could co-exist and the question which mechanism dominates therefore seems an empirical one. As we explain below, while both hypotheses predict that more influence should lead to more capital allocation, they have different empirical predictions on how influence should affect the sensitivity of a bank's loan growth to deposit growth.

Among others, Harris et al. (1982), Antle and Eppen (1985) and Bernardo et al. (2001, 2004) model asymmetric information *within* a firm as an essential friction of intra-firm resource allocation (see Rajan and Reichelstein, 2004 for a review of this literature). A general implication of these theories is that information asymmetry within a firm can lead to an under-allocation of capital because the headquarters may worry that units overstate their own investment opportunities. In our case, information asymmetry exists between the headquarters and the member banks regarding their true lending opportunities. This may lead to an under-allocation of capital to member banks with good opportunities. More influential banks, however, may have better access to and better communications with the headquarters, which may result in reduced information asymmetry and more allocations of capital. We call this the 'information asymmetry' hypothesis.

However, in models by Meyer et al. (1992), Scharfstein and Stein (2000), Rajan et al. (2000), and Wulf (2008), influence inside a firm may also be used to obtain larger capital allocations to satisfy empire building preferences. Empire building can have the purpose of controlling more resources, enjoying private benefits, or gaining status from running a larger bank. We call this the 'empire building' hypothesis.

While both hypotheses predict that more influential member banks may receive larger allocations of capital from the headquarters, they have different predictions on how banks should respond to positive and negative deposit shocks. This difference allows us to disentangle the two hypotheses.

If an influential member bank experiences a negative deposit shock in its local market, both the empire building and information asymmetry hypotheses predict the bank will try to use its influence to obtain more headquarters funding to prevent its lending from declining. However, when an influential member bank experiences a positive local deposit shock, the two hypotheses' predictions diverge: the empire building hypothesis predicts that the bank would use its influence to try to keep the windfall cash flow to further grow its lending (see Blanchard et al., 1994), whereas the information asymmetry hypothesis predicts that the bank would restrain from increasing lending as long as investment opportunities do not change.

Therefore, the 'empire building' hypothesis suggests that more influential banks would show loan growth that is more sensitive to deposit growth for positive deposit shocks and less sensitive for negative deposit shocks. In contrast, the 'information asymmetry' hypothesis predicts that influence is associated with a lower sensitivity of a member bank's lending to its internal cash flow for both positive and negative deposit shocks. The latter happens as more influential banks are insulated from negative shocks (as they can better communicate their true lending opportunities) while, at the same time, unlike their less influential peers they do not need to rely on the opportunities of positive deposit shocks to increase lending.

We can therefore summarize the above hypotheses as follows:

H1 ('*Information Asymmetry' Hypothesis*): More influential banks receive more funds from the headquarters and their lending is less sensitive to the local deposit base for both negative and positive deposit shocks.

H2 ('*Empire Building' Hypothesis*): More influential banks receive more funds from the headquarters and they increase their lending more when experiencing positive deposit shocks and decrease their lending less when experiencing negative deposit shocks.

The empirical predictions of the two hypotheses are summarized in Figure 1. In addition, we expect the empirical predictions to be stronger when information asymmetry between the headquarters and the banks is greater (smaller), as influence may be more (less) relevant in those circumstances. We will test both hypothesis against the null hypothesis that influence is unrelated to intra-firm capital allocations and the sensitivity of loan to deposit growth.

In our empirical analysis, we document large and frequent internal loans to, and deposits from, member banks vis-à-vis the headquarters. Net funds from the headquarters partly

compensate member banks for lower deposit growth and are larger if investment opportunities are better.[5] We find that more influential banks are allocated more funds from the headquarters: a one-standard deviation difference in influence is associated with net funds from the headquarters (relative to total assets) that are higher by about 6.3%, which is more than one half the cross-sectional standard deviation and about a third of the median ratio of net funds from the headquarters relative to total assets.

While member banks' loan growth is higher for more productive banks with better opportunities, it also depends significantly on their own deposit growth. Thus, loan growth seems generally constrained by the local deposit base. While we cannot completely rule out that the correlation between loan growth and local deposit growth is partially driven by investment opportunities, our focus in this paper is on how this correlation varies across member banks with high versus low influence.

We find that the loan growth of more influential banks is less sensitive to their own deposit growth. We find that more influential member banks are not only less likely to decrease lending after negative cash flow shocks, but are also less likely to surge lending when experiencing positive cash flow shocks. This latter finding seems inconsistent with the 'empire building' hypothesis. Rather, it supports the 'information asymmetry' hypothesis, where less influential banks are more constrained by information asymmetry vis-à-vis the headquarters and thus have to rely more heavily on positive deposit shocks to grow their lending. Economically, one standard deviation increase in influence is associated with a reduction of 0.066 in the sensitivity coefficient of loan growth to deposit growth, which is about one quarter of the unconditional coefficient. These results are robust to the inclusion of region-by-time fixed effects, member bank fixed effects, to separately controlling for voting and ownership rights, and to interacting deposit growth with member bank size and different proxies of performance. In effect, the use of region-by-time fixed effects means that our results are obtained by comparing, in each time period, about a dozen member banks within narrowly defined geographical regions.

The effects of influence are stronger if there is greater potential for information asymmetry problems between the member banks and the headquarters, for which we use several alternative proxies. First, we sort banks into high and low deposit growth volatility groups. High deposit volatility creates more volatile funding deficits, leading member banks to make more frequent requests for large funding support from the headquarters. Unlike small funding requests

[5] Net funds from the headquarters are defined as the difference between loans from and deposits at the headquarters. Gopalan et al. (2007) also used net funds in their analysis. Our results do not change if we look at gross funds (loans) from the headquarters instead.

that are routinely approved, larger requests would require direct communication and the provision of more information to committees at the headquarters. Second, we use a member bank's distance to the headquarters as a measure of information asymmetry (see, e.g., Coval and Moskowitz, 1999, Hauswald and Marquez, 2006 and Dell'Ariccia, 2001). Finally, we separate business lending from personal lending. Business lending relies more on soft information (see, e.g., Liberti and Mian, 2009) while personal lending in this banking group predominantly consists of residential mortgage loans with relatively more hard information. We assume that the transmission of hard information may be less affected by differences in influence, and compare the sensitivity of loan growth to deposit shocks between different loan products. Across all three measures, we find that influence is more important in reducing the sensitivity of loan growth to deposit growth when information asymmetry problems are likely to be more severe.[6]

A major challenge in the internal capital market literature is how to account for investment opportunities, which may differ across different parts of a firm (in our case across member banks) and may be correlated with deposit growth. However, several aspects of our empirical design allow us to mitigate such endogeneity concerns (explained in more detail in Section 2.3). First, the banks within the group are very homogenous in terms of their business model, products, brands, and pricing policies. Second, we control for variations in local market conditions by employing region-by-time fixed effects that change each time period (quarter).[7] Third, we also control for investment opportunities using the banking group's own internal measure of member bank productivity, which is defined as income over costs. Fourth and finally, we exploit an exogenous event in 2007, which implied largely exogenous deposit inflows, to mitigate concerns that our influence measures proxies for unobserved productivity.

The remainder of the paper is structured as follows. The next section describes the data and methodology. Section 3 presents the empirical results, and Section 4 concludes.

2. Data and Methodology

2.1 Funding and Lending of Member Banks

The group consists of 181 member banks and a centralized headquarters which is jointly-owned by the member banks. Banks cannot self-select into this group and the group has never

[6] As an additional measure and for robustness, we also use in unreported regressions the age of a bank and assume that older and more established banks have a longer track record and are less exposed to asymmetric information vis-à-vis the headquarters. While most banks in the sample are relatively old, our results are also robust to using this proxy for information asymmetries.

[7] Our results are also robust to further adding bank fixed effects, accounting for time-invariant heterogeneity at the bank level.

acquired banks from the outside. The government has no ownership or direct involvement in the group. All banks of the group have an identical business model and brand, identical products and marketing, and identical pricing schedules. Specifically, all member banks offer the same rates for deposits. The headquarters provides reference rates to the member banks for loans to customers. Finally, the member banks are mutually owned by their local depositors. The directors of the member banks are not personally shareholders in the headquarters and thus may have similar incentives as division managers within a typical firm. The member banks' stated goal is to maximize value for their owners, dispersing regular profit-sharing dividends to them and serving their financial interests.

Member banks have three sources of funding: local deposits, retained earnings, and headquarters funding (i.e., internal capital allocations). The funding from the headquarters arrives in the form of internal loans, on which all banks pay the same interest rates. Member banks cannot access the external capital market themselves, nor are they allowed to invest their cash surpluses outside the group. Member banks can invest their funds either in loans to customers in the local market or deposit surplus funds at the headquarters.

The headquarters has excellent access to the external capital markets, as evidenced by its top credit rating and continued access to money markets during the recent global credit crisis. Lending at the aggregate group level, as shown in Figure 2, is largely unrelated to fluctuations in aggregate deposits. This suggests that the headquarters seems to be able to smooth out group-level funding shortages by tapping the external capital market. A correlation between loan and deposits growth at the member bank level may thus suggests that possible frictions are more likely to come from the internal capital allocation process rather than from frictions between the headquarters and the external capital market.

2.2 Measure of Member Bank Influence

We use information on the voting and ownership rights of each member bank in the headquarters to construct a proxy for a bank's influence within the group. A member bank's relative 'influence' is defined as the bank's voting rights share in the headquarters divided by its ownership rights share. Therefore, a member bank is considered more influential if it holds more voting rights relative to its ownership rights. Using the divergence from one-share-one-vote to measure disproportionate influence is common in the corporate governance literature, which generally finds that voting rights in excess of ownership rights are associated with private benefits (see, e.g., Claessens et al., 2000, Doidge et al., 2005, Faccio and Lang, 2002, Harvey et al, 2001,

Durnev and Kim, 2004, La Porta et al, 1999, 2002, Lemmon and Lins, 2003, Lins, 2003, and Leuz et al. 2009).

Through their voting rights, member banks have direct authority in the headquarters and decide, among other things, on the composition of the group's supervisory board, which elects the banking group's executive board and sets the general strategy of the banking group. The voting rights distribution is shown in Figure 3. With a total number of votes in the group equal to 1,165 and the maximum number of votes of a member equal to 10, even the largest bank has less than 2% of the overall voting rights. Therefore, our influence proxy should *not* be interpreted as meaning overall dominance, but rather greater influence within the organization relative to a given ownership share.[8]

The ratio of voting rights to ownership rights seems exogenous to recent changes in investment opportunities or performance. Specifically, the voting rights structure in this banking group was determined historically (i.e., many decades ago) and has generally not been updated even if banks have grown differently. Neither voting nor ownership rights change in our sample period. Mismatches between voting rights and ownership rights further exist because, irrespective of the number of shares a bank owns, the smallest member banks with the lowest numbers of shares are given at least 1 vote while the largest member banks with the highest numbers of shares are assigned at most 10 votes. Second, as fractional votes are not possible, a member bank whose ownership rights narrowly qualifies her for 7 votes would control the same voting rights as another bank, whose larger number of shares would almost qualify her for 8 votes.

Allocating headquarters funds to the member banks was not an important concern in the past, as the group had more deposits than lending opportunities (i.e, internal transfers from the headquarters to the members were generally not needed). The imbalance between deposits and lending at both the local and the aggregate level is a rather recent phenomenon. Similar changes occurred in other industrialized countries as well. In the US, for example, lending exceeded deposits for the first time at the turn of 21st century. It is therefore unlikely that internal capital allocations were a major consideration when voting rights structures was envisioned and votes/shares allocated decades ago.

[8] The US Senate may provide an imperfect but still useful analogy illustrating the idea behind our measure. With only about 0.2% of the US population, the state of Alaska can elect two senators to the 100-member US Senate. With a 2% vote share in the Senate, Alaska certainly cannot be considered as having dominance control. However, it may enjoy influence disproportionate to its size because its support can be won over with a smaller favor (which, however, can be substantial relative to its smaller economy or population size) than what, for example, the much more populous California would ask for.

Ownership rights allow member banks to share the profits and losses of the headquarters activities. When voting rights and ownership rights diverge, a bank may not internalize all of the consequences of an internal capital market allocation decision. Therefore, a value of the influence variable, i.e., the ratio of voting rights to ownership rights, that is larger (smaller) than 1 indicates that a bank has disproportionally more (less) influence within the organization and may be able to bargain for relatively more (less) headquarters support than its ownership rights would suggest.[9]

Figures 4-A and 4-B depict the non-linear relationship between member bank size, their voting rights, ownership rights, and influence within the group. Figure 4-B illustrates a negative correlation of -53% between influence and size. However, a lot of variation in the influence proxy is not explained by size and we show in subsequent analyses that our results are not driven by this correlation. We do so by directly controlling for size as well as by estimating regressions separately for different size group samples. Our results are also robust to separately controlling for ownership and voting rights.[10]

2.3 Controlling for Investment Opportunities

Accounting for investment opportunities, which may differ across banks, is a major challenge in the banking and internal capital market literatures. Changes in loan growth could be driven by unobserved differences in local economic circumstances faced by different banks. Moreover, changes in local deposits may partially reflect changes in lending opportunities. Three aspects of our empirical design allow us to mitigate these endogeneity concerns: the homogeneity

[9] For illustration, consider a larger bank and a smaller bank, both controlling seven votes (which is typical, as half of the member banks have six or seven votes; see Figure 3). There are two alternative ways to think about the smaller bank's disproportionate influence. First, the smaller bank has more incentive to use her voting rights to obtain private favors from the headquarters, because she does not internalize the costs to the headquarters as much as the larger bank. Therefore, the smaller bank is more eager to conduct influence activities. Second, although both banks have seven votes, the smaller bank, because of her smaller size, can be satisfied with fewer resources in an absolute sense, and thus usually make a smaller request to the headquarters for favors. From the perspective of the headquarters, it is easier to accommodate the smaller bank's request. Therefore, the smaller bank is more likely to receive favors when requested. To sum up, the smaller bank is more influential and successful in obtaining resources from the headquarters, because she has more votes relative to her ownership rights and size.

[10] We also study the effects of the influence of a coalition of banks which consist of all banks in the north versus all banks in the south of the country. Motivated by the banking group's particular history, a north-south divide may arise as the banking group historically consisted of two separate organizations with similar structures, one of which operated in the north and the other operated in the south of the country. Member banks in the north or south may naturally form coalitions among them. We create the influence measure for the "north coalition" and the "south coalition", which is the ratio of voting rights share of all bank in the north (south) over the ownership rights share of all banks in the north (south). The influence measure value is 1.04 for the north and 0.98 for the south coalition, implying the "north coalition" would be considered more influential. Consistent with the results in the paper, banks in the north receive more funds from the headquarters and that their loan growth is less related to their deposit growth.

of member banks, the use of regional fixed effects that change each quarter, and the possibility to directly control for bank productivity.

First, the homogeneity of the member banks within the group facilitates across-bank comparisons. Using the same brand name, all member banks operate with the same business model and use identical products and pricing policies. Each member bank operates only in its own local area. Some member banks are larger because they cover a larger area and thus have more branch locations.

Second, while the group's overall market is highly homogenous in terms of social and economic development, we further control for variations in local market conditions by employing regional fixed effects that change each quarter.[11] As a result, each time period we compare each member bank to the other member banks (on average about one dozen) in its relatively small proximate region. As we allow this local economic environment to change each quarter, the effect of local market conditions on loan and deposit growth of banks in the region should be largely captured by these region-by-quarter fixed effects. Our results are also robust to the further inclusion of bank fixed effects.

Third, our dataset includes the banking group's own internal measure of bank productivity, defined as income over costs, and measures how well a member bank is turning inputs (costs) into output (income) in its lending activities. Controlling for current (and even future) productivity differences further mitigates concerns about unobserved investment opportunity differences.

In addition, the supply of local deposits could be considered largely exogenous to the member banks, as all member banks are offering the same rates for the same deposit products. Deposit growth also seems to be unrelated to bank effort as we do not find any evidence that total full-time working hours at a member bank, a proxy for effort, is correlated with deposit growth. The supply of local deposits seems thus influenced mainly by local economic and demographic conditions, competition with banks outside the group, and macroeconomic factors. We try to control for these factors by using the region-by-quarter fixed effects.

Finally, we exploit an exogenous shock to deposit growth to mitigate the concern that influence may be proxying for some unobserved difference in bank productivity. In the second quarter of 2007, as a result of a foreign takeover of a major rival, the banking group observed a large inflow of deposits. Importantly, these windfall deposits occur for basically all member

[11] We divide the overall market of the banking group into a dozen regions. The average region inhabits 1.4 million people in a relatively small area of about 2,800 km² (about 1,100 square miles, i.e., one-fifth the size of the state of Connecticut) and is highly homogenous in terms of social and economic development.

banks of the group and the abnormal deposit inflows does not seem to be correlated with our influence measure.

2.4 Descriptive Statistics

Our proprietary dataset is from the banking group's own internal managerial accounting system. We can observe each member bank's loans and deposits and all internal capital transfer on a quarterly basis from January 2005 to September 2007. Panel A of Table 1 provides descriptive statistics on bank characteristics. Definitions of all variables can be found in Appendix A1 and correlations of the main variables in Appendix A2.

Not surprisingly, the main source of member bank funding comes from deposits by customers in the local market (57%). The main form of investments of a member bank is loans (80%) to its customers, and in particular personal loans (mostly residential mortgage loans). The banking group's internal performance assessment measure ('Bank Productivity') has an average value of 1.35 and a standard deviation of 0.17. The influence variable has an average of 1.24, and its standard deviation of 0.42 indicates significant cross-sectional variation. Banks hold on average 6.4 voting rights (votes) in the headquarters and have an average ownership share of 0.54%.

Panel B provides statistics of the internal capital market. It documents significant two-way fund transfers within the group. Funds from the headquarters constitute on average 30% of the total funding of a member bank. The average bank deposits 11% of total assets at the headquarters. As a result, net funds from the headquarters are equal to 19% of total assets. In 94% of the bank-quarters, calculated over the sample period, banks are net receivers of funds from the headquarters.[12] Therefore, member banks rely significantly on funding from the headquarters to finance their local lending.

3. Empirical Results

3.1 Bank Influence and Capital Allocation

We start by analyzing capital allocations from the headquarters to the member banks and how influence relates to these capital transfers. In particular, we want to understand whether more influential banks receive more funds from the headquarters. This analysis provides us with some first insights on whether capital allocations are related to corporate politics (i.e., influence of

[12] 16 out of 181 individual banks are in at least one quarter net payers into the system. Out of these 16 banks, four banks are net payers throughout the whole sample period (i.e., 11 quarters), three for 10 quarters, and the rest on average for five quarters.

member banks) inside the organization. We measure internal capital transfers by looking at the ratio of net funds from the headquarters divided by member bank total assets.

As control variables, we include local deposit growth, bank size, solvency, and bank productivity. Deposit Growth is included to measure the local cash flows available at the member bank level to finance lending. Bank Size is the log of total assets. Solvency is a measure of capital constraints and calculated as the ratio of the actual capital of a bank to what is required for banking supervision purposes. Bank Productivity is included to control for investment opportunities at the individual bank level. As indicated, all regressions also use region-by-time fixed effects to further control for variations in local market conditions, especially with regard to investment opportunities. All standard errors throughout the paper are robust and clustered at the member bank level.

The regression results are reported in Table 2. They show that member banks with lower local deposit growth receive more funds from the headquarters, suggesting that the headquarters (at least partially) compensates member banks when they face a lower deposit base. As the banks of the group are not allowed to access the external capital markets directly, their difference in reliance on internal funding cannot be explained by some banks' superior access to non-retail-deposit funding from external sources. The significantly positive coefficient on the bank productivity variable suggests that capital allocation does relate to investment opportunities of banks. Banks which are more productive, and thus may have better investment opportunities, generally receive more funding from the headquarters. This is consistent, for example, with the theory and evidence in Maksimovic and Phillips (2002) which suggest that more productive units inside an organization should receive more funds from the headquarters. We also find that larger banks generally receive more funding from the headquarters.

Most important, we find that our influence measure is significantly related to capital allocations. Consistent with both the 'information asymmetry' and 'empire building' hypothesis, we find that more influential banks receive significantly more funds from the headquarters. The effect of influence on internal capital allocation is also economically large. Based on the coefficient estimate from column 1, an increase in our influence variable by one standard deviation is associated with an increase in the ratio of net funds from the headquarters to total assets by 0.42*0.143 = 6%. This is over half the cross-sectional standard deviation and about a third of the median ratio of net funds from the headquarters over total assets.

About 6% of banks are net supplier of funds into the internal capital markets. If we model the determinants of a bank being a net payer into the system (column 7), we find, consistent with the previous evidence, that such banks are generally less influential within the group.

To mitigate concerns that our results are driven by variation in ownership or voting rights rather than by variation in the ratio of the two, the regressions in columns 3-6 directly control for both ownership and voting rights, on top of our influence measure. The estimates show that our results are mostly driven by the ratio of voting rights to ownership rights, not the two components of the ratio.[13]

It is possible that influence may proxy for some unobserved variations in investment opportunities across banks, and the headquarters is actually allocating resources to banks with higher investment opportunities, which happen to have greater influence as well. As researchers, we have the benefit of hindsight and can observe future realized productivity.[14] In Columns 4-6, instead of current bank productivity, we control for bank productivity that is 1, 2, and 4 quarters ahead in the future, respectively.[15] We find that influence remains a significant determinant of capital allocation, even after controlling for future realized productivity. This mitigates the concern that our influence measure is correlated with or proxying for (changes in) future investment opportunities.

3.2 Bank Influence and Lending

In this subsection, we analyze the lending behavior of the banks, in particular, how a bank's influence relates to the sensitivity of its loan growth to its local deposit growth (see, e.g., Houston et al., 1997 and Campello, 2002). Loan growth needs to be financed by cash flows from local sources (deposit growth or retained profits) or by capital transfers from the headquarters. Regressing loan growth on local deposit growth as well as a set of controls, the coefficient of deposit growth, i.e., the sensitivity of loan growth to local deposit growth, reflects how much a bank's lending depends on internal sources of funding. We investigate the importance of influence by interacting deposit growth with our influence proxy, thus allowing the loan-to-deposit sensitivity to vary across banks of high versus low influence. We further try to distinguish between the 'information asymmetry' and the 'empire building' hypothesis by separately

[13] In unreported regressions, we also separate our sample based on bank size at the beginning of the sample period. Our results are robust to such separations and thus unlikely to be driven by a non-linearity in the influence-size relationship. We also consider subsamples based on the banks' voting and ownership rights and our results are also robust to such separations.

[14] Our aim in this analysis is not to make any statements about whether allocations are efficient or not in our group, but to make sure that our results on the effect of influence on capital allocation are not driven by heterogeneity in future investment opportunities.

[15] We thank Utpal Bhattacharya for suggesting this method. A possible limitation is that future productivity may be affected by current (distorted) allocations, and therefore, we will of course never know what the perfect allocation should have been. However, an allocation based on incorporating knowledge on future productivity (i.e., with the benefit of hindsight) would still seem to be relatively more efficient.

considering positive and negative deposit growth. To control for investment opportunities, we include region-quarter fixed effects and bank productivity. Additional controls are the log of total assets, growth in bank capital, the measure of capital constraints (Solvency), and loan loss provisions over total assets. We also check whether our results are robust to adding bank fixed effects which should account for time invariant, bank-specific unobserved heterogeneity.

The results are reported in Table 3. They show that locally generated funds (i.e., deposit growth) are positively related to loan growth. The results in column 1 imply that, for a member bank with influence equal to 1, i.e., no deviation from one-share-one-vote, a one standard deviation increase in deposit growth (3.8%) is associated with a 3.8%*(0.286 – 0.157*1) = 0.49% increase in loan growth. While we cannot completely rule out that this correlation is partially driven by investment opportunities, our focus in this paper is on how this correlation varies across member banks with high versus low influence.

The interaction term between deposit growth and the influence measure provides strong evidence that more influential member banks exhibit a lower sensitivity of their lending to their own local cash flows, as its coefficient is negative (-0.157 in column 1) and statistically significant. The results in column 1 imply that, for a less influential member bank with influence value equal to 0.5, loan growth increases by 0.79% after a one standard deviation increase in deposit growth, a much greater effect than in banks with influence equal to 1 (0.49%, as discussed above). The effect on a more influential bank with an influence value of 2 is slightly negative and close to zero (–0.11%). These results are robust to also controlling for bank fixed effects (column 2).

In column 3 and 4, we distinguish between positive and negative deposit shocks: the variable Deposit Growth^{+} takes the value of the deposit growth rate if positive and zero if negative, and Deposit Growth^{-} takes the absolute value of deposit growth rate if negative and zero if positive. The results show that in case of positive deposit shocks more influential banks are more likely to restrain their loan growth. This behavior differs from that of less influential banks, which seem to boost lending after a positive deposit shock. In case of negative deposit shocks, we find that more influential banks are less likely to decrease lending. Overall, this suggests that more influential banks are not only less likely to decrease lending after negative cash flow shocks, but are also less likely to surge lending in response to positive cash flow shocks.

The results on positive deposit shocks are not consistent with the ‘empire building’ hypothesis, which would predict that more influence leads to more lending, especially in the context of positive deposit shocks (see Blanchard et al., 1994). Rather, it supports the ‘information asymmetry’ hypothesis and that influence improves the information flow between

the headquarters and the member banks. Recall our previous result that more influential member banks receive more funding from the headquarters. That result is also consistent with smaller information asymmetry frictions vis-à-vis the headquarters for more influential banks: the headquarters entrusts more funds to the more influential banks allowing them to expand beyond the limit of their local deposit supply (see Table 2) and such banks refrain from increasing lending too much when experiencing positive deposit shocks (see Table 3). The situation is opposite for less influential banks. They receive less funding from the headquarters and instead (have to) seize the opportunities of positive deposit shocks to grow their lending.

The negative coefficient on the interaction of deposit growth and influence is robust to adding interactions between deposit growth and ownership rights and between deposit growth and voting rights (columns 5-7). Therefore, the results on influence are not driven by variation in either ownership or voting rights themselves, but rather by variation in their ratio. Our results are also robust to adding the average loan growth in a region which is included to control for the loan demand in a region (column 7). Note that our results are again robust to using bank fixed effects in addition to the region-by-time fixed effects.[16]

3.3 Windfall Deposits and Accounting for Differences in Productivity and Size

In this section, we first investigate an exogenous event that resulted in a windfall increase in deposits and then conduct some robustness tests to see whether our results on the effect of influence on the loan-to-deposit growth sensitivity are driven by differences in bank productivity or size across member banks.

First, we exploit an exogenous event to mitigate the concern that influence may be proxying for some unobserved difference in bank productivity. Although our influence measure remains the same over the sample period, it seems less valuable when most banks have significant excess internal cash flows. In the second quarter of 2007, as a result of a foreign takeover of a major rival, the banking group observed a large and exogenous inflow of deposits. The inflow of deposits is apparent from Figure 5, which shows that deposit growth in this quarter is more than three times its normal level. While deposits increase substantially, lending increases by only

[16] In unreported regression, we decompose deposit growth by products types into transaction account deposit growth, term deposits growth, and savings deposit growth, and find that lending is mainly sensitive to changes in savings deposits. The results show that changes in transaction account deposits, compared with changes in savings account deposits, have only a negligible impact on loan growth. This mitigates the concern that the correlation between loans and deposits arises naturally as banks require borrowers to maintain a transaction account with the banks for monitoring purposes (see Fama, 1980, 1985).

about 15%.[17] Importantly, these windfall deposits occur for basically all member banks of the group and the abnormal deposit inflows do not seem to be correlated with our influence measure.

Most member banks therefore receive a windfall relief in their funding constraints in this quarter, implying less need for additional allocations of funds from the headquarters. It is thus plausible to argue that influence is less valuable under both hypotheses when banks experience large deposit inflows that relieve financial constraints. As a result, we would expect that the coefficient on the triple interaction of influence, deposit growth and the event dummy to be positive, to offset the negative coefficient on the (unconditional) interaction of influence and deposit growth.

In contrast, it is unlikely that any unobserved productivity differences across member banks should change during this quarter. If influence is simply proxying for unobserved productivity, we should thus expect that the effect of influence should remain the same during this quarter (i.e., it should not be different from all other quarters of the sample period). In this case, we would expect the coefficient on the triple interaction of influence, deposit growth and the event dummy to be zero or insignificant.

To investigate this, column 8 and 9 of Table 3, include a 2007Q2 dummy variable and its interactions with deposit growth, influence, and 'deposit growth * influence' (which creates a triple interaction term), respectively. We find that the coefficient on this triple interaction term, 'deposit growth * influence * 2007Q2,' is significantly positive and economically quite meaningful. It suggests that the effect of influence on the loan-to-deposit-growth sensitivity is significantly smaller during the event quarter, supporting the idea that influence matters less in case of a large exogenous windfall cash flow. As argued, this finding mitigates concerns that our influence measure simply proxies for unobserved productivity, which is not expected to change systematically during this quarter. Moreover, it seems to be inconsistent with the 'empire building' hypothesis, which would predict that more influential banks extend lending in response to a positive and exogenous cash windfall (see Blanchard et al., 1994).

Second, we modify the analysis of Table 3 to allow the sensitivity of net loan growth to deposit growth to vary across banks with good and poor performance. The results are reported in Table 4. Our main measure of bank performance is obtained from the group's internal accounting system. Specifically, the 'Bank Productivity' is an income-over-cost ratio, which measures how well a member bank is turning input (costs) into output (income) in its lending activities. This can

[17] About three quarters of the deposit inflows are from households, and therefore, it is unlikely that the windfalls are driven by business customers immediately moving both their deposit and lending relationship to the bank.

also be interpreted as a measure of a bank's investment opportunities, as more productive banks can produce higher outputs for the same amount of capital allocation from the headquarters. As an additional check, we also consider ROA and ROE as alternative measures of bank performance.

Previously in Table 2, we found that more productive banks, as measured by Bank Productivity, receive more funding from the headquarters. We now simultaneously control for productivity, influence and their respective interactions with deposit growth. We thereby test whether our previous results on influence are merely driven by differences in productivity.

The results first show that for relatively more productive banks (using Bank Productivity and ROE), net loan growth is not only significantly higher but also significantly less sensitive to their own deposit growth. Further, the effect of bank influence documented previously not only stays significant but is even stronger in these regressions that control for the effect of Bank Productivity, ROE or ROA and their interactions with deposit growth (see columns 1-3 for results with region-by-time fixed effects and columns 5-7 for results with both region-by-time fixed effects and bank fixed effects). These results suggest that the allocation of capital in the internal capital market responses to both influence and productivity, and banks' investments are more independent from their own cash flows when they are either more influential or more productive. Overall, the results confirm that our results on the effect of influence do not seem driven by our influence measure proxying for ability.[18] Finally, we test whether our results are driven by differences in bank size. Columns 4 and 8 show that our influence results are robust to including an interaction of bank size and deposit growth.[19]

3.4 Influence and Information Asymmetry Problems

Our findings so far point to the 'information asymmetry' hypothesis, i.e. that greater influence results in a better information flow between the headquarters and a bank, as greater influence is associated with a lower sensitivity of loan growth to deposit growth. If influence mitigates information asymmetry within the banking group, we should expect that influence is

[18] In unreported regressions, we replace the contemporaneous productivity by its average level during the sample period to mitigate concerns that our productivity measure is endogenous to the funding constraint situation faced by a bank and may not actually reflect investment opportunities. Our results do not change when we use this alternative measure of productivity.

[19] To further make sure that our influence results do not just pick up the non-linearity between influence and size, we again separate our sample based on bank size at the beginning of the sample period. The estimates show that our results are robust to such a size separation and hence again unlikely to be driven by a non-linearity in the influence-size relationship. For further robustness, we also consider subsamples based on the banks' voting and ownership rights, respectively. Again, our results are robust to such separations.

particularly relevant at banks or for loan products where information asymmetry is relatively more important. We examine the differential effects of influence across subsamples by (i) sorting member banks into subsamples based on their level of information asymmetry vis-à-vis the headquarters; and by (ii) dividing loans into those subject to high versus low levels of information asymmetry. While we have no direct evidence that influence can address information asymmetry problems or help transmitting soft information (as in Stein, 2002), such sub-sample analysis can arguably provide some circumstantial evidence about whether influence may matter for information asymmetry.

First, in order to separate our sample into banks with high and low levels of information asymmetry vis-à-vis the headquarters, we use two proxies for information asymmetries: deposit growth volatility and the physical distance between the headquarters and a member bank. We measure deposit growth volatility by calculating the standard deviation of a bank's deposit growth. While deposit growth is observable and verifiable by the headquarters, it may proxy for the importance of information asymmetry in the following sense. More volatile deposit growth is associated with greater fluctuations in the funding gaps (i.e., funding deficits or surpluses between investment opportunities and local deposit growth). Banks with greater deposit growth volatility therefore experience larger funding deficits more frequently (rather than smaller funding requests that are routinely approved by the headquarters). As larger requests will need to be reviewed by a committee at the headquarters, they need to be justified with more detailed information about investment opportunities by the member bank. This presumably increases the importance for information flows between the member bank and the headquarters. Therefore, for two banks with the same level of structural funding deficits over the long-term, the one with more volatile local deposit growth will be more exposed to any information asymmetries vis-à-vis the headquarters.

With regard to the other proxy, we assume that banks which are in close proximity to the headquarters are less exposed to asymmetric information vis-à-vis the headquarters (see e.g., Coval and Moskowitz, 1999, Dell'Ariccia, 2001, Hauswald and Marquez, 2006, Degryse and Ongena, 2005, Landier, Nair, and Wulf, 2007, and Liberti and Mian, 2009).

Table 5 reports in Panel A the results of loan growth regressions for subsamples of banks with different levels of information asymmetry using the deposit growth volatility and distance to headquarters proxies. We compare the subsample of banks in the upper half (or top quartile) with banks in the lower half (or bottom quartile) of the distribution of the respective information asymmetry proxies. The results provide evidence consistent with the 'information asymmetry' hypothesis and show that greater influence significantly reduces the sensitivity of lending to the

own cash flows only in the subsample of banks where information asymmetries may be the greatest. In the subsamples of banks with low levels of information asymmetry, the coefficient on deposit growth interacted with influence is significant in none of the specifications, and is in economic terms always smaller. For the subsample of banks where our proxy suggests greater (importance of) information asymmetry, the same interaction terms are significant in all cases, even after controlling for region-by-time fixed effects and for bank fixed effects.[20]

Overall, these results suggest that member bank influence is most strongly associated with the loan-to-deposit sensitivity when information asymmetry is the greatest.[21]

Second, we decompose loan growth into its two subcomponents, i.e. business loan growth and personal loan growth. Personal loans, according to the banking group's definition, include mainly residential mortgage loans and consumer loans, with the lion share being residential mortgage loans. The evaluation and approval process of such loans are more automated and contain relatively little subjective information. In the banking group, large corporate loans are handled by the headquarters, and therefore, most business loans at the member banks are small business loans. These business loans tend to be more soft-information-intensive and it may hence be more difficult for the headquarters to verify local bank managers' claims of investment opportunities and creditworthiness and to evaluate their decisions. Liberti and Mian (2009), for example, look into the paper trails of corporate loan evaluation files and document the difficulty of passing soft (i.e., abstract and/or subjective) information up the hierarchy in a large banking corporation. The 'information asymmetry' hypothesis would thus predict that member bank influence has a stronger effect for business loans versus personal loans.[22]

The regressions in Panel B show that this is indeed the case. Columns 1-2 use business loan growth as the dependent variable, while columns 3-4 use personal loan growth. First we find

[20] In unreported regressions, we also use the age of a bank as a proxy for information asymmetry and assume that older and more established banks have a longer track record and are less exposed to information asymmetry vis-à-vis the headquarters. While most banks in the sample are relatively old (the median bank age is 101 years old, while bank age has a standard deviation of only 9 years), we still find that the interaction term, 'deposit growth * influence,' is statistically significant only for those banks which are younger than the median bank.

[21] In unreported regressions, we also distinguish between positive and negative deposit shocks. The 'empire building' hypothesis would predict that more influential banks increase their lending more than less influential banks when positive shocks occur. However, our results do not suggest this. Instead, more influential banks generally invest less when positive shocks occur which is again rather consistent with the 'information asymmetry' hypothesis. While not all interactions of positive deposit growth and influence are statistically significant in the high information asymmetry subsample (which might be partially due to the reduced sample size) they are all economically large and positive. Influence thus does not seem to lead to more lending when positive shocks occur (as predicted by the empire building hypothesis).

[22] There is no significant relation between a bank's influence and the share of business loans in its portfolio.

that the sensitivity of loan growth to deposit growth is much smaller for personal loan growth than for business loan growth (half if comparing column 1 and 3, and one tenth if comparing column 2 and 4). The effect of influence correspondingly is smaller for the same magnitude for personal loan growth. These results suggest that, facing positive deposit shocks, less influential banks are more likely to expand their business lending (probably resulting in overinvestment) vis-à-vis their personal lending while more influential banks show relative restraints from doing so. The incentive for less influential banks to rush on personal loans (which are mostly residential real estate loans and contain mostly hard information) may be smaller because it seems less difficult for any member banks (influential or not) to convince the headquarters with hard information when investment opportunities on residential real estate loans arise.

4. Conclusion

This paper looks into the internal capital market of a large retail-banking group to study how corporate politics affect internal capital allocation and lending behavior. The group consists of 181 member banks, which own the headquarters. As a proxy for a member bank's disproportionate influence inside the organization we use the divergence from one-share-one-vote. Influence within the banking group may affect internal capital allocations and member bank lending through two different mechanisms. Influence can be used (1) to overcome information asymmetries between member banks and the headquarters, and/or (2) for empire building by member bank managers.

We document an active internal capital market. Net funds from the headquarters partly compensate member banks for lower deposit growth and are larger if investment opportunities are better. While member banks' loan growth is higher for more productive banks with better opportunities, it also depends significantly on their own deposit growth. More influential banks receive more funds from the headquarters, which is consistent with both the 'empire building' and 'information asymmetry' hypotheses.

Next, the loan growth of more influential banks is less sensitive to their own deposit growth. We also find that influence is more important in reducing the sensitivity of loan growth to deposit growth when information asymmetry problems are likely to be more severe, based on a number of proxies. Consistent with the 'information asymmetry' hypothesis, more influential member banks are not only less likely to decrease lending after negative cash flow shocks, but are also less likely to surge lending in response to positive cash flow shocks. The latter finding is inconsistent with the 'empire building' hypothesis.

While several organizational features are certainly specific to our banking group, our findings may have implications that go beyond this organization. First, this group structure is not uncommon. All 27 countries in the European Union, for example, have banking groups that show similar organizational structures, i.e. where the headquarters is owned by the subsidiaries, which in turn have dispersed outside shareholders. By the end of 2006, these groups had in total more than 4,000 member banks operating around 60,000 branches for about 140 million customers. They had total assets of more than 4.6 trillion EUR and a market share of around 20% in the deposit market. Further, most commercial banks operate their business organizations in broadly similar ways, e.g., branches are set up based on geographic areas, and in developed countries, banks make more loans than what branches can collect from local markets, necessitating the allocation of funding from the headquarters. Specifically, most commercial banks have organizational features broadly resembling the following arrangements: (1) divisions/branches are set up based on geographic areas; (2) branch managers have autonomy in making loans and taking deposits in local markets, but with uniform pricing across branches; (3) in developed countries, branches and the bank as a whole typically make more loans than the deposits they collect, and need to ask the headquarters for net funding (with the headquarters in turn raising money in the external capital market); (4) branch managers have better information on investment opportunities vis-à-vis the headquarters and may have a personal incentive to expand their size; and (5) some branch managers may have more influence than others within the bank.

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Table 1: Summary Statistics of Bank and Internal Capital Market Characteristics

Panel A provides summary statistics of the member banks in our sample. It reports both the panel (overall) as well as cross-sectional (between) standard deviations. For definitions of the variables see Appendix A1. Correlations between the main variables are reported in Appendix A2. We use quarterly data for the period Q1 2005 to Q3 2007. The total number of banks in the sample is 181 and the total number of observations is 1991. Business Loan Growth and Personal Loan Growth are winsorized at 5%. Panel B provides details on the capital flows from and to the headquarters (HQ). Funds from HQ are the loans extended by the headquarters to the member banks in the group. Deposits at HQ are the funds deposited by member banks at the headquarters. Net HQ Funds is the difference between loans from the headquarters and deposits at the headquarters.

Panel A: Bank Characteristics

Variable	Mean	Median	Panel STD	Cross-Sect. STD	5%	95%
Deposits/Total Assets	0.57	0.57	0.08	0.08	0.44	0.70
Deposit Growth (in %)	1.87	1.63	3.78	0.79	-2.36	6.79
Loans/Total Assets	0.80	0.81	0.04	0.04	0.73	0.85
Loan Growth (in %)	2.13	1.98	1.63	0.82	0.09	4.63
Business Loan Growth (in %)	1.59	1.37	2.58	1.08	-2.79	7.28
Personal Loan Growth (in %)	2.21	2.09	1.19	0.70	0.23	4.71
Business Loans/Total Assets	0.25	0.24	0.07	0.07	0.15	0.38
Private Loans/Total Assets	0.55	0.56	0.08	0.07	0.43	0.67
Bank Capital/Total Assets	0.05	0.05	0.02	0.02	0.03	0.08
Bank Capital Growth (in %)	1.40	0.00	3.87	0.85	-0.28	8.87
Bank Productivity	1.35	1.34	0.17	0.15	1.10	1.62
Solvency	1.40	1.43	0.25	0.24	1.01	1.77
Loan Loss Provisions/Total Assets (in %)	0.050	0.012	0.115	0.033	-0.080	0.259
ROE (in %)	8.65	8.78	2.55	1.79	4.45	12.25
ROA (in %)	0.406	0.386	0.203	0.108	0.126	0.773
Influence	1.24	1.15	0.42	0.42	0.68	2.01
Ownership Rights (in %)	0.54	0.49	0.29	0.29	0.18	1.10
Voting Rights	6.44	7.00	1.72	1.72	4.00	9.00
STD Deposit Growth (in %)	3.13	2.62	2.32	2.33	1.67	5.41
Distance to Headquarters (in km)	118	116	62	63	24	239
Average Loan Growth Region (in %)	1.87	1.57	1.93	0.30	-0.91	5.48

Panel B: Internal Capital Market Characteristics

Variable	Mean	Median	Panel STD	Cross-Sect. STD	5%	95%
Funds from HQ (in 1000 EUR)	370,000	307,000	291,000	286,000	70,800	862,000
Funds from HQ/Total Assets	0.30	0.30	0.09	0.09	0.15	0.44
Deposits at HQ (in 1000 EUR)	126,000	107,000	87,300	83,500	32,600	283,000
Deposits at HQ/Total Assets	0.11	0.10	0.03	0.03	0.07	0.17
Net HQ Funds (in 1000 EUR)	245,000	188,000	245,000	240,000	-10,700	641,000
Net HQ Funds/Total Assets	0.19	0.20	0.11	0.11	-0.01	0.36
Net Provider of Funds	0.06					
Net Receiver of Funds	0.94					

Table 2: Member Bank Influence and Net Funding from the Headquarters

This table looks at the determinants of net funding from the headquarters. In column 1-6, the dependent variable is net funds from the headquarters (defined as loans from the headquarters minus deposits at the headquarters) divided by total assets of a member bank. In column 7, the dependent variable is a dummy variable which is one if a bank is a net provider of funds in a given quarter. For definitions of the variables see Appendix A1. Our measure of influence is the influence of a member bank in the group. It is defined as the share of voting rights divided by the share of ownership rights of a member bank in the headquarters. The regressions use quarterly data from Q1 2005 to Q3 2007 for 181 banks. All standard errors are clustered at the member bank level. Constants were included in the regressions but are not reported. Absolute values of robust t statistics are reported in parentheses, * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

	Net HQ Funds/Total Assets						**Net Provider of Funds**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Deposit Growth	-0.0029***	-0.0029***	-0.0031***	-0.0031***	-0.0029***	-0.0030***	0.0016
	(4.86)	(4.86)	(5.03)	(5.71)	(5.45)	(5.64)	(0.97)
Influence	0.1430***	0.1397***	0.1529***	0.1533***	0.1530***	0.1518***	-0.1463**
	(4.71)	(4.04)	(4.27)	(4.33)	(4.37)	(4.37)	(2.20)
Voting Rights			-0.0222	-0.0239*	-0.0251*	-0.0247*	
			(1.61)	(1.71)	(1.79)	(1.76)	
Ownership Rights		-0.0092	0.0211	0.0216	0.0199	0.0157	
		(0.25)	(0.52)	(0.53)	(0.49)	(0.39)	
Log(Total Assets)	0.0740***	0.0763***	0.1305***	0.1348***	0.1383***	0.1372***	-0.0717
	(3.94)	(3.83)	(3.34)	(3.42)	(3.51)	(3.47)	(1.57)
Solvency	-0.1497***	-0.1490***	-0.1487***	-0.1488***	-0.1475***	-0.1453***	0.1447**
	(6.47)	(6.49)	(6.45)	(6.37)	(6.28)	(5.88)	(2.06)
Bank Productivity	0.1252***	0.1245***	0.1271***				-0.1204
	(3.22)	(3.21)	(3.32)				(1.35)
Bank Productivity (t+1)				0.1242***			
				(3.36)			
Bank Productivity (t+2)					0.1218***		
					(3.41)		
Bank Productivity (t+4)						0.1228***	
						(3.47)	
Region-by-Time-Fixed Effects	YES	YES	YES	YES	YES	YES	YES
Bank Fixed Effects	NO	NO	NO	NO	NO	NO	NO
Clustering by Bank	YES	YES	YES	YES	YES	YES	YES
Observations	1810	1810	1810	1629	1448	1086	1810
(Pseudo) R-squared	0.625	0.626	0.631	0.635	0.637	0.635	0.231

Table 3: Member Bank Influence and the Sensitivity of Loan Growth to Deposit Growth

This table looks at the determinants of loan growth (in %). As independent variables, we use deposit growth, our influence measure, an interaction of deposit growth and the influence variable and a set of control variables. Our measure of influence is the share of voting rights divided by the share of ownership rights of a member bank in the headquarters. In column 3 and 4, Deposit Growth^{+} is a variable that takes the values of Deposit Growth if positive and 0 otherwise. Likewise, Deposit Growth^{-} is a variable that takes the absolute values of Deposit Growth if negative and 0 otherwise. Average loan growth is the average loan growth in a region computed for our sample of banks. The regressions in Column 7 and 8 include a dummy which is one if an observation is from the second quarter of 2007. As a result of a foreign takeover of a major rival, the banking group observed a large inflow of deposits in this quarter. Deposit growth in this quarter is more than three times its normal level. For definitions of the variables see Appendix A1. The regressions use quarterly data from Q1 2005 to Q3 2007 for 181 banks. All standard errors are clustered at the bank level. Constants were included in the regressions but are not reported. Absolute values of robust t statistics are reported in parentheses, * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

	Loan Growth								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Deposit Growth	0.2860***	0.2087***			0.2630*	0.1939	0.2055	0.3261***	0.2536***
	(4.16)	(2.91)			(1.74)	(1.23)	(1.48)	(4.11)	(3.08)
Deposit Growth^{+}			0.1866***	0.0840					
			(2.85)	(1.11)					
Deposit Growth^{-}			-0.5177**	-0.4971**					
			(2.51)	(2.13)					
Influence	0.0810		-0.0477		0.1193			0.0915	4.1161
	(0.31)		(0.17)		(0.32)			(0.35)	(1.57)
Deposit Growth* Influence	-0.1570***	-0.1174***			-0.1353*	-0.1359*	-0.1366*	-0.1834***	-0.1431***
	(3.97)	(2.83)			(1.78)	(1.69)	(1.85)	(4.13)	(3.09)
Deposit Growth^{+} * Influence			-0.1109***	-0.0671					
			(2.84)	(1.40)					
Deposit Growth^{-} * Influence			0.2651**	0.2387*					
			(2.26)	(1.80)					
Voting Rights					-0.1724				
					(1.35)				
Ownership Rights					0.0902				
					(0.16)				
Deposit Growth * Voting Rights					-0.0051	0.0104	0.0102		
					(0.33)	(0.62)	(0.60)		
Deposit Growth * Ownership Rights					0.0529	-0.0638	-0.0729		
					(0.41)	(0.44)	(0.50)		
Q2 2007 Dummy								2.7826***	
								(3.06)	
Q2 2007 Dummy * Influence								-1.1674*	-0.9400
								(1.90)	(1.50)
Q2 2007 Dummy * Deposit Growth								-0.4117**	-0.3640**
								(2.46)	(2.32)
Q2 2007 Dummy * Influence * Deposit Growth								0.3434**	0.2267*
								(2.36)	(1.71)
Bank Capital Growth	0.0562**	0.0484	0.0504	0.0311	0.0572*	0.0441	0.0417**	0.0613**	0.0514
	(2.05)	(1.55)	(1.40)	(0.78)	(1.96)	(1.35)	(2.35)	(2.20)	(1.63)

Log(Total Assets)	-0.1604	3.6151	-0.1467	4.9540**	0.2959	3.4624	1.7129**	-0.1518	4.2479*
	(1.20)	(1.64)	(1.06)	(2.27)	(0.78)	(1.55)	(2.13)	(1.14)	(1.89)
Solvency	-1.6895***	-5.6276***	-1.7661***	-5.2383***	-1.6786***	-5.6656***	-5.9372***	-1.6815***	-5.4956***
	(5.37)	(4.25)	(5.29)	(4.33)	(5.22)	(4.22)	(4.54)	(5.39)	(4.26)
Bank Productivity	1.9447***	0.8166	1.9495***	0.7681	1.9499***	0.8322	0.1310	1.9283***	0.8287
	(5.46)	(0.97)	(5.34)	(0.95)	(5.35)	(1.00)	(0.24)	(5.40)	(0.98)
Loan Loss Provisions/Total Assets	-0.1318	-0.5080	-0.1129	-0.4493	-0.1400	-0.5410	-0.6166	-0.1130	-0.5042
	(0.26)	(0.86)	(0.22)	(0.77)	(0.28)	(0.92)	(1.27)	(0.22)	(0.85)
Average Loan Growth Region							-0.0148		
							(0.46)		
Region-by-Time-Fixed Effects	YES	YES	YES	YES	YES	YES	NO	YES	YES
Bank Fixed Effects	NO	YES	NO	YES	NO	YES	YES	NO	YES
Clustering by Bank	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1810	1810	1810	1810	1810	1810	1810	1810	1810
R-squared	0.195	0.160	0.204	0.179	0.197	0.161	0.105	0.201	0.375

Table 4: After Controlling for Performance and Size, More Influential Banks Still Have A Smaller Sensitivity of Loan to Deposit Growth

This table examines loan growth for well and poorly managed banks. The dependent variable in all regressions is a bank's loan growth (in %). We proxy whether a bank is well or poorly managed by looking at bank performance. Bank performance is measured as bank productivity, return on equity (ROE) or return on assets (ROA). For definitions of the variables see Appendix A1. The regressions use quarterly data from Q1 2005 to Q3 2007 for 181 banks. All standard errors are clustered at the bank level. Constants were included in the regressions but are not reported. Absolute values of robust t statistics are reported in parentheses, * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

	Loan Growth							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Deposit Growth	0.6425***	0.4716***	0.2788***	0.4744	0.6412***	0.4524***	0.2217***	0.1165
	(4.91)	(3.93)	(3.56)	(0.70)	(8.00)	(9.48)	(4.72)	(0.32)
Deposit Growth * Bank Productivity	-0.2518***				-0.3019***			
	(3.75)				(5.95)			
Deposit Growth * ROE		-0.0167**				-0.0209***		
		(2.24)				(7.27)		
Deposit Growth * ROA			0.0172				-0.0234	
			(0.24)				(0.43)	
Deposit Growth * Log(Total Assets)				-0.0088				0.0043
				(0.28)				(0.25)
Influence	0.0497	0.2477	0.2854	0.0874				
	(0.19)	(0.95)	(1.11)	(0.33)				
Deposit Growth * Influence	-0.1699***	-0.1989***	-0.1541***	-0.1605***	-0.1364***	-0.1772***	-0.1205***	-0.1154***
	(4.02)	(4.15)	(3.74)	(4.09)	(5.98)	(7.37)	(4.83)	(4.78)
Bank Capital Growth	0.0309	-0.0221	0.0557*	0.0585**	0.0163	-0.0363*	0.0441**	0.0470***
	(1.22)	(0.72)	(1.91)	(2.02)	(0.96)	(1.95)	(2.56)	(2.75)
Log(Total Assets)	-0.1976	-0.1390	-0.0278	-0.1433	3.8281***	3.0128**	3.8440***	3.5791***
	(1.43)	(1.09)	(0.21)	(0.86)	(3.03)	(2.44)	(3.07)	(2.79)
Solvency	-1.7566***	-1.8935***	-1.8110***	-1.6862***	-5.5916***	-5.9613***	-5.7204***	-5.6367***
	(5.21)	(5.87)	(5.42)	(5.29)	(8.71)	(9.42)	(8.82)	(8.67)
Bank Productivity	2.5464***			1.9333***	1.7137***			0.8195
	(5.26)			(5.25)	(2.61)			(1.27)
ROE		0.1949***				0.1515***		
		(7.13)				(6.67)		
ROA			1.9811***				0.8152	
			(4.26)				(1.54)	
Loan Loss Provisions/Total Assets	-0.1752	0.2657	1.2850**	-0.1214	-0.5068	-0.4211	0.0035	-0.5165
	(0.35)	(0.44)	(2.25)	(0.24)	(1.08)	(0.89)	(0.01)	(1.08)
Region-by-Time-Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Bank Fixed Effects	NO	NO	NO	NO	YES	YES	YES	YES
Clustering by Bank	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1810	1810	1810	1810	1810	1810	1810	1810
R-squared	0.207	0.226	0.187	0.195	0.180	0.202	0.161	0.160

Table 5: Influence and Asymmetric Information

This table looks at the effects of influence on the sensitivity of loan growth to deposit growth for banks with different levels of asymmetric information vis-à-vis the headquarters. In Panel A, asymmetries of information are proxied by using the standard deviation of deposit growth of a bank during the sample period and physical distance between a bank and the headquarters. We use the standard deviation of deposit growth as a measure of information asymmetries as more volatile deposit growth is associated with greater fluctuations in the funding gaps (i.e., funding deficits or surpluses between investment opportunities and local deposit growth). Banks with greater deposit growth volatility therefore experience larger funding deficits more frequently (rather than smaller funding requests that are routinely approved by the headquarters). Larger requests receive more scrutiny at the headquarters and need to be justified with more detailed information about investment opportunities by the member bank. This presumably increases the importance for information flows between the member bank and the headquarters. We separate the sample into banks with low and high levels of asymmetric information based on whether the standard deviation of deposit growth is below or above the sample median (columns 1-2) and based on whether a bank is in the bottom or top variable quartile (columns 3-4). Likewise, we separate the sample into banks based on whether the distance between the bank and the headquarters is below or above the sample median (columns 5-6) and based on whether a bank is in the bottom or top variable quartile (columns 7-8). In Panel B, we separate loan growth into business and personal loan growth and examine business and personal loan growth (which are predominantly residential mortgage loans) separately. Business loans tend to be more soft-information-intensive which is more difficult to transmit and it is hence more difficult for the headquarters to verify local bank managers' claims of investment opportunities and creditworthiness and to evaluate their decisions. For definitions of the variables see Appendix A1. The regressions use quarterly data for 181 banks from Q1 2005 to Q3 2007. All standard errors are clustered at the member bank level. Constants were included in the regressions but are not reported. Absolute values of robust t statistics are reported in parentheses, * denotes significant at 10%; ** significant at 5%; *** significant at 1%.

Panel A: Deposit Growth Volatility and Distance to Headquarters

Measure of Inform. Asymmetry	**Loan Growth**							
	Deposit Growth Volatility				**Distance to Headquarters**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Asymmetric Info Bank-HQ		Asymmetric Info Bank-HQ		Asymmetric Info Bank-HQ		Asymmetric Info Bank-HQ	
	Low (STD Dep.Gr. ≤Median)	High (STD Dep.Gr. >Median)	Low (Q1 STD Dep. Growth)	High (Q4 STD Dep. Growth)	Low (Distance ≤Median)	High (Distance >Median)	Low (Q1 Distance)	High (Q4 Distance)
Deposit Growth	0.1922**	0.2776***	0.1248	0.3906***	0.2614*	0.2777***	0.0634	0.2578**
	(2.44)	(3.25)	(1.33)	(3.11)	(1.98)	(2.97)	(0.57)	(2.19)
Influence	0.1716	-0.4850	0.4606	0.8329	0.2548	-0.1914	-0.1996	0.4043
	(0.52)	(1.49)	(0.74)	(1.54)	(0.74)	(0.45)	(0.42)	(1.13)
Deposit Growth* Influence	-0.0878	-0.1467***	-0.0157	-0.2193***	-0.0907	-0.1842**	0.0020	-0.1959**
	(1.51)	(3.06)	(0.21)	(3.10)	(1.05)	(2.53)	(0.02)	(2.02)
Log(Total Assets)	-0.0159	-0.3998***	0.1819	-0.0454	0.1058	-0.3601**	-0.0177	-0.1466
	(0.09)	(2.74)	(0.47)	(0.20)	(0.48)	(2.06)	(0.05)	(0.52)
Solvency	-1.1400***	-1.9025***	-0.7165	-1.3626**	-1.0068**	-2.2539***	-1.1384	-2.0485***
	(3.07)	(4.23)	(1.00)	(2.17)	(2.23)	(5.75)	(1.60)	(3.17)
Bank Productivity	1.5019***	2.1461***	1.9087**	2.1673***	1.1890*	2.4863***	0.6343	2.2149***
	(3.33)	(4.51)	(2.33)	(3.80)	(1.97)	(4.61)	(0.86)	(2.74)
Bank Capital Growth	0.1351**	0.0380	0.1144*	0.0685	0.1574*	-0.0005	0.1951*	0.0166
	(2.54)	(1.22)	(1.86)	(1.64)	(1.81)	(0.01)	(1.70)	(0.34)
Loan Loss Provisions/Total Assets	-0.1181	-0.0258	-1.9846*	-0.2338	0.1365	-0.1858	-1.2829	-0.9830
	(0.11)	(0.04)	(1.97)	(0.12)	(0.14)	(0.28)	(1.20)	(0.79)
Region-by-Time-Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Bank Fixed Effects	NO	NO	NO	NO	NO	NO	NO	NO
Clustering by Bank	YES	YES	YES	YES	YES	YES	YES	YES
Observations	900	910	450	460	930	880	460	470
R-squared	0.246	0.256	0.332	0.328	0.221	0.267	0.230	0.293

Panel B: Separating Business and Personal Loan Growth

	Business Loan Growth		Personal Loan Growth	
	(1)	(2)	(3)	(4)
Deposit Growth	0.1928***	0.1861***	0.1120***	0.0516**
	(3.30)	(3.00)	(4.64)	(2.34)
Influence	0.1778		-0.0815	
	(0.52)		(0.38)	
Deposit Growth * Influence	-0.1098**	-0.1170***	-0.0610***	-0.0270*
	(2.56)	(2.67)	(3.66)	(1.88)
Bank Capital Growth	0.0521*	0.0822**	0.0184*	0.0046
	(1.83)	(2.41)	(1.89)	(0.41)
Log(Total Assets)	-0.0144	1.9331	-0.1589	2.3697**
	(0.07)	(0.72)	(1.21)	(2.02)
Solvency	-1.5667***	-4.9836***	-1.2501***	-2.1605***
	(4.37)	(3.58)	(5.51)	(3.27)
Bank Productivity	2.9270***	2.9272*	1.4069***	0.3086
	(5.44)	(1.88)	(4.59)	(0.64)
Loan Loss Provisions/Total Assets	-0.2956	0.0944	-0.0649	-0.4378
	(0.39)	(0.11)	(0.19)	(1.20)
Region-by-Time-Fixed Effects	YES	YES	YES	YES
Bank and Time Fixed Effects	NO	YES	NO	YES
Clustering by Bank	YES	YES	YES	YES
Observations	1810	1810	1810	1810
R-squared	0.195	0.168	0.208	0.178

Figure 1: Overview of Empirical Predictions

This figure provides an overview of the empirical predictions of the information asymmetry and empire building hypothesis. We expect the differences in the empirical predictions between the two hypotheses to be greater when information asymmetry between the headquarters and the banks is greater (smaller), as influence may be more (less) relevant in those circumstances.

		Information Asymmetry Hypothesis	Empire Building Hypothesis
Funds from the Headquarters		More influential banks receive more funds from the headquarters	
Sensitivity of Loan Growth to Deposit Growth	**Positive Shocks to Deposits**	More influential banks increase their lending *less* when experiencing positive deposit shocks (i.e., lending is less sensitive to the local deposit base)	More influential banks increase their lending *more* when experiencing positive deposit shocks (i.e., lending is less sensitive to the local deposit base
	Negative Shocks to Deposits	More influential banks decrease their lending less when experiencing negative deposit shocks (i.e., lending is less sensitive to the local deposit base)	

Figure 2: Time Series of Aggregate Loan and Deposit Growth at the Banking Group Level

This figure shows the time series of deposit and loan growth aggregated at the banking group level. Both variables are calculated by aggregating the net loans and deposits over all member banks. It is observed that at the banking group level aggregate net loan growth is much more volatile than aggregate deposit growth.

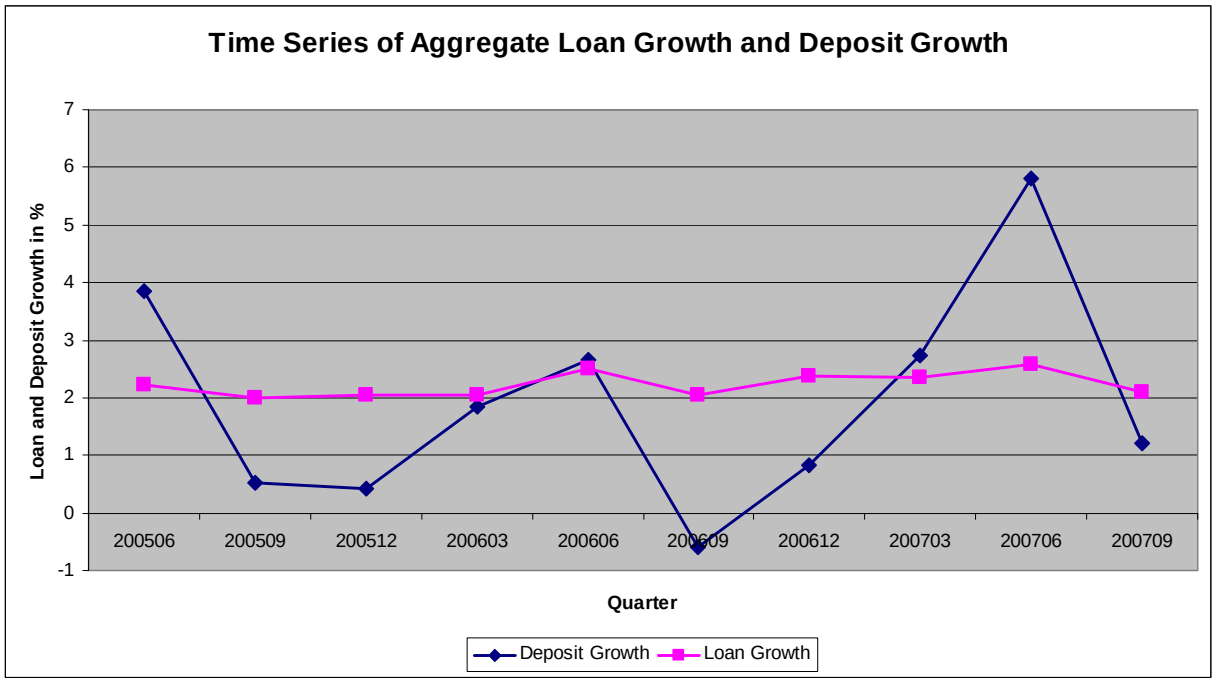


Figure 3: Distribution of Voting Rights in the Banking Group

This figure shows the distribution of voting rights in the banking group. Voting rights are constant over time and vary across member banks between a minimum of 1 vote and a maximum of 10 votes. The figure shows, for example, that 32% of the banks in the sample have 7 votes. The group consists of 181 member banks.

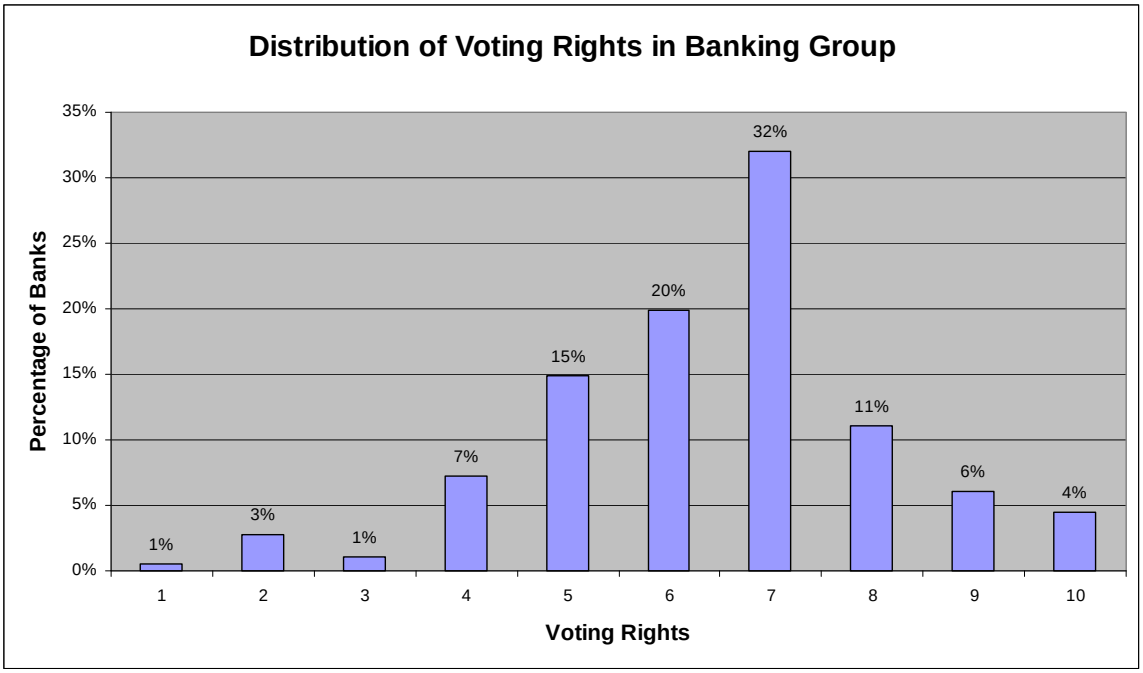


Figure 4: Distribution of Influence in the Banking Group

Figure 4-A shows the non-linear relation between member bank size (measured by total assets of a bank) and the number of voting rights (left axis). It also shows the relation between member bank size and ownership rights (in %, right axis). Figure 4-B plots the relation between the Influence variable and bank size. Influence is the share of voting rights of a bank divided by the share of ownership rights of a member bank in the headquarters. The observations in the figure are based on values at the third quarter of the year 2007.

Figure 4-A

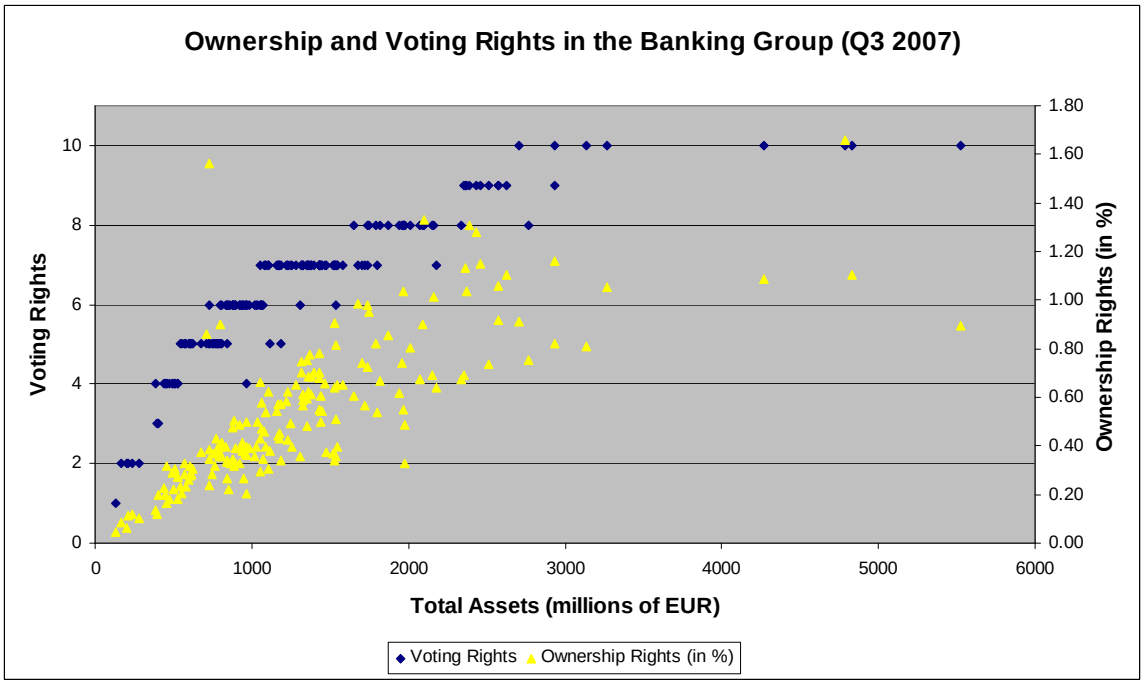


Figure 4-B

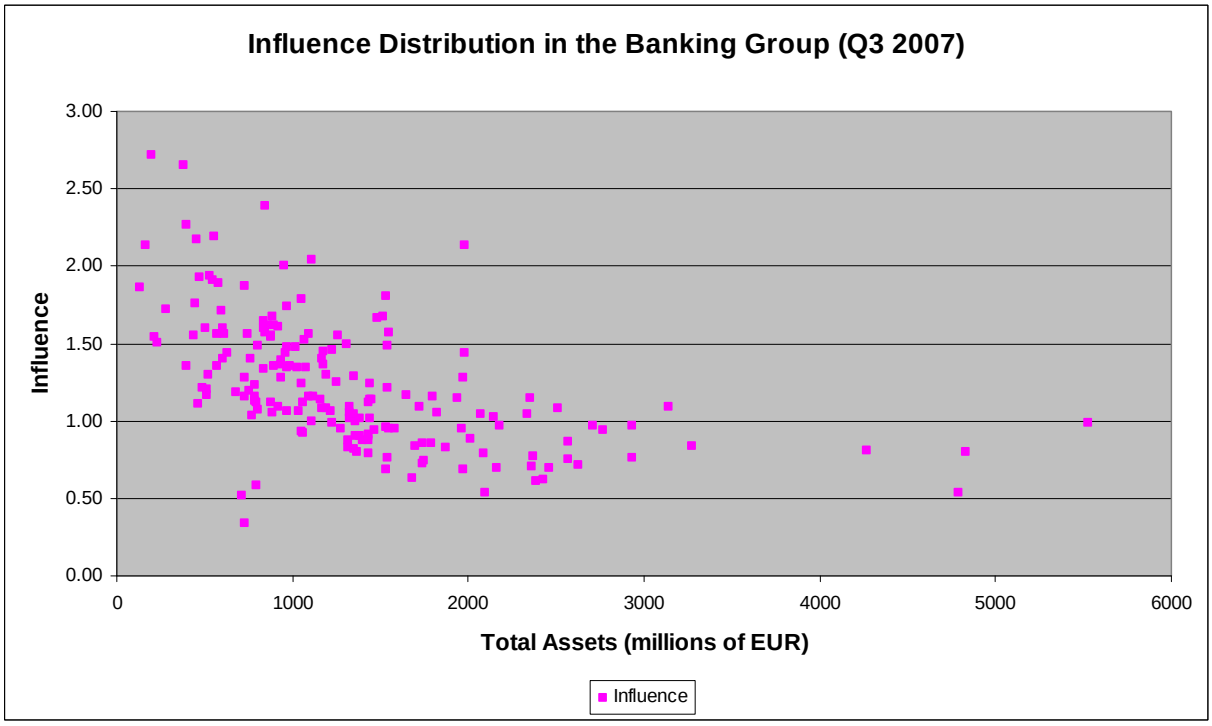
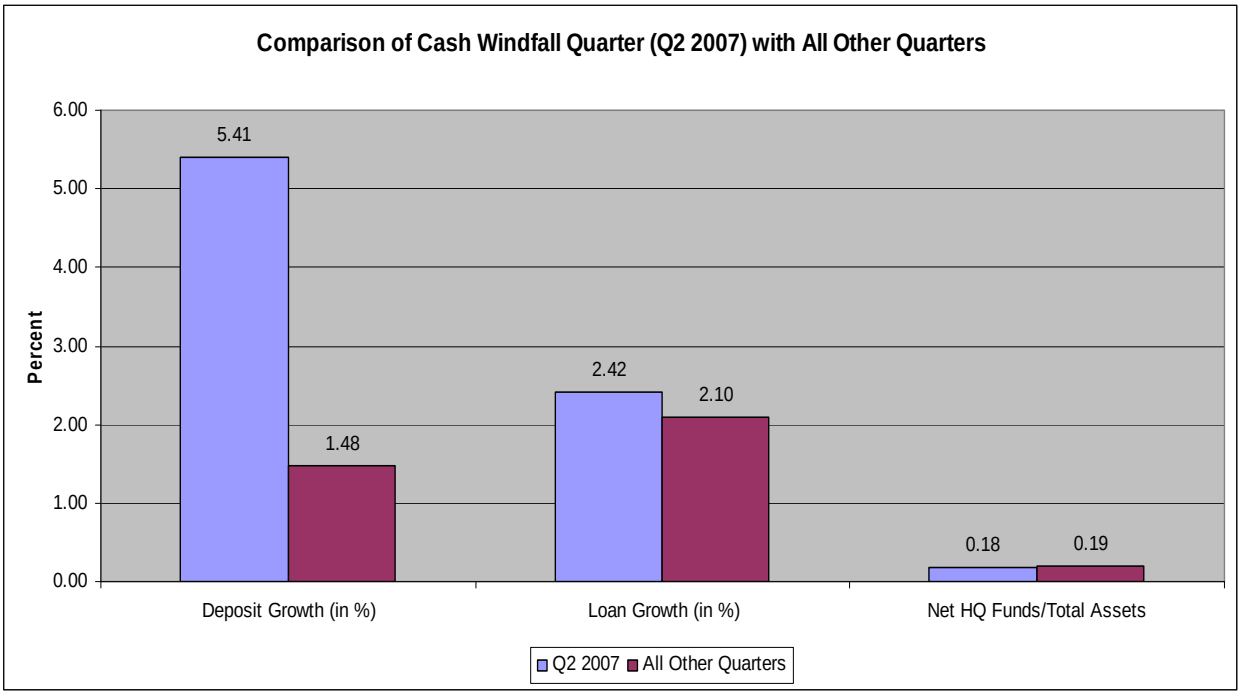


Figure 5: Comparison of Cash Windfall Quarter (Q2 2007) with All Other Quarters

This figure compares mean values of Deposit Growth, Loan Growth, and net funding from the headquarters (Net HQ Funds/Total Assets) between the cash windfall quarter of Q2 2007 and all other quarters of the sample period. Deposit Growth is significantly different at 1%, Loan Growth at 5%, and Net HQ Funds is not statistically different. In Q2 2007 the banks of the banking group experienced major cash inflows as a result of a foreign takeover of a major rival in the deposit market.



Appendix A1: Definition of Variables

This table provides definitions of the main variables in our data set.

Variable	Definition
Total Assets	Total assets of a bank in t (in 1000 Euro)
Deposits	Total deposits taken by a bank in t from customers (in 1000 EUR) and the sum of current account deposits, term deposits and savings deposits
Loans	Total outstanding loans provided by a bank in t (in 1000 EUR)
Loan Growth	Growth in loans in period t measured as log of loans in t minus log of loans in t-1, multiplied by 100
Business Loan Growth	Growth in loans to business customers in period t measured as log of loans in t minus log of loans in t-1, multiplied by 100
Personal Loan Growth	Growth in loans to private customers (mainly residential mortgage loans and consumer loans) in period t measured as log of loans in t minus log of loans in t-1, multiplied by 100
Funds from HQ	Funds/loans extended by the headquarter to a bank in t (in 1000 EUR)
Deposits at HQ	Money deposited at the headquarter by a bank in t (in 1000 EUR)
Distance to Headquarters	Physical distance between a bank and the headquarters, measured in km
STD Deposit Growth	Standard deviation in deposit growth of a bank (measured over the sample period)
Net HQ Funds	Difference between Funds from HQ and Deposits at the HQ and a measure of the net amount of funds extended by the headquarter to a bank in t (in 1000 EUR)
Net Provider of Funds	Dummy variable that takes the value 1 if a bank is net provider of funds (i.e. Net Funds from HQ<0) in t
Net Receiver of Funds	Dummy variable that takes the value 1 if a bank is net receiver of funds (i.e. Net Funds from HQ>=0) in t
Bank Capital	Equity of a bank in t (in 1000 EUR)
Bank Productivity	Ratio of total income to total costs in t
Solvency	Actual capital of a local bank divided by the capital required for banking supervision purposes in t
Loan Loss Provisions	Loan loss provisions in t (in 1000 EUR)
ROE	Return on equity in t and measured as net income over equity (in %)
ROA	Return on assets in t defined as net operating income over total assets (in %)
Influence	Measures the influence of a bank in the organization and defined as the ratio of a bank's share of voting rights divided by its share of ownership rights in the headquarters. A member bank with more voting rights relative to its ownership rights is perceived as more influential because it can bargain for more favors relative to its ownership share.
Voting Rights	Measures the number of votes in the headquarters held by a member bank. The variable ranges between 1 and 10.
Ownership Rights	Measures the number of shares held by a bank in the headquarters divided by the total number of shares outstanding (number reported in %).
Average Loan Growth Region	Average loan growth in a region computed for our sample of banks.

Appendix A2: Correlations of Main Variables

This table provides correlations of the main variables in our data set.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Deposit Growth (in %)	(1)	1.00														
Loan Growth (in %)	(2)	0.18	1.00													
Business Loan Growth (in %)	(3)	0.08	0.65	1.00												
Personal Loan Growth (in %)	(4)	0.15	0.63	0.06	1.00											
Bank Capital Growth (in %)	(5)	0.08	0.08	0.07	0.01	1.00										
Bank Productivity	(6)	0.08	0.17	0.17	0.17	0.06	1.00									
Solvency	(7)	-0.07	-0.20	-0.09	-0.21	0.00	0.05	1.00								
ROE (in %)	(8)	0.11	0.19	0.18	0.13	0.09	0.75	0.18	1.00							
ROA (in %)	(9)	-0.11	0.04	0.05	0.03	0.05	0.54	0.25	0.55	1.00						
Influence	(10)	0.03	0.05	0.02	0.06	-0.01	0.12	-0.09	0.00	-0.03	1.00					
Ownership Rights (in %)	(11)	-0.03	-0.02	0.01	-0.03	0.00	-0.05	-0.04	0.01	0.02	-0.84	1.00				
Voting Rights	(12)	0.02	0.05	0.04	0.06	0.01	0.12	-0.31	0.08	-0.01	-0.61	0.80	1.00			
STD Deposit Growth (in %)	(13)	0.05	0.08	0.08	0.06	-0.10	-0.02	-0.37	-0.09	-0.13	0.17	-0.04	0.13	1.00		
Distance to Headquarters (in km)	(14)	-0.02	-0.07	-0.01	-0.10	0.01	0.05	-0.05	-0.03	-0.02	-0.11	0.05	0.04	0.05	1.00	
Net HQ Funds/Total Assets	(15)	-0.05	0.11	0.11	0.07	0.00	0.29	-0.49	0.01	-0.05	0.25	-0.11	0.20	0.33	0.30	1.00