

## The Payout Behaviour of German Savings Banks

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### Abstract

Our analysis finds that, although a growing number of savings banks are making payouts, the majority do not make any. Furthermore, savings banks distribute only a small part of their net profit to the shareholders. This means that they can build up capital despite making payouts. Savings banks also hold significantly more capital than is called for by the regulatory framework. Finally, the regression analysis shows that savings banks that have less capital distribute profits to their shareholders considerably less frequently. This correlation has intensified since 2009, even though the Savings Banks Acts (Sparkassengesetze) were relaxed in individual federal states.

### Das Ausschüttungsverhalten der deutschen Sparkassen

#### Zusammenfassung

Unsere Analyse zeigt, dass die Mehrheit der Sparkassen keine Ausschüttungen tätigt, auch wenn die Zahl der ausschüttenden Sparkassen zugenommen hat. Die Sparkassen schütten darüber hinaus nur einen kleinen Teil ihres Bilanzgewinns an ihre Träger aus. Das bedeutet, dass sie Eigenkapital aufbauen können, obwohl sie Ausschüttungen vornehmen. Des Weiteren haben die Sparkassen deutlich mehr Eigenkapital als regulatorisch vorgeschrieben. Schließlich zeigt die Regressionsanalyse, dass Sparkassen, die weniger Eigenkapital haben, deutlich seltener Gewinne ausschütten. Dieser Zusammenhang hat sich seit 2009 verstärkt, obwohl die Anforderungen an Sparkassen für Ausschüttungen in den Sparkassengesetzen in einigen Bundesländern gelockert wurden.

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## I. Introduction

In recent years, the profits of German savings banks have increasingly come under pressure as a result of the low-interest-rate environment. This makes it more difficult for them to build up capital, as they increase their capital and reserves mainly by retaining profits. Against this background, this study examines German savings banks' payout behaviour.

Our paper is based on the studies of *Kleff/Weber* (2010) and *Rathgeber/Wallmeier* (2012). Both studies show that more profitable and better capitalized savings banks are more likely to distribute profits. Our paper supplements these studies in two key aspects. First, we have considerably more information about savings banks' payouts than the two previous studies. We can therefore examine whether the payout policy of savings banks varies across time and between the federal states. A possible reason for differences could be the Savings Banks Acts, because they differ between the federal states and govern whether and what amount of profit the savings banks are allowed to distribute.

The second contribution of this paper is that we examine whether the probability of a savings bank making payouts has decreased in recent years. Significantly higher regulatory capital requirements mean that banks' need to retain profits and build up capital has grown. Under the new capital requirements, also known as Basel III, banks must gradually increase their tier 1 capital ratio – measured in terms of tier 1 capital relative to risk-weighted assets – to 6 % (up from 4 % under Basel II) by 2016, of which a minimum of 4.5 % (2 % under Basel II) must be common equity tier 1 (CET1) capital. Furthermore, banks are required to build up a capital conservation buffer from 2016 onwards, which is to be steadily raised by 0.625 % per year until it reaches 2.5 % in 2019, although it can fall short of this figure in periods of crisis. From 2016, the national supervisor can also require banks to establish a countercyclical capital buffer that can amount to a maximum of 2.5 % in 2019.<sup>1</sup> Besides this, supervisors are currently working on a Supervisory Review and Evaluation Process (SREP) framework for less significant institutions, which might result in additional capital add-ons. All capital requirements need to be met using CET1 capital. This largely comprises retained profits in the case of German savings banks. In addition to the higher capital requirements, savings banks also need reserves to prepare themselves for an abrupt interest rate rise and/or a deterioration in credit quality if the economy weakens. Given the healthy economy, risk provisioning is currently at a historically low level.<sup>2</sup>

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<sup>1</sup> For an overview of the transposition of Basel III into national law, see Deutsche Bundesbank (2013).

<sup>2</sup> See Deutsche Bundesbank (2016).

Rather than distributing profits less frequently, savings banks in North Rhine-Westphalia, Hesse, Schleswig-Holstein and Thuringia could also have distributed profits to their shareholders more often in recent years. Because the statutory framework for distributions was changed in those states in 2009, it has become easier for savings banks to distribute profits. This could have led savings banks in those states to distribute profits more, rather than less, frequently.

The decision on payouts is made by the supervisory board on the recommendation of the management of the savings bank. The supervisory board represents the interest of the owners ("Träger"). Their interests in payouts may differ from those of the management. The payout decision can, hence, be described as a shareholder-manager conflict (Jensen 1986). In case of payouts, conflicts of interest arise because the owners may want to decide on their own how the savings bank's profits are used and, thus, be interested in payouts, while the management may wish to retain profits and build up reserves to reduce the risk of solvency problems that may lead to its dismissal. In addition, capital may be needed to extend banks' business. Savings banks' managers may be incentivized to grow beyond the optimal size, because their salary is usually linked to the size of the bank.<sup>3</sup> In addition, the managers could, for public relations reasons and to enhance their public image, be interested in providing direct support to charitable work through donations rather than indirectly through payouts to the shareholders of the savings banks. The conflict of interest is particularly severe if the savings bank generates substantial free cash-flow, i.e. cash-flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital (Jensen 1986).

Payouts may mitigate this conflict of interest because they reduce the resources under managers' control (Easterbrook 1984; Jensen 1986). This ensures that the managers will have to approach the capital market in order to meet the funding needs for new projects. The need to approach the capital markets imposes a discipline on the managers, and thus reduces the cost of monitoring the managers. This free cash-flow theory of payouts does not apply to savings banks, because unlike private banks they are due to their legal form neither controlled by the capital market nor by private investors.<sup>4</sup> Market discipline is, hence, low at savings banks. In addition, the supervisory board members are usually politi-

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<sup>3</sup> The regional savings banks associations, recommend linking the fixed pay of savings banks' managers to the size of the bank with managers of larger banks having a larger fixed pay.

<sup>4</sup> Savings banks are usually not allowed to issue share capital by the Savings Banks Acts. Savings banks also hardly issue bonds to fund their activities. Most of their funding comes from customer deposits. In addition, savings banks are due to their legal form not allowed to be taken over by private banks. This significantly reduces the power of the market for corporate control, which is viewed as additional control mechanism (Jensen 1986).

cians without expertise and experience in banking.<sup>5</sup> This implies that information asymmetries are often large and internal control mechanisms weak at savings banks, thereby, putting the managers in a better position to enforce their interests. This might explain theoretically why most savings banks do not make payouts (Kleff/Weber 2010; Rathgeber/Wallmeier 2012).

The paper is structured as follows. The statutory framework governing public sector savings banks' distribution of profits will be explained in the next chapter. We will look in particular at the amendment to the Savings Banks Acts, which has made it easier for savings banks in some federal states to distribute their profits since 2009. In chapter 3, the data set is presented and the capital base and payout policy of savings banks is examined on a descriptive level over a period from 2003 to 2013. In chapter 4, we analyse the key factors determining the payout policy of savings banks. Chapter 5 summarises the key findings of our analysis.

## II. Legal Framework for Payouts

Savings banks are not provided with capital from their shareholders. Because of that, they build up their capital mainly through profit retention. This explains why the Savings Banks Acts govern precisely which savings banks may distribute profit, and how much profit they are allowed to distribute.<sup>6</sup> According to these acts, a savings bank is only eligible to distribute profits if its capital or reserves exceed a certain minimum level. Because each of Germany's federal states has its own Savings Banks Act, the minimum levels are different (see Table 1). In North-Rhine Westphalia, for example, a savings bank is eligible to distribute profits if the ratio of its contingency reserves to risk-weighted assets is at least 7%. This minimum requirement was abolished in 2009 when changes were made to the Savings Banks Act in North-Rhine Westphalia. In Hesse, Schleswig-Holstein and Thuringia, the minimum requirement was abolished in 2009 as well. Lower Saxony followed in 2015. This means that the savings banks in those states are free to distribute profits as long as they meet regulatory capital requirements.<sup>7</sup> If savings banks are eligible to make a distribution, the amount of net profit they may pay out depends on their level of capital. As a rule, savings

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<sup>5</sup> See Böhm et al. (2012) and Körner et al. (2014). Hau/Thum (2009) show that the competence of supervisory board members is systematically lower and, thus, corporate governance mechanisms weaker in state-owned banks compared to private banks in Germany.

<sup>6</sup> For a detailed description of the savings bank legislation relating to distributions, see Lepper (2003) and Steiner/Rathgeber (2009).

<sup>7</sup> The minimum contingency reserve, measured by the ratio of contingency reserves to total assets, had to amount to at least 4% in Hesse and at least 5% in Thuringia. In Schleswig-Holstein, savings banks were only eligible to distribute if the ratio of their contingency reserves to total assets was at least 3%. In Lower Saxony, the distribution requirements were repealed as early as 2004.

banks that are more poorly capitalised may distribute fewer profits. Full profit distribution is not possible in most federal states.<sup>8</sup> These rules are designed to ensure that only those savings banks that hold a sufficient level of capital make payouts. Exceptions to these rules are North-Rhine Westphalia, Hesse, Schleswig-Holstein, Thuringia and Lower Saxony, in which net profit can be distributed in full. In all of these states, however, the board of directors must take into consideration the institution's future economic performance when deciding whether profits should be distributed.

### **III. Descriptive Analysis of the Payout Policy and Capitalization of Savings Banks**

One of the problems researchers face when analysing the payout policy of savings banks is that no data are collected on the distributions within the scope of supervisory reporting. Moreover, savings banks themselves publish only little information on whether they have distributed profits. For that reason, savings banks' distributions were calculated using data taken from the annual financial statements in the Deutsche Bundesbank's prudential information system (BAKIS). The idea behind our calculations is that the holdings of contingency reserves ("Sicherheitsrücklagen") that are reported in the balance sheet can increase only if the savings bank transfers part of its profit for the year to the contingency reserves ("Vorwegzuführungen") and/or retains part of its net profit. As the contingency reserves held are known from the reporting system and data on the appropriation of annual profit is reported, it is possible to determine whether or not a savings bank made payouts in a specific year.<sup>9</sup>

In order to review the plausibility of our calculations, a random sample of the distributions calculated were compared with the actual distributions that the individual savings banks stated in their annual reports. In all cases, distributions were identified correctly. All in all, the data set contains information on 423 savings banks for which data were available for the period from 2003 to 2013.

#### *1. Number of Savings Banks Eligible to Distribute and Savings Banks that Distribute*

Before it is possible to analyse which savings banks distribute profits, it is necessary to determine which savings banks are eligible to distribute profits according to the Savings Banks Acts (see Table 1). Table 2 shows that 398 savings

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<sup>8</sup> See Steiner/Rathgeber (2009).

<sup>9</sup> For details on the calculation, see the notes in the annex. In calculating payouts, we benefited particularly from comments by the Bavarian Savings Banks Association.

banks were eligible to do so in 2013. Of those, 168 banks are from North-Rhine Westphalia, Hesse, Schleswig-Holstein and Thuringia, which had no specific eligibility criteria for payouts in 2013. It is striking that, although almost all savings banks were able to make payouts, only one-third actually did so. Most savings banks, hence, did not make payouts. Similar observations were made by *Kleff/Weber* (2010) and *Rathgeber/Wallmeier* (2012). However, the number of savings banks distributing profits has been rising since 2003, with the exception of 2008 and 2010 (see Figure 1). It is also interesting that payout behaviour varies considerably between the federal states (see Table 2). For example, while only one savings bank distributed profits in Baden-Württemberg in 2013, 49 did so in North-Rhine Westphalia. This means that every second savings bank in North-Rhine Westphalia distributed profits in 2013. The proportion of distributing savings banks is higher only in Saxony, Rhineland-Palatinate, Thuringia and Saarland.

## 2. Savings Banks' Payout Ratio and Level of Capital

As long as savings banks distribute only a small part of their profits, they can continue to build up capital despite making payouts. This is the case for most savings banks, although the share of distributed profits relative to net profit increased to almost 35 % in 2013 (see Figure 1). However, the payout ratio varies greatly between the federal states (see Table 3). The share of distributed profits is highest in Saxony (median of 64 % of net profit) and North Rhine-Westphalia (33 %). The savings banks in Bavaria (median of 10 %) and Saarland (15 %) have the lowest payout ratio.

If savings banks hold sufficient capital, distributions pose less of a threat to their capital adequacy. Measured in terms of the regulatory tier 1 capital ratio, most savings banks hold sufficient capital. On average, the ratio of tier 1 capital to risk-weighted assets was 15 % in 2013, with the contingency reserves that count towards CET1 capital accounting for 10 percentage points (see Table 4). This is considerably higher than the regulatory tier 1 capital ratio of 5.5 % in 2013 (of which minimum CET1 capital: 4 %) and is also higher than the current minimum tier 1 capital ratio of 6 % (of which minimum CET1 capital: 4.5 %). Furthermore, the savings banks already meet the requirements for the capital conservation buffer that will increase the minimum CET1 capital ratio to 7 % by 2019. This is also the case for savings banks not eligible to distribute profits under the Savings Banks Acts, although they are, as expected, far more poorly capitalised. Most savings banks therefore are not reliant on retaining profits in order to meet the higher regulatory capital requirements under Basel III.

Interestingly, the level of capital held by the savings banks varies significantly between the federal states (see Table 5). In Schleswig-Holstein, the savings

banks that made payouts had the lowest level of CET1 capital, measured in terms of the ratio of contingency reserves to risk-weighted assets. These banks have virtually no contingency reserves. Instead, their tier 1 capital consists primarily of common stock or issued share capital. The level of tier 1 capital that they hold relative to risk-weighted assets rises significantly if the contingency reserves stipulated in section 340g of the German Commercial Code (Handels-gesetzbuch) – which also count as tier 1 capital – are included in this figure.<sup>10</sup> Nevertheless, tier 1 capital remains lowest in Schleswig-Holstein.<sup>11</sup>

#### IV. Determinants of the Payout Policy of Savings Banks

In this chapter, we analyse the factors determining the payout policy of savings banks. In line with *Kleff/Weber* (2010) and *Rathgeber/Wallmeier* (2012), we estimate the following logit model:

$$P_{it} = \frac{\exp(X_{it}\beta)}{(1 + \exp(X_{it}\beta))}$$

The dependent variable  $P_{it}$  is the probability that savings bank  $i$  distributes profits in year  $t$ ;  $X$  is a vector of control variables that affect the probability of a payout.

To analyse the impact of the level of capital on the probability of a savings bank distributing profits, we use the ratio of balance sheet capital or contingency reserves to risk-weighted assets.<sup>12</sup> Savings banks that hold a high level of capital should be more likely to distribute profits because they meet the eligibility requirements more easily and are therefore eligible to distribute profits (see chapter 2). The management may also be more willing to distribute profits if the savings bank holds a high level of capital and payouts do not threaten the capital adequacy of the bank. For this reason, we expect the probability of a savings bank making distributions to be higher if it holds a high level of capital.

We also control for holdings of disclosed contingency reserves, which banks may create pursuant to section 340g of the German Commercial Code for the purpose of hedging against general banking risks. They are recognised as CET1

<sup>10</sup> Pursuant to section 340g of the German Commercial Code, banks may create reserves to hedge against general banking risks (fund for general banking risks). Besides their risk provisioning function, these reserves can also be used to build up capital, for internal financing and for balance sheet management (see, for example, *Bornemann et al*, 2014).

<sup>11</sup> It should be noted that only one savings bank distributed profit in Baden-Württemberg in 2012.

<sup>12</sup> Contingency reserves are the equivalent of revenue reserves at private banks.



capital. Savings banks holding large section 340g reserves may be more likely to distribute profits, as they rely less on profit retention to build up CET1 capital. Furthermore, the management board could be more willing to distribute profits if a savings bank has already created high levels of section 340g reserves. For the same reason, profitable savings banks may be more likely to make payouts as well.

The size of a savings bank could influence the probability of payouts, because large savings banks could be under greater public pressure to distribute profits than small banks (Kleff/Weber 2010; Rathgeber/Wallmeier 2012). Furthermore, we control for lending to local government and local government associations. This includes loans to the owners of the savings banks. Loans granted to local authorities could be regarded as a substitute for payouts (Kleff/Weber 2010). This would suggest that the payout probability falls if a savings bank grants a large number of loans to local authorities compared to the volume of loans extended to all non-banks.

Our regression model also includes two dummy variables. The “Independent savings banks” dummy tests whether the payout policy of an independent savings bank (“Freie Sparkasse”) differs from that of a public savings bank. Independent savings banks, currently six, are not owned by their municipalities (“Träger”), but organized as joint stock companies. Because independent savings banks are not public institutions, they are not subject to the Savings Banks Acts. This means that they are exempt from the regional principle, i.e. the rule that the operations of a savings bank must be confined to the area of their public shareholder. Particularly relevant for this paper is that independent savings banks are not subject to the distribution rules. This means that they do not have to meet certain minimum levels of capital to be eligible to distribute profits as long as they meet the regulatory capital requirements. We, therefore, expect independent savings banks to distribute profits more frequently than public savings banks.

According to Kleff/Weber (2010) and Rathgeber/Wallmeier (2012), the payout probability could also depend on how many shareholders a savings bank has. If two savings banks merge, the sponsorship (“Trägerschaft”) is usually transferred to a special-purpose entity (“Zweckverband”) to which the shareholders of the merged banks belong. Mergers thus expand the group of shareholders, which could make it more difficult for individual shareholders to enforce their interests. We use the “Special-purpose entity” dummy to control for this. Given that the shareholders’ interests in a payout could vary, it is not clear whether the probability of a distribution increases or decreases if a savings bank has several shareholders.

As was explained in chapter 2, payout behaviour also depends on the distribution rules contained in the Savings Banks Acts. In order to control for this and



for other differences between savings banks' payout policies across the federal states, our baseline model is estimated with dummy variables for each federal state. Time dummies additionally control for all unobserved effects that vary over time but that impact on all savings banks at the same time, such as economic activity and the interest rate level. Table 6 provides an overview of the variables used in the regression analysis and whether they are expected to be positive or negative. Descriptive statistics on our variables can be found in Table 7. To prevent our results from being distorted by outliers, values are winsorised at the 1st and 99th percentile.<sup>13</sup> Standard errors are clustered at the savings bank level to control for autocorrelation in the residuals.

### 1. Results of the Regression Analysis

In the first step of our regression analysis, we estimate our baseline model. In the second step, we extend our baseline model to include interaction terms in order to examine whether the impact of the level of capital on the probability of a savings bank making payouts has changed since 2009. In view of the low-interest-rate environment and tighter capital requirements, we would expect savings banks to have made fewer payouts at the same level of capital than before 2009.

#### a) Baseline Model

Table 8 shows the results of the estimates of our baseline model. A savings bank's level of capital is measured using the ratio of balance sheet capital to risk-weighted assets in columns 1 and 2, and alternatively, using the ratio of contingency reserves to risk-weighted assets in columns 3 and 4. To measure savings banks' profitability, we use annual profit after tax relative to total assets in columns 1 and 3, and relative to balance sheet capital in columns 2 and 4.

The results are in line with expectations. Consistent with *Kleff/Weber* (2010) and *Rathgeber/Wallmeier* (2012), we find that savings banks with more capital have a significantly higher payout probability. The more capital banks have, the more likely they are to meet the requirements to be able to distribute profits (see chapter 2). Savings banks with considerable reserves pursuant to section 340g of the German Commercial Code are also significantly more likely to distribute profits. If savings banks hold more capital and have more reserves, distributions pose less of a threat to their capital adequacy. The management board of the savings banks could therefore be more willing to distribute profits to their shareholders.

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<sup>13</sup> The results do not change if the variables are not winsorised.

Profitable and large savings banks also distribute profits significantly more frequently. Large institutions are under greater public pressure to make payouts (Kleff/Weber 2010). The “Special-purpose entity” dummy is also significant. The negative sign indicates that the probability of a savings bank distributing profits is smaller if the shareholder is a special-purpose entity. As special-purpose entity savings banks have several shareholders, conflicts of interest can arise. Our findings show that this reduces the probability of a bank making payouts.<sup>14</sup> “Independent savings banks”, on the other hand, distribute profits significantly more frequently. They are not subject to any distribution rules and may, therefore, be more likely to make payouts. The ratio of loans to local authorities to the total volume of loans extended to non-banks, by contrast, does not matter, as in Rathgeber/Wallmeier (2012).

The annual and federal state dummies are also jointly significant. According to our results, the probability of savings banks distributing profits is significantly higher in Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate, Saarland, Saxony, Saxony-Anhalt, Schleswig-Holstein and Thuringia than in Baden-Württemberg (the reference group). This is consistent with the descriptive analysis in Table 2.<sup>15</sup> To sum up, our results are largely in line with our hypotheses and the results of Kleff/Weber (2010) and Rathgeber/Wallmeier (2012).

### b) Savings Banks’ Payout Policies Since 2009

In this section, we will examine whether the payout policy of savings banks has changed since 2009. We are particularly interested in finding out whether savings banks have made fewer distributions at the same level of capital. The need to retain profits is likely to have become greater, because the introduction of Basel III has significantly increased the regulatory capital requirements. Recently, savings banks might have further reduced their distributions in anticipation of additional capital add-ons under the SREP.

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<sup>14</sup> Special-purpose entity savings banks (“Zweckverbandssparkassen”) are created through mergers and acquisitions. If these transactions were made to avoid supervisory intervention (as shown, for instance, by Koetter et al. 2007), the lower distribution probability could also be because special-purpose entity savings banks are not as well capitalised and are thus more reliant than other savings banks on profit retention. We do not believe that this drives our results. First, we already control for savings banks’ level of capital in our regression model. Second, a descriptive comparison of the capital ratios demonstrates that special-purpose entity savings banks have significantly *more* and not less tier 1 capital in relation to risk-weighted assets than the other savings banks.

<sup>15</sup> In order to save space, we only present the results for the federal state dummies in Table 8. The annual dummies are not presented in any tables on the grounds of space considerations.

In order to test whether savings banks distribute less frequently at the same level of capital, we expand our baseline model to include an interaction term between the capital ratio and a dummy for the period from 2009 onwards (balance sheet capital or contingency reserves/risk-weighted assets \* dummy from 2009 onwards). We focus on the period from 2009 onwards, as 2009 was the year in which the Basel Committee on Banking Supervision first announced comprehensive proposals for reforming capital adequacy regulations.<sup>16</sup> Table 8 shows that the interaction term is significantly negative. This indicates that the probability of a savings bank making distributions has considerably decreased at the same level of capital since 2009. To illustrate this point: prior to 2009, the probability of a savings bank with balance sheet capital amounting to 10 % of risk-weighted assets distributing profits was 40 %, according to our estimates (column 1 in Table 9). After 2009, this probability decreased to 15 %. The savings banks might have made fewer distributions lately to prepare themselves for Basel III and/or an abrupt interest rate rise as well as a deterioration in credit quality if the economy weakens.

The Savings Banks Acts were amended in 2009 in the federal states of North Rhine-Westphalia, Hesse, Schleswig-Holstein and Thuringia (see chapter 2). We can use this fact to examine whether the payout behaviour of the savings banks in these federal states differs from that of the savings banks in the other states. Since the savings banks in North Rhine-Westphalia, Hesse, Schleswig-Holstein and Thuringia are no longer required to meet any additional capital requirements to make payouts since 2009, the probability that savings banks from these states will distribute profits might have increased. In order to test this hypothesis, we expand our baseline model to include a three-way interaction term between the capital ratio, a dummy for Hesse (HS), North Rhine-Westphalia (NRW), Schleswig-Holstein (SH) and Thuringia (TH), and a dummy for the period from 2009 onwards (balance sheet capital or contingency reserves/risk-weighted assets \* dummy for HS, NRW, SH and TH \* dummy from 2009 onwards). The results in Table 10 confirm our hypothesis. As expected, the coefficient of the three-way interaction term is significantly positive. In Table 11, we use a separate interaction term for each of the federal states of Hesse, North Rhine-Westphalia, Schleswig-Holstein and Thuringia rather than a joint interaction term for all four federal states. In this model, the three-way interaction term remains significant for North Rhine-Westphalia and Thuringia. However, the overall coefficient remains negative if we add the coefficient for the three-way interaction term and the coefficient for the interaction term between the

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<sup>16</sup> See the press release entitled “Comprehensive response to the global banking crisis” published by the Bank for International Settlements (BIS) on 7 September 2015. Furthermore, the Basel Committee had already adopted stricter regulations in 2009 (updated in 2010 and 2011), particularly for securitisations and market risks (referred to informally as “Basel 2.5”).

capital ratio and dummy from 2009 onwards (balance sheet capital or contingency reserves/risk-weighted assets \* dummy from 2009 onwards). In summary, our results imply that the probability that savings banks from North Rhine-Westphalia and Thuringia will make payouts is lower at the same level of capital after 2009. Compared with savings banks in other federal states, however, payouts are more likely.

Besides the three-way interaction terms, we also include a set of interaction terms between the capital ratio and a dummy for Hesse (HS), North Rhine-Westphalia (NRW), Schleswig-Holstein (SH) and Thuringia (TH) (see Tables 10 and 11). This interaction term tests whether capital has a different effect on the distribution probability of savings banks in these states, in general. The interaction term for North Rhine-Westphalia, Thuringia and Hesse (balance sheet capital or contingency reserves/risk-weighted assets \* dummy for NRW, TH or HS) is insignificant. By contrast, the interaction term (balance sheet capital or contingency reserves/risk-weighted assets \* dummy for SH) for Schleswig-Holstein is significantly negative, ie the probability that savings banks from that state will distribute profits is smaller, even if these banks hold the same level of capital, than for savings banks from other states. Savings banks in Schleswig-Holstein have a poorer capital base and could, therefore, rely more heavily on profit retention to build up capital.

### c) Robustness of Results

We conduct several tests to review the robustness of our results. First, we test whether the results are dependent on variables that we use to measure savings banks' level of capital. To do this, we replace our previous variables with the ratio of tier 1 capital to risk-weighted assets, or the ratio of capital to total assets as in *Rathgeber/Wallmeier* (2012), or with the ratio of reserves to total assets as in *Kleff/Weber* (2010). There is no change in the results.<sup>17</sup>

So far, we have used time dummies to control for the macroeconomic environment (eg economic activity and interest rate levels). This assumes a broadly similar economic performance across Germany. While this assumption is justified with respect to interest rate levels, economic activity can differ greatly from region to region. Therefore, we also control for local economic growth in Table 12, using the annual growth rate of regional gross domestic product (GDP). The growth rate has a positive sign, but is insignificant. If the local economy is performing well, savings banks could be more willing to distribute profits to their shareholders.

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<sup>17</sup> In order to save space, we do not present these results. The results can be obtained from the author upon request.

In recent years, there has been growing media coverage of shareholders pressuring savings banks to distribute profits.<sup>18</sup> These shareholders are often municipalities that are in financial difficulties and want to use the payouts to consolidate their budgets.<sup>19</sup> To examine whether savings banks in heavily indebted municipalities are more likely to make payouts, we use the ratio of local government's and local government associations' core budget debt to regional GDP, as in *Kleff/Weber* (2011) and *Rathgeber/Wallmeier* (2012). The data are obtained from the regional debt statistics of the Federal Statistical Office. They were comprehensively amended in 2010, so that there is only limited scope for comparing the values up to 2009 with those as of 2010. This should be taken into consideration in the interpretation. This is also the reason why we have not controlled for the shareholder's indebtedness thus far. If heavily indebted shareholders exercise greater pressure on savings banks to make distributions, the payout probability should rise in line with growing municipal debt. The results in Table 12 confirm this hypothesis. The coefficient for the debt ratio has a positive sign and is (weakly) significant. This does not change even if we use per capita debt instead of the debt ratio.<sup>20</sup> These results imply that savings banks in heavily indebted municipalities are under greater pressure to distribute profits.<sup>21</sup> Importantly, the results of the other variables do not change.

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<sup>18</sup> See, for example, the article "Sparkassen sollen Pleitestädte retten" in the *Financial Times Deutschland* of 22 March 2012, or the article "Neue Begehrlichkeiten" in the *Handelsblatt* of 25 March 2015.

<sup>19</sup> The shareholders receive support from the General Accounting Offices of Hesse (2012) and Lower Saxony (2015). Both offices consider it reasonable, given the difficult budget position, for municipalities to push the savings banks for distributions when they are faced with financial difficulties.

<sup>20</sup> In place of the debt level, we also control for the ratio of the annual budgetary balance, measured by the difference between gross revenue and gross spending, to total spending. The higher the budget deficit, the more reliant the shareholder is on using debt to finance spending. Shareholders with a high deficit could place greater pressure on savings banks to distribute profit. The variable is insignificant, as for the debt ratio. Because of the changeover to double-entry bookkeeping, there are no data for North Rhine-Westphalia and Saarland (both from 2009), Lower Saxony and Mecklenburg-West Pomerania (from 2012), which means that the sample is considerably smaller than in the baseline model. For this reason, we do not present the results. The results can be obtained from the author upon request.

<sup>21</sup> This pressure can nonetheless exist in isolated cases, as the example of Stadtsparkasse Duisburg or Sparkasse Essen show. See, for example, the article "Sparkassen sollen Pleitestädte retten" in the *Financial Times Deutschland* of 22 March 2012 or the article "Neue Begehrlichkeiten" in the *Handelsblatt* of 25 March 2015.

## V. Conclusion

In recent years, the profits of German savings banks have increasingly come under pressure from the low-interest-rate environment. This makes it more difficult for them to build up capital, as they increase their capital and reserves mainly by retaining profits. Against this background, this study examines the savings banks' payout behaviour. More frequent and larger payouts may undermine the stability of savings banks in times when capital is needed most.

Our analysis finds that, although a growing number of savings banks are making payouts, the majority of savings banks currently still do not make any, although almost all savings banks meet the eligibility criteria to be able to do so. Furthermore, the savings banks distribute only a small part of their net profit to the shareholders. This means that they can build up capital despite distributing profits. Moreover, savings banks hold significantly more capital than is called for by the regulatory framework.

Finally, the empirical analysis shows that distributions are made only by the best-performing savings banks in terms of their profitability, capital position and the risk content of their assets. In addition, since 2009, the savings banks appear to be increasingly building up reserves to equip themselves for the stricter capital adequacy requirements and the continuation of the low-interest-rate environment. The probability of savings banks from North Rhine-Westphalia and Thuringia making payouts has also decreased after 2009. Compared with savings banks in other federal states, however, payouts are more likely. In both states, the Savings Banks Acts were amended in that year, making it easier for banks to distribute profits.

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## Annex

### *Explanation of the Data Set*

No data are collected on the savings banks' distributions within the scope of the supervisory reporting process. For this analysis, the savings banks' distributions were calculated using data from the annual financial statements available in the Deutsche Bundesbank's prudential information system (BAKIS). The fundamental idea behind calculating the distributions is that the holdings of revenue reserves and contingency reserves that are reported in savings banks' balance sheets can increase only if a savings bank transfers a part of its annual profit to the contingency reserves and/or retains a part of its net profit. As the contingency reserves held are known from the supervisory reporting process and data on the appropriation of annual profit is reported to the Deutsche Bundesbank, it is possible to determine whether or not a savings bank has made a distribution.<sup>22</sup>

This can be illustrated using a simple example. Let us assume a savings bank has €500 million in contingency reserves at the end of 2013, with a net profit of €10 million. The following year, the savings bank reports contingency reserves of €505 million, ie the con-

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<sup>22</sup> Profit and loss brought forward as well as other profit/revenue reserves were taken into account in the calculation. As a general rule, they do not play a role for the savings banks.



tency reserves have increased by €5 million between 2013 and 2014. This increase could be due to the fact that the savings bank retained part of its net profit in 2013 and/or that it transferred part of its 2014 profit to the contingency reserves in advance (“Vorwegzuführungen”). As advance allocations are reported to the Bundesbank, it is known whether the savings bank has made use of the second option. In this example, no advance allocations were made. This means that the contingency reserves could only have increased by €5 million in 2014 if the savings bank retained €5 million from its net profit in 2013. Consequently, the €5 million remaining of the savings bank’s profit must have been distributed to the shareholders.

When performing the calculation, it should be noted that net profit in 2013 does not increase the contingency reserves by €5 million until 2014, because the decision on the appropriation of net profit for financial year 2013 is not made until the start of 2014 at the annual general meeting of the savings bank. This means that data for 2014 must be available in order to calculate the payout in 2013. For the same reason, data for 2015 must be available in order to calculate the payout in 2014. As 2015 data for individual institutions are currently not fully available, we are unable to calculate any payouts for 2014. Our data set therefore ends in 2013.

Problems arise when calculating the distributions in the case of acquisitions. With acquisitions, the acquiring institution’s contingency reserves rise due to the acquisition, as the contingency reserves of the acquired institution are transferred to the acquiring institution. In this case, contingency reserves increase even if no advance allocations from annual profit were made and no net profit is retained. A similar problem arises if contingency reserves are converted into capital reserves and common stock into contingency reserves.<sup>23</sup> An additional problem emerged in 2009 when contingency reserves increased considerably as a result of transition effects associated with the introduction of the Act to Modernise Accounting Law (Bilanzrechtsmodernisierungsgesetz), although no advance allocations were made or profits retained. These problems led to around 412 cases in which it could not be clearly determined whether a distribution had been made.

In such cases, we calculated the distributed profits as the average of the value in the previous and following years, ie if a savings bank distributed profits totalling € 5 million in the year prior to reallocating common stock to contingency reserves and distributed the same amount in the year thereafter, we assumed that it had also distributed profits totalling €5 million in the year that the reallocation took place. This assumption is plausible because, according to our data, the savings banks’ payout behaviour remains relatively constant over time. In order to check whether our results change if these adjustments are disregarded, we deleted all observations in which the aforementioned problems arose and it could not be clearly determined whether a distribution had been made before calculating our estimates again. There was no change in the results.

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<sup>23</sup> Conversely, the stock of contingency reserves can decrease when reserves are converted into common stock.

## Tables

Table 1

**Overview of the Minimum Contingency Reserve by Federal State  
(Eligibility to Distribute as at October 2016)**

<i>Federal state</i>	<i>Legal basis</i>	<i>Capital variable</i>	<i>Assessment basis</i>	<i>Minimum quotient</i>
Baden-Württemberg	Section 31 of Savings Banks Act	Contingency reserves	Total assets	4 %
Bavaria	Section 21 of Savings Banks Directive	Reserves	Risk-weighted assets	6 %
Brandenburg	Section 27 of Savings Banks Act	Reserves	Risk-weighted assets	6 %
Bremen	Section 23 of Savings Banks Act	Contingency reserves	Risk-weighted assets	10 %
Hesse	Section 16 of Savings Banks Act			No minimum requirements
Lower Saxony	Section 24 of Savings Banks Act			No minimum requirements
Mecklenburg-West Pomerania	Section 27 of Savings Banks Act	Contingency reserves	Risk-weighted assets	6 %
North Rhine-Westphalia	Section 25 of Savings Banks Act			No minimum requirements
Rhineland-Palatinate	Section 20 of Savings Banks Act	Liabe capital	Risk-weighted assets	10 %
Saarland	Section 25 of Savings Banks Act	Liabe capital	Risk-weighted assets	9.5 %

*(Continue next page)*

(Table 1: Continued)

<i>Federal state</i>	<i>Legal basis</i>	<i>Capital variable</i>	<i>Assessment basis</i>	<i>Minimum quotient</i>
Saxony	Section 27 of Savings Banks Act, Section 1 of Savings Banks Distribution Regulation	Tier 1 capital	Risk-weighted assets	6 %
Saxony-Anhalt	Section 27 of Savings Banks Act	Tier 1 capital	Risk-weighted assets	6 %
Schleswig-Holstein	Section 27 of Savings Banks Act			No minimum requirements
Thuringia	Section 21 of Savings Banks Act			No minimum requirements

Table 1 shows the existing requirements for eligibility to make distributions in the individual federal states on the basis of the Savings Banks Acts. “No minimum requirements” means that the federal states’ Savings Banks Acts do not include any requirements for the savings banks to be able to distribute profits over and above measures pursuant to section 10 of the German Banking Act (*Kreditwesengesetz*). Please note: presentation based on *Steiner/Rathgeber* (2009).

Table 2  
Savings Banks that Distribute and Have the Ability to Distribute (2013)

	<i>Number of savings banks</i>	<i>of which savings banks able to distribute</i>	<i>of which savings banks that have actually made distributions</i>
Baden-Württemberg	53	39	1
Bavaria	71	71	5
Brandenburg	11	11	3
Hesse	34	34*	14
Lower Saxony	44	44	11
Mecklenburg	9	9	3
West Pomerania			
North Rhine-Westphalia	105	105*	49
Rhineland-Palatinate	24	24	13
Saarland	7	7	6

	<i>Number of savings banks</i>	<i>of which savings banks able to distribute</i>	<i>of which savings banks that have actually made distributions</i>
Saxony	12	12	12
Saxony-Anhalt	13	13	4
Schleswig-Holstein	13	13*	3
Thuringia	16	16*	8
<i>Total</i>	<i>412</i>	<i>398</i>	<i>132</i>

Table 2 shows the number of savings banks that were able to make distributions and did make distributions in 2013. \* No distribution requirements in 2013. To ensure the anonymity of the banks, no details are given on the ability of the savings banks in the federal states of Bremen and Hamburg to distribute profits. Very few savings banks operate there. No data are given for Berlin as no institution-specific data are available for the Berliner Sparkasse.

*Table 3*  
**Share of Distributed Profit Relative to Net Profit**

	<i>Mean</i>	<i>Median</i>	<i>Standard deviation</i>
Baden-Württemberg	22.6	23.0	1.1
Bavaria	16.2	10.0	17.1
Brandenburg	28.1	27.0	11.8
Hesse	30.7	25.0	20.4
Lower Saxony	28.4	22.0	23.0
Mecklenburg-West Pomerania	29.5	20.0	25.3
North Rhine-Westphalia	41.3	33.0	28.5
Rhineland-Palatinate	31.1	28.5	17.7
Saarland	14.3	15.0	4.7
Saxony	63.7	64.0	25.0
Saxony-Anhalt	23.1	20.0	16.8
Schleswig-Holstein	40.2	19.0	38.6
Thuringia	29.5	25.0	21.2
All savings banks	35.2	26.0	26.7

Table 3 shows descriptive statistics for the share of profits distributed by the savings banks to their shareholders between 2003 and 2013, relative to net profit. To ensure the anonymity of the banks, no details are given on the ability of the savings banks in the federal states of Bremen and Hamburg to distribute profits. Only very few banks operate there. No data are given for Berlin as no institution-specific data are available for the Berliner Sparkasse.

Table 4  
Capitalization of the Savings Banks (Mean, 2013)

	<i>All savings banks</i>	<i>Savings banks unable to distribute profits</i>	<i>Savings banks able to distribute profits</i>	<i>Savings banks that can but do not distribute any profits</i>	<i>Savings banks that can and do distribute profits</i>
Balance sheet capital/ total assets	5.74	4.42	5.8	5.73	5.94
Contingency reserves/ total assets	5.44	4.14	5.49	5.48	5.52
Section 340g reserves/ total assets	2.68	2.7	2.68	2.63	2.77
Tier 1 capital/ total assets	7.91	6.75	7.96	7.91	8.05
Balance sheet capital/ risk-weighted assets	10.62	7.75	10.74	10.39	11.44
Contingency reserves/ risk-weighted assets	10.04	7.21	10.16	9.91	10.65
Section 340g reserves/ risk-weighted assets	5.04	4.96	5.05	4.88	5.38
Tier 1 capital/ risk-weighted assets	14.72	11.98	14.84	14.41	15.7
Liable capital/ risk-weighted assets	17.75	15.31	17.85	17.42	18.72
Risk-weighted assets/ total assets	0.56	0.57	0.56	0.57	0.54

Table 4 shows the different indicators for assessing the level of capital of the savings banks. All values are averages across all savings banks for 2013.

*Table 5*  
**Capitalization of Distributing Savings Banks by Federal State**  
**(Mean and Median, 2013)**

	<i>Balance sheet capital/ risk-weighted assets</i>		<i>Contingency reserves/ risk-weighted assets</i>		<i>Tier 1 capital/ risk-weighted assets</i>	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
Baden-Württemberg	9.4	9.4	9.2	9.2	15.2	15.2
Bavaria	12.0	10.2	11.6	9.9	14.6	14.4
Brandenburg	12.5	12.3	12.0	11.7	24.0	22.4
Hesse	13.6	13.6	11.9	12.4	18.1	18.6
Lower Saxony	13.8	13.7	13.3	13.2	18.6	17.6
Mecklenburg-West Pomerania	12.8	12.2	12.6	12.0	15.2	15.9
North Rhine-Westphalia	9.6	9.2	9.2	8.7	13.4	13.2
Rhineland-Palatinate	13.1	12.8	11.9	11.9	16.5	16.4
Saarland	10.2	10.3	9.8	9.9	12.0	11.7
Saxony	11.5	10.9	11.3	10.7	18.8	16.3
Saxony-Anhalt	14.6	14.0	14.3	13.8	19.9	21.3
Schleswig-Holstein	8.3	9.3	1.8	0.0	12.3	11.0
Thuringia	13.9	14.6	13.4	14.1	20.2	21.4
<i>All savings banks</i>	<i>11.4</i>	<i>10.8</i>	<i>10.7</i>	<i>10.4</i>	<i>15.7</i>	<i>14.8</i>

Table 5 shows the different indicators for the level of capital of savings banks that distributed profits in 2013. All values were calculated for 2013. No data are given for Berlin as no institution-specific data are available for the Berliner Sparkasse.

*Table 6*  
**List of the Variables Used in the Regression Analysis**

<i>Variable</i>	<i>Definition</i>	<i>Expected sign</i>
Section 340g reserves/ risk-weighted assets	Reserves pursuant to section 340g of the German Commercial Code divided by risk-weighted assets	+
Balance sheet capital/ risk-weighted assets	Balance sheet capital divided by risk-weighted assets	+
GDP growth	Annual growth rate of gross domestic product (GDP) at district and city level	+
Dummy from 2009 onwards	Dummy variable that adopts a value of one for all years after 2009 and a value of zero if not	–
Dummy for HS, NRW, SH and TH	Dummy variable that adopts a value of one if a savings bank has its registered office in Hesse (HS), North Rhine-Westphalia (NRW), Schleswig-Holstein (SH) or Thuringia (TH), and a value of zero if not	+/-

(Continue next page)

(Table 6: Continued)

<i>Variable</i>	<i>Definition</i>	<i>Expected sign</i>
Dummy for HS	Dummy variable that adopts a value of one if the savings banks have their registered office in Hesse and a value of zero if not	+/-
Dummy for NRW	Dummy variable that adopts a value of one if the savings banks have their registered office in North Rhine-Westphalia and a value of zero if not	+/-
Dummy for SH	Dummy variable that adopts a value of one if the savings banks have their registered office in Schleswig-Holstein and a value of zero if not	+/-
Dummy for TH	Dummy variable that adopts a value of one if the savings banks have their registered office in Thuringia and a value of zero if not	+/-
Independent savings banks	Dummy variable that adopts a value of one if the savings bank is an independent savings bank ("Freie Sparkasse") and a value of zero if not	+
Annual profit/ balance sheet capital	Annual profit after tax divided by balance sheet capital	+
Annual profit/ total assets	Annual profit after tax divided by total assets	+
Loans to local government and local government associations/ non-banks	Loans to local government and local government associations divided by total lending to non-banks	-
Log (total assets)	Logarithm of total assets	
Local government debt/GDP	Up to 2009: debt attributable to local government and local government associations at district level; as of 2010: core budget debt; both figures at district and city level	+
Contingency reserves/ risk-weighted assets	Contingency reserves divided by risk-weighted assets	+
Special-purpose entity savings banks	Dummy variable that adopts a value of one if the shareholder of an institution is a special-purpose entity ("Zweckverband").	+/-

Table 6 lists the variables used in the regression analysis and states which sign we anticipate for the coefficient of the variable in the regression analysis.



*Table 7*  
**Descriptive Statistics**

	<i>Observations</i>	<i>Mean</i>	<i>Median</i>	<i>Standard deviation</i>
Section 340g reserves/ risk-weighted assets	4642	1.62	0.28	2.53
Balance sheet capital/ risk-weighted assets	4642	9.74	9.24	2.57
GDP growth	4642	2.52	2.54	4.02
Dummy from 2009 onwards	4642	0.45	0.00	0.50
Dummy for HS	4642	0.08	0.00	0.27
Dummy for NRW	4642	0.25	0.00	0.43
Dummy for SH	4642	0.03	0.00	0.18
Dummy for TH	4642	0.04	0.00	0.19
Dummy for HS, NRW, SH and TH	4642	0.40	0.00	0.49
Independent savings banks	4642	0.01	0.00	0.11
Annual profit/balance sheet capital	4642	3.13	2.88	1.89
Annual profit/total assets	4642	0.17	0.15	0.11
Loans to local government and local government associations/ non-banks	4642	5.21	3.85	4.87
Log (total assets)	4642	21.12	21.11	0.92
Local government debt/GDP	4587	48.51	42.60	30.62
Contingency reserves/ risk-weighted assets	4642	9.19	8.83	2.79
Special-purpose entity savings banks	4642	0.38	0.00	0.48

Table 7 shows descriptive statistics on the variables used in the regression analysis. To prevent our results from being distorted by outliers, the following procedure is used in the case of all variables except the dummy variables: values below the 1st and above the 99th percentile of the respective variables are increased or reduced to the value of the respective percentile ("winsorised").

Table 8  
Regression Results, Baseline Model

	(1)	(2)	(3)	(4)
Balance sheet capital/risk-weighted assets	0.266 -0.051 ***	0.306 -0.05 ***		
Contingency reserves/risk-weighted assets			0.227 -0.048 ***	0.269 -0.047 ***
Section 340g reserves/risk-weighted assets	0.1 -0.051 *	0.098 -0.051 *	0.092 -0.05 *	0.088 -0.049 *
Annual profit/total assets	3.66 -0.846 ***		4.034 -0.823 ***	
Annual profit/balance sheet capital		0.169 -0.046 ***		0.187 -0.045 ***
Log (total assets)	0.636 -0.123 ***	0.648 -0.124 ***	0.644 -0.126 ***	0.661 -0.126 ***
Loans to local government and local government associations/loans to non-banks	0.033 -0.024	0.026 -0.025	0.037 -0.025	0.029 -0.025
Independent savings banks	3.072 -0.842 ***	3.03 -0.84 ***	4.651 -0.854 ***	4.903 -0.834 ***
Special-purpose entity savings banks	-0.561 -0.273 **	-0.566 -0.275 **	-0.574 -0.273 **	-0.582 -0.275 **
Number of observations	4642	4642	4642	4642
Pseudo R <sup>2</sup>	0.3	0.3	0.29	0.29
Dummy for each federal state	Yes	Yes	Yes	Yes
Wald Chi-Square-statistic federal state dummies	135.25***	124.91***	142.24***	135.08***
Dummy for each year	Yes	Yes	Yes	Yes
Wald Chi-Square-statistic annual dummies	55.78***	59.57***	53.67***	57.58***
Clustered standard errors	Savings bank	Savings bank	Savings bank	Savings bank

\*\*\*/\*\*/\* means significance at the 1%/5%/10% level. z-values on the basis of robust standard errors are in parentheses.

Table 8 shows the results of the logit estimate of our baseline model. The dependent variable is a dummy variable that adopts the value of one if the savings bank has made a distribution between 2003 and 2013, and takes the value of zero if not. All models contain dummies for each year and for each federal state (reference group of the federal state dummies: Baden-Württemberg).

*Table 9*  
**Regression Results, Baseline Model with Interaction Term**

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X	0.414 -0.066 ***	0.456 -0.066 ***	0.327 -0.061 ***	0.371 -0.061 ***
X * dummy from 2009 onwards	-0.242 -0.053 ***	-0.242 -0.053 ***	-0.16 -0.051 ***	-0.161 -0.051 ***
Number of observations	4642	4642	4642	4642
Pseudo R <sup>2</sup>	0.31	0.3	0.3	0.29
Dummy for each federal state	Yes	Yes	Yes	Yes
Dummy for each year	Yes	Yes	Yes	Yes
Clustered standard errors	Savings bank	Savings bank	Savings bank	Savings bank

\*\*\*/\*\*/\* means significance at the 1%/5%/10% level. z-values on the basis of robust standard errors are in parentheses.

Table 9 shows the results of the logit estimate of our baseline model, extended to include an interaction term between the capital ratio and a dummy that adopts the value of one for the period between 2009 and 2013 and of zero if not. The dependent variable is a dummy variable that is one if a savings bank makes payouts and zero if not. Only the results for the capital ratios (X) and the interaction terms (dummy from 2009 onwards) are reported.

Table 10  
Regression Results, Baseline Model with Three-way Interaction Term

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X	0.434 -0.074 ***	0.473 -0.074 ***	0.339 -0.07 ***	0.381 -0.069 ***
X * dummy from 2009 onwards	-0.238 -0.051 ***	-0.237 -0.051 ***	-0.164 -0.048 ***	-0.164 -0.048 ***
X * dummy for HS, NRW, SH and TH	-0.084 -0.105	-0.075 -0.106	-0.056 -0.093	-0.049 -0.094
X * dummy from 2009 onwards* dummy for HS, NRW, SH and TH	0.059 -0.025 **	0.056 -0.025 **	0.067 -0.024 ***	0.064 -0.024 ***
Number of observations	4642	4642	4642	4642
Pseudo R <sup>2</sup>	0.31	0.31	0.3	0.3
Dummy for each federal state	Yes	Yes	Yes	Yes
Dummy for each year	Yes	Yes	Yes	Yes
Clustered standard errors	Savings bank	Savings bank	Savings bank	Savings bank

\*\*\*/\*\*/\* means significance at the 1%/5%/10% level. z-values on the basis of robust standard errors are in parentheses.

Table 10 shows the results of the logit estimate of our baseline model, extended to include a three-way interaction term between the capital ratio, a dummy for the federal states of Hesse (HS), North Rhine Westphalia (NRW), Schleswig-Holstein (SH) and Thuringia (TH) (dummy for HS, NRW, SH and TH) as well as a dummy that adopts the value of one for the period between 2009 and 2013 and of zero if not (dummy from 2009 onwards). The dependent variable is a dummy variable that is one if a savings bank makes payouts and zero if not. Only the results for the capital ratios (X) and the interaction terms (dummy from 2009 onwards and dummy for HS, NRW, SH and TH) are reported. All other variables used in our baseline model (Table 8) are omitted.

Table 11

**Regression Results, Baseline Model with Separate Three-way Interaction Terms for Hesse, North Rhine-Westphalia, Schleswig-Holstein and Thuringia**

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X	0.422 -0.075 ***	0.467 -0.075 ***	0.326 -0.071 ***	0.373 -0.07 ***
X * dummy from 2009 onwards	-0.216 -0.057 ***	-0.22 -0.057 ***	-0.14 -0.049 ***	-0.144 -0.049 ***
X * dummy for HS	-0.15 -0.163	-0.124 -0.16	-0.122 -0.124	-0.103 -0.121
X * dummy from 2009 onwards* dummy for HS	0.001 -0.049	-0.002 -0.047	-0.006 -0.042	-0.005 -0.041
X * dummy for NRW	0.112 -0.155	0.119 -0.156	0.141 -0.137	0.149 -0.136
X * dummy from 2009 onwards* dummy for NRW	0.091 -0.029 ***	0.085 -0.029 ***	0.105 -0.03 ***	0.097 -0.03 ***
X * dummy for SH	-0.623 -0.306 **	-0.579 -0.29 **	0.021 -0.196	0.039 -0.188
X * dummy from 2009 onwards* dummy for SH	0.039 -0.078	0.024 -0.076	0.01 -0.074	0.001 -0.069

(Continue next page)

(Table 11: Continued)

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X * dummy for TH	−0.195 −0.166	−0.215 −0.172	−0.173 −0.154	−0.194 −0.159
X * dummy from 2009 onwards* dummy for TH	0.094 −0.038 **	0.1 −0.039 **	0.085 −0.036 **	0.092 −0.036 **
Number of observations	4642	4642	4642	4642
Pseudo R <sup>2</sup>	0.32	0.32	0.31	0.31
Dummy for each federal state	Yes	Yes	Yes	Yes
Dummy for each year	Yes	Yes	Yes	Yes
Clustered standard errors	Savings bank	Savings bank	Savings bank	Savings bank

\*\*\*/\*\*/\* means significance at the 1%/5%/10% level. z-values on the basis of robust standard errors are in parentheses.

Table 11 shows the results of the logit estimate of our baseline model, extended to include three separate three-way interaction terms between the capital ratio, a dummy that adopts a value of one for the period between 2009 and 2013 and of zero if not (dummy from 2009 onwards), and a dummy each for the federal states of Hesse (dummy for HS), North Rhine-Westphalia (dummy for NRW), Schleswig-Holstein (dummy for SH) and Thuringia (dummy for TH). The dependent variable is a dummy variable that is one if a savings bank makes payouts and zero if not. Only the results for the capital ratios (X) and the interaction terms (dummy from 2009 onwards and dummy for HS, dummy for NRW, dummy for SH and dummy for TH) are reported. All other variables used in our baseline model (Table 8) are omitted.

Table 12

**Regression Results, Baseline Model with Separate Three-way Interaction Terms for Hesse, North Rhine-Westphalia, Schleswig-Holstein and Thuringia as well as Additional Control Variables**

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X	0.422 -0.075 ***	0.466 -0.075 ***	0.343 -0.072 ***	0.389 -0.072 ***
X * dummy from 2009 onwards	-0.222 -0.056 ***	-0.226 -0.056 ***	-0.166 -0.049 ***	-0.17 -0.049 ***
X * dummy for HS	-0.127 -0.166	-0.102 -0.162	-0.118 -0.128	-0.097 -0.126
X * dummy from 2009 onwards* dummy for HS	-0.013 -0.05	-0.015 -0.048	-0.017 -0.043	-0.016 -0.042
X * dummy for NRW	0.112 -0.152	0.119 -0.153	0.138 -0.136	0.148 -0.136
X * dummy from 2009 onwards* dummy for NRW	0.082 -0.029 ***	0.075 -0.029 ***	0.094 -0.03 ***	0.086 -0.03 ***
X * dummy for SH	-0.6 -0.279 **	-0.555 -0.262 **	-0.294 -0.296	-0.239 -0.296
X * dummy from 2009 onwards* dummy for SH	0.036 -0.074	0.021 -0.072	0.016 -0.07	0.005 -0.066

(Continue next page)



(Table 12: Continued)

	X=			
	<i>Balance sheet capital/ risk-weighted assets</i>	<i>Contingency reserves/ risk-weighted assets</i>		
	(1)	(2)	(3)	(4)
X * dummy for TH	-0.201 -0.166	-0.221 -0.171	-0.19 -0.155	-0.211 -0.158
X * dummy from 2009 onwards* dummy for TH	0.105 -0.039 ***	0.111 -0.039 ***	0.101 -0.037 ***	0.108 -0.037 ***
GDP growth	0.014 -0.012	0.014 -0.012	0.013 -0.012	0.013 -0.012
Local government debt/GDP	0.005 -0.003 *	0.005 -0.003 *	0.005 -0.003 *	0.005 -0.003 *
Number of observations	4587	4587	4587	4587
Pseudo R <sup>2</sup>	0.32	0.32	0.31	0.3
Dummy for each federal state	Yes	Yes	Yes	Yes
Dummy for each year	Yes	Yes	Yes	Yes
Clustered standard errors	Savings bank	Savings bank	Savings bank	Savings bank

\*\*\*/\*\*/\* means significance at the 1%/5%/10% level. z-values on the basis of robust standard errors are given in parentheses.

Table 12 shows the results of the logit estimate of our baseline model, extended to include three separate three-way interaction terms between the capital ratio, a dummy that adopts the value of one for the period between 2009 and 2013 and of zero if not, and a dummy each for the federal states of Hesse (HS), North Rhine-Westphalia (NRW), Schleswig-Holstein (SH) and Thuringia (TH). Unlike in Table 10, we also control for the annual growth rate of regional GDP and the debt level of local government and local government associations. The dependent variable is a dummy variable that is one if a savings bank makes payouts and zero if not. Only the results for the capital ratios (X), the interaction terms (dummy from 2009 onwards and dummy for HS, dummy for NRW, dummy for SH and dummy for TH) and the regional variables are reported. All other variables used in our baseline model (Table 8) are omitted.

## Figures

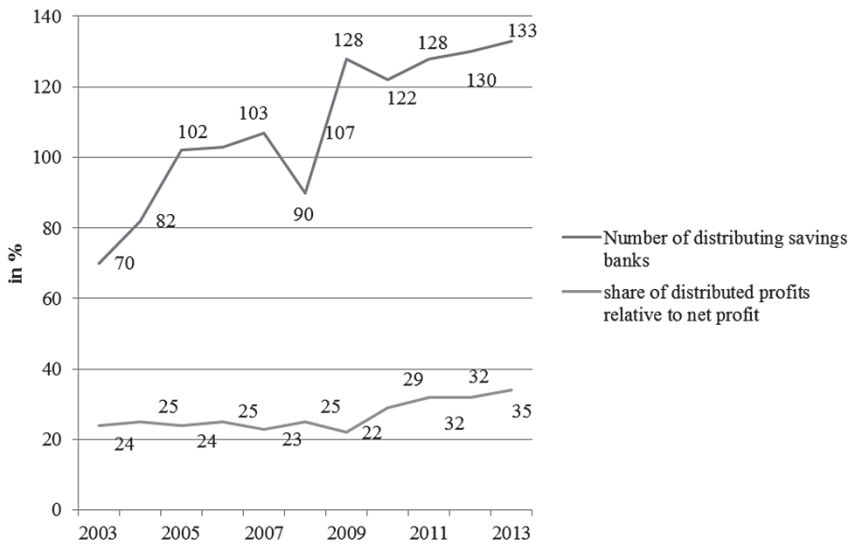


Figure 1: Number of Distributing Savings Banks and Share of Distributed Profits Relative to Net Profit (Median)

Figure 1 shows the number of distributing savings banks and the share of distributed profits relative to net profit (as a percentage).