

Impacts of Basel III capital regulation to German co-operative banks

An empirical analysis based on a balance sheet simulation

By
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Abstract

Almost 250 German co-operative banks cannot fulfill the new capital requirements according to Basel III. In general, there are two possibilities of achieving compliance with CET1 ratio by either increasing the regulatory capital or decreasing the risk-weighted assets. Both alternatives to comply with the modified CET1 ratio increases the maturity mismatch between the asset and liability side of a balance sheet. However, the maturity mismatch is shrinking after complying with the modified CET1 ratio. This result is important for the interdependency of the CET1 ratio and the new modified liquidity requirements. Moreover, the income of a bank will decline if a regulatory reduction of risk-weighted assets or an increase in CET1 capital occurs. This is resulting from an increase in administrative expenses as well as a reduction of potential new business. Considering these facts, the analysis shows the importance of the involvement of the new CET1 ratio by implementing the business strategy of a co-operative bank.

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1 Introduction

The new regulatory framework Basel III raises the qualitative and quantitative requirements of the core equity tier one (CET1) capital. After the final implementation of Basel III in national legislation the banks have to fulfill a CET1 Ratio of 7%, including the capital conservation puffer (Art. 92 (1a) CRR and Art. 129 (1) CRD IV). In consideration of the countercyclical capital puffer (Art. 136 (4) CRD IV) the CET1 ratio can increase up to 9.5% of the risk weighted assets (RWAs) (Deutsche Bundesbank, 2011, p. 8, BCBS, 2011). Due to these regulatory modifications, several microeconomic studies show a capital shortfall which depends on the size of the financial institutions (CEBS 2010; EBA 2012a; EBA 2012b; EBA 2013; BCBS 2010a; BCBS 2012a; BCBS 2012b; BCBS 2013).² On the other hand, macroeconomic studies indicate an increase in interest rates of loans caused by the new capital requirement (BCBS, 2010a; King 2010; MAG 2010a; MAG 2010b)³. However, co-operative banks are not taken into account in these studies.⁴ Moreover, the effects of the new regulatory capital requirements on the balance sheet and the profit situation of banks are not being analyzed, albeit an identification of the interaction mechanisms of the modified CET1 ratio is important for the management of co-operative banks. Hence, the following analysis will quantify the amount of co-operative banks which cannot fulfill the new CET1 ratio. Afterwards, the impacts on the balance sheet and earnings and expenses of a primary bank will be analyzed. The findings of these studies provide important information for the management of co-operative banks regarding to implement a business strategy which is conform to the new capital requirement. The following study is based on a large data base of the financial statements and regulatory risk reports (§ 26a KWG) of almost every co-operative bank in Germany.

In a first step, based on a quantification of the number of German co-operative banks which cannot fulfill the modified CET1 ratio, the amount of capital or a required reduction of RWAs to comply with the new capital requirements will be analyzed (chapter 2). Afterwards a theoretical accounting approach to measure the impact of the new CET1 ratio to the balance sheet and income statements of co-operative banks will be implemented (Chapter 3). Based on this technical balance-sheet-simulation in chapter 4 the effects of the modified CET1 ratio on

² Schätzle 2012, p. 7-12 presents an overview to the result of these studies.

³ More detailed information to the results of the macroeconomic study see Schätzle 2012, p. 16-21.

⁴ However, for example CEBS 2010, p. 3 and BCBS 2010a, p. 1 differentiate between banks with more or less than Euro 3 Billion of CET1 capital. But this classification does not enable a transfer of the results of these studies to co-operative banks (Schätzle 2012, p. 13-14).

the balance sheet and profit and loss account of the co-operative banks will be quantified. In chapter 5, the study will be concluded with a summary of the results.

2 Modification of the Core Tier 1 Ratio according to Basel III

The modification of the CET1 ratio can have extensive impacts on co-operative banks, depending on whether the banks can fulfill the new ratio or not. Therefore, the number of co-operative banks which cannot fulfill the CET1 ratio of Basel III will be quantified. As the German co-operative banks show a great heterogeneity, this analysis differentiates between type 1 (smaller), 2, 3 and 4 (larger) banks. For this, the underlying banks will be classified in three groups. Each group consists of the same amount of co-operative banks. While the first and second group is characterized by a huge homogeneity, the spreads of the total asset of group 3 banks is greater. Therefore, this group is divided into two groups: one with total assets of less than (type 3 banks) and one with more than one billion of total assets (type 4 banks). The number of banks in each group and the minimum and maximum of the total assets within the several groups is shown in the following Table 1.

Table 1: Classification of the underlying banks based on total assets

Size category of banks	Number of banks	Minimum of total assets	Maximum of total assets
Type 1 banks	366	15.350.842,56 €	180.737.236,40 €
Type 2 banks	366	181.563.797,40 €	483.863.706,30 €
Type 3 banks	215	486.697.746,30 €	999.127.507,00 €
Type 4 banks	151	1.004.066.190,00 €	11.671.660.064,00 €

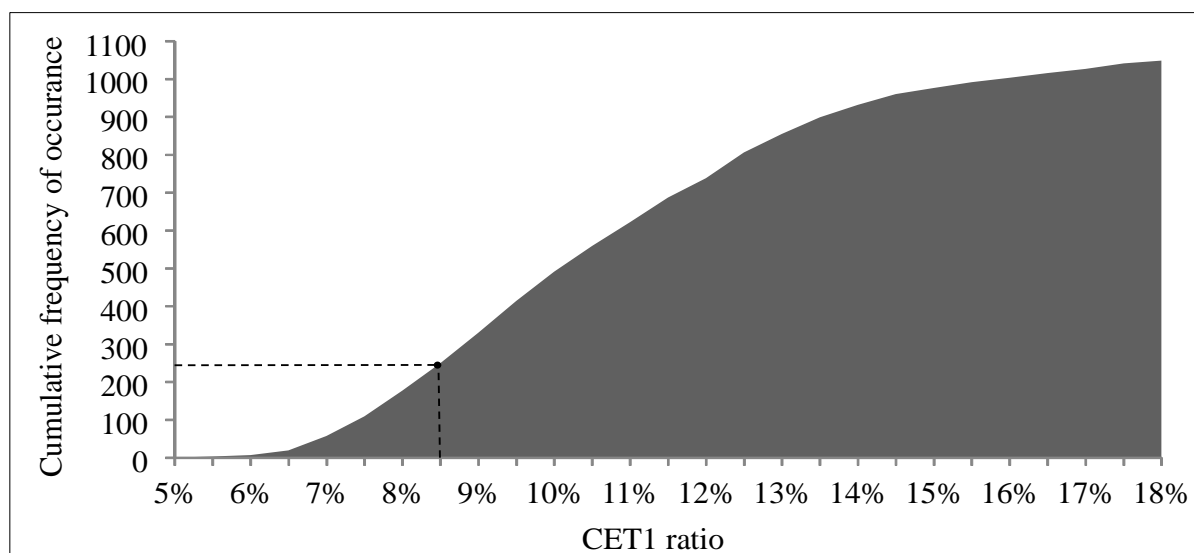
Referring to the balance sheet simulation in chapter 4, banks with a surplus of net income due to different accounting action and abnormally income are not taken into consideration. If these banks are incorporated in the dynamic balance sheet analysis, the banks cannot fulfill the CET1 in the course of time even if their CET1 ratio is conform at the beginning the simulation.

2.1 CET1 ratio of German co-operative banks

Pollmann/ Schätzle 2012, p. 26 show an irrelevance of additional CET1 capital by co-operative banks. This leads to the assumption that co-operative banks in Germany will comply with the additional CET1 ratio of 1.5% of the RWAs with CET1 capital, especially with reserve funds (Pollmann/ Schätzle 2012, p. 26). Therefore, the analysis below neglects the possibility of the co-operative banks to issue capital, which comply with the regulatory requirements of the

additional CET1 capital. Hence, the analysis bases on an increased CET1 ratio of 8.5% of the RWAs. To quantify the number of co-operative banks which cannot fulfill the CET1 ratio, the cumulative frequency of the capital ratio is shown in Figure 1. Furthermore, the analysis below does not take into account the possibility of suspending the capital deductions of the investments of co-operative banks in the co-operative central banks (DZ-/ WGZ Bank AG) (Art. 49 (3) CRR). Although this regulatory modification will increase the CET1 ratio of the co-operative banks, the primary banks' investment in the co-operative central banks cannot be quantified based on publicly available information. Moreover, these investments may be taken into account within the MaRisk (MaRisk 2012, AT 2.2) or within regulatory framework of the management with large risk weighted positions (Art. 387-403 CRR) within a bank. Due to this, the analysis below assumes a capital deduction of equity holding of co-operative banks like the requirements of Basel II.⁵

Figure 1: Cumulative frequency of the CET1 ratio



As shown in Figure 1, 249 banks⁶ of the subject co-operative banks cannot fulfill the new CET1 ratio of 8.5% of the RWAs. This amount can be differentiated in 47 type 1, 93 type 2, 63 type 3 and 46 type 4 banks. Because of the underlying assumed CET1 deduction, the amount of banks which do not comply with the CET1 ratio is just based on the quantitative increase in the new ratio. It should be considered that the analysis abstracts from the modification of the RWAs. While the increase in capital requirements for the market risk positions (BCBS 2009; CRD III; Deutsche Bundesbank 2011, p. 21-24) may be of little importance for co-operative

⁵ 50% of the equity holding of co-operative banks on the co-operative central bank will be discounted of the CET1 ratio of co-operative banks.

⁶ Differences to the analysis of Pollmann/ Schätzle 2012 are based on non-consideration of banks which positive net-income is caused by accounting measures and by extraordinary revenues.

banks (Pollmann/ Schätzle 2012, p. 10), the implementation of the adjustment coefficient for the capital requirements of loans on small and medium sized firms (Art. 501 (1) CRR) may reduce the RWAs of the co-operative banks. But the amount of the possible reduction of RWAs due to this adjustment coefficient cannot be quantified on public available information.⁷ Therefore, the number of banks which do not fulfill the modified CET1 ratio is below 249. However, this analysis abstracts from a capital puffer due to possible costs of financial distress.⁸ With this regard, the CET1 ratio of co-operative banks should be higher than 8.5%. This may result in a higher amount of co-operative banks which are confronted with an additional need for capital.

2.2 Empirical CET1 ratio of co-operative banks

The average CET1 ratio of the identified co-operative banks which do not comply with the new regulatory CET1 ratio is 7.51%.⁹ In consideration of the different bank sizes only a small difference between the average CET1 ratio of the various banks can be identified: The average ratio of type 1 and 2 banks is 7.46% and 7.55%. Instead, the type 3 and 4 banks have an average CET1 ratio of 7.41% and 7.61%. To fulfill the new CET1 ratio, these banks have to increase their CET1 capital or decrease their RWAs. Table 2 shows both the average CET1 ratio and the aggregated needed increase in CET1 capital and decrease in RWAs of type 1, 2, 3 and 4 bank.

Table 2: Capital shortfall and a required reduction of RWAs to fulfill the CET1 ratio

Size category of banks	n	CET1 ratio	Capital shortfall	Reduction of RWAs
Type 1 banks	47	7,46%	39.820.242,50 €	-463.548.441,18 €
Type 2 banks	93	7,55%	183.664.170,00 €	-2.160.402.341,18 €
Type 3 banks	63	7,41%	313.364. 182,50 €	-3.686.708.029,41 €
Type 4 banks	46	7,61%	634.211.783,75 €	-7.461.824.102,94 €
All banks	249	7,51%	1.171.060.378,50 €	-13.772.482.914,71 €

⁷ This adjustment factor is applied to different regulatory risk groups (Art. 501 (2) CRR). To quantify the reduction of RWAs due to this factor, internal information about the amount of loans for small and medium banks in each regulatory risk group is needed (N.N. 2013, p. 13).

⁸ Banks may hold an additional capital puffer to reduce the probability to get regulatory penalty, when their CET1 ratio is below the required one (Rime 2001, p. 792).

⁹ Pollmann/ Schätzle 2012 and Domikowsky et.al. 2012 analyze the CET1 ratio, taken into account not only banks can't fulfill the new capital requirements.

The summarized capital shortfall of the co-operative banks which cannot fulfill the CET1 ratio on 31.12.2010 is Euro 1.17 billion. In contrast, the aggregated required modification of RWAs amounts to Euro 13.8 billion. Because of the risk weighting of the assets, the decrease in the nominal amount of assets is much higher and depends on the risk weight of the reduced assets. Based on average RWAs to nominal assets of the underlying co-operative banks, the aggregate balance sheet of the co-operative banks would decrease to Euro 23.4 Billion. This amount could be reduced by a more risk orientated reduction in assets.

This analysis shows that co-operative banks which cannot fulfill the new CET1 ratio are confronted with several implications concerning their future business strategy. Albeit all co-operative banks are confronted with a regulatory influence on their future business strategy, the following analysis constrains to banks which do not comply with the modified CET1 ratio.

3 Accounting approach to quantify the effects of the new CET1 ratio

Based on the amount of those co-operative banks mentioned in chapter 2 which cannot fulfill the CET1 ratio, this chapter shows the technical accounting approach to quantify the impacts on banks caused by either an increase in CET1 capital or a decrease of RWAs. Although banks can comply with the CET1 ratio by transferring risky assets to more risk less assets or by investigating the new CET1 ratio in assets with a risk weight of 0%, the following analysis assumes a recapitalization through substitution of debts and a reduction of RWAs to fulfill the modified CET1 ratio.¹⁰

3.1 Modifications of the balance sheet

To increase the regulatory capital, co-operative banks can issue new co-operative shares or retain the earnings of the previous period. Resulting from the absence of an organized market for co-operative shares (Theurl 2002, p. 84; Stolz/ Wedow 2011, p. 101), the further analysis assumes an increase in CET1 capital solely by retained assets. Thereby, the fulfillment of the new capital requirements by co-operative banks depends on the possibility to allocate the earnings to the reserve funds (Stolz/ Wedow 2011, p. 101). This alternative represents a medium or long term alternative to implement the new regulatory capital requirements.¹¹ In contrast, the underlying decrease of RWAs by banks is a short term alternative to comply with

¹⁰ This assumption is also made by Berg/ Uzig 2011, p. 15. For more course of actions to fulfill the CET1 ratio by banks (reduction of dividend payouts, decrease of operative expenses, increase of interest spreads) see e.g. MAG 2010b, p.1, 10; Admati, et.al. 2010, p. 8-11; Schätzle 2012, p. 21-25.

¹¹ Roger/ Vlcek 2011, p. 11-15 analyze the macroeconomic implications of an increase in reserve funds to fulfill the new CET1 ratio.

the modified CET1 ratio. As shown above, the following analysis abstracts from a transfer of risky assets to less risky assets.

3.1.1 Changes in funds of general banking risks and revenue reserve

The funds of general banking risks as well as the revenue reserves fulfill the increasing requirements of CET1 capital (e.g. Domikowsky et al. 2012, p. 97). While an increase of the funds of the general banking risks is decided by the management board (§ 340g HGB; Bieg 2010, p. 283),¹² the reserve funds are built by an annual percentage on the income after taxes, defined by the statutory of a co-operative bank (§ 7, 38 (2) and § 39 of the standard statute of the co-operative banks; Keßler 2010, p. 80-81 (33-34); Domikowsky et al. 2012, p. 97). In addition, the revenue reserve in each observation year can increase due to the decisions of the general meeting on the income distribution (§ 48 (1) GenG; Hillebrand/ Keßler 2010, p. 711 (65); Domikowsky et al. 2012, p. 97). Below, an allocation of the revenues to the funds of general banking risk ($FBr_{i,t}$) will be done in case of a co-operative bank increasing its fund in 2010. Following, the ratio of the addition of the fund of general banking risk to the after tax profits will be multiplied with the income in each observation period. Additionally, the CET1 capital is increased by the statutory addition of the income after taxes to the reserve funds ($sRF_{i,t}$). This annual contribution is based on the ratio of an increase in statutory reserves on the income after taxes by 31.12.2010, too. Furthermore, because of the constancy of the absolute dividend payouts ($div_{i,t=0}$) of German co-operative banks (see Appendix 1), an increase of reserve funds by the decision of the general meeting will only take place if the absolute dividend payouts of the base year ($div_{i,t=0}$) are not affected in the observation. This means that, if the annual distributable profit ($dprofit_{i,t}$) is higher than the absolute dividend payouts of the base year, the difference between both will raise the reserve funds. This course of action ensures both statutory characteristics in the face of an increase in reserve funds and the preferences of the members of each co-operative bank. Like changing the funds of general banking risks, an increase in reserve funds may differ from the alternative to raise new CET1 capital and the decline in RWAs. The latter alternative should have a greater impact on a co-operative bank's profit. As a consequence, a decline in RWAs reduces the possible amount to increase reserve funds.¹³

¹² The following analysis abstracts from an addition to the funds of the general banking risk according to § 340e HGB.

¹³ See Appendix 2 for the meanings of the notations.

$$\Delta FBr_{i,t} = (Income_{i,t}) * \frac{\Delta FBr_{i,t=0}}{Income_{i,t=0}} \quad (3.1)$$

$$\Delta RF_{i,t} = (Income_{i,t}) * \frac{\Delta sRF_{i,t=0}}{Income_{i,t=0}} + dprofit_{i,t} - div_{i,t=0} \quad (3.2)$$

3.1.2 Modification of debts

If a co-operative bank cannot comply with the CET1 ratio, a reduction of RWAs will reduce the interest-bearing liabilities in the same amount of the RWAs decline (Formula 3.3). Instead, the amount of reduced debts by increasing CET1 capital is determined by the retained earnings of a co-operative bank (Formula 3.4). Using the alternative of reducing RWAs will therefore lead to a greater reduction of interest-bearing debts than if reserve funds were increased.

$$debts_{i,t=1} = debts_{i,t=0} - \Delta RWA_{i,t=1} + CET1_{i,t=0} \quad (3.5)$$

$$debts_{i,t} = debts_{i,t-1} - \Delta CET1_{i,t} + \underbrace{\Delta RWA_{i,t}}_{\Delta RWA_{i,t} \geq 0, \text{ if } CET1 \text{ ratio} > 8.5\%} \quad (3.6)$$

In spite of these differences in the changes of interest-bearing liabilities, the technical variation of debts after implementing the CET1 ratio does not differ from the alternative to raise new equity and to decrease RWAs.¹⁴

The regulatory modification of debts is referred to i) deposits from banks, ii) deposits from customers of a co-operative bank, iii) debt certificates, iv) goods-liabilities, v) subordinated debts and vi) profit sharing rights. However, other liabilities are not taken into account as they are resulting from i) no typical bank business (Geschrey et al. 2010, p. 31-33, part B), ii) legal compulsory provisions (Geschrey et al. 2010, p. 41-80, part B) where variation cannot be quantified (e.g. provisions), iii) non relevance for co-operative banks (e.g. trading liabilities)¹⁵ or iv) an existing correspondent position on the asset side of the balance sheet (e.g. trust liabilities)¹⁶. The following analysis further abstracts from interest-bearing orientated substitution of debts. Regarding this, long range assumptions of the behavior of banks and

¹⁴ For the technical variation of debts after comply with the CET1 ratio see chapter 3.3.

¹⁵ See Geschrey et al. 2010, p. 27-28, part B.

¹⁶ See Geschrey et al. 2010, p. 29, part B.

internal information will be required. Because of this, the following analysis assumes a percentage modification of the debts mentioned above. This line of action does not affect the structure of interest-bearing liabilities. Therefore, the impacts of a reduction of debts to the interest expenses can be quantified on publicly available information.

3.1.3 Modification of the asset side of the balance sheet

An increase of CET1 capital does not influence the asset side of a balance sheet in periods where the banks cannot fulfill the CET1 ratio. Instead, a reduction of RWAs implies a modification of the assets in times the CET1 ratio is below the required one. The amount of the decline in assets results from the difference between the actual RWAs of a bank and the possible maximum of the RWAs based on the present amount of CET1 capital of a co-operative bank. To quantify the nominal asset reduction, the required decline in RWAs will be divided by the average risk weight (RWAs divided by total assets) ($RW_{i,t=0}$) of each bank.¹⁷

$$\Delta assets_{i,t} = \frac{\Delta CET1_{i,t}}{CET1\ ratio * RW_{i,t=0}} \quad (3.7)$$

$$assets_{i,t} = assets_{i,t-1} + \frac{\Delta CET1_{i,t}}{\underbrace{CET1\ ratio * RW_{i,t=0}}_{if\ CET1\ ratio \geq 8.5\%}} \quad (3.8)$$

$$\Delta assets_{i,t=1} = \frac{\frac{CET1_{i,t=0}}{CET1\ ratio_{i,t=0}} - RWA_{i,t=0}}{RW_{i,t=0}} \quad (3.9)$$

The modification of the assets is constraint to the following balance sheet positions: i) cash and cash equivalents, ii) debt instruments from public-sector entities and bills of exchange for refinancing by central banks, iii) loans and advances to banks, iv) loans and advances to customers, v) bonds and other fixed-income securities, vi) shares and other variable-yield securities and vii) trading assets. Because of the exogenous determination and the strategic meaning of “long term equity investment” and “shares in affiliated companies” these assets do not vary in the following balance sheet simulation.¹⁸ Furthermore the i) intangible assets, ii)

¹⁷ See Appendix 2 for the meanings of the notations.

¹⁸ These positions assume a long term relationship to the corporations (§ 271 HGB, Baetge et al. 2012, p. 319-320). Because of long term investments of co-operative banks in their co-operative central banks (DZ-/ WGZ Bank AG), a variation of these positions imply an increase/ decrease of equity of the central banks. For detailed information of balancing these positions see Gschrey et al. 2010, p. 80-82, part A).

property, plant and equipment, iii) other assets, iv) prepaid expenses and accrued income and v) deferred tax assets will not be considered.¹⁹

3.2 Modification of positions of the profit and loss account

The illustration of the variation of the balance sheet positions to fulfill the new CET1 ratio shown above has impacts on the profit and loss account.²⁰ Furthermore, the operative implementation of the new CET1 ratio and the modified reporting standards (e.g. Hartmann/Loch 2012, p 262-266; Deutsche Bundesbank/ BaFin 2011; Lux et al. 2011; Auerbach et al. 2012, p. 5) can increase the general and administrative expenses of co-operative banks.²¹ These regulatory impacts are shown in Table 3. Because the trading assets are of almost no relevance, therefore the variation in “net trading income” will not be analyzed.²² Also, the technical variations of the relevant positions of the profit and loss accounts do not differ from an increase in CET1 capital and a decrease of RWAs.

Table 3: Variation in relevant positions of the profit and loss account²³

Profit and loss account positions	Increase of CET1 capital and decrease of RWAs
Interest expenses (ie)	$ie_{i,t} = ie\ debts_{i,t} * \emptyset\ interest\ on\ debts_{i,t=0}$
Interest income (ii)	$ii_{i,t} = ii\ assets_{i,t} * \emptyset\ interest\ on\ assets_{i,t=0}$
Current income (ce)	$ce_{i,t} = ce\ assets_{i,t} * \emptyset\ income\ on\ ce\ assets_{i,t=0}$
Amortization on assets (amo)	$amo_{i,t} = amo\ assets_{i,t} * \emptyset\ amo\ on\ amo\ assets_{i,t=0}$
General and administrative expenses (gae)	$gae_{i,t} = pe_{i,t-1} * (1 + gae\%) + assets_{i,t} * \emptyset\ pe_{i,t=0}$
Income and other taxes (T)	$T_{i,t} = Earnings\ after\ tax_{i,t} * \emptyset\ t_{i,t=0}$

The quantification of effects that an increase (decrease) of CET1 capital (RWAs) causes is based on the assumption of an average i) interest expense per interest-bearing debt ($\emptyset\ interest\ on\ debts_{i,t=0}$), ii) income per interest-bearing assets ($\emptyset\ interest\ on\ assets_{i,t=0}$),

¹⁹ The positions i) – iii) may be less liquid and iv) – v) are either transitory or there is the same amount on the asset side of a balance sheet (Gschrey et al. 2010, p. 123 (667), p. 129 (688) part A).

²⁰ The variation of reserve funds and funds of the general banking risk is shown in chapter 3.1.1.

²¹ The following analysis does not assume a variation in premiums for the BVR Protection Schemes. See Schöning/ nolte 2005, p. 328; Hofmann 2009a, p. 997 for more information to the BVR insurance institution.

²² Co-operative banks which cannot fulfill the CET1 ratio do not have trading assets. In aggregate, only 2% of the German co-operative banks have earnings or expenses on trading assets at 31.12.2010.

²³ See Appendix 2 for the meanings of the notations.

iii) current income per bonds and other fixed-income assets (\emptyset interest on ce assets_{*i,t=0*}), iv) amortization and write downs per relevant assets (\emptyset amo on amo assets_{*i,t=0*}), v) personal expenses (pe) per total assets (\emptyset pe_{*i,t=0*}) plus an temporary regulatory increase in other general and administrative expenses (gae%) and the average vi) income and other taxes per ordinary and extraordinary income (\emptyset t_{*i,t=0*}) based on data of 31.12.2010. To analyze the impacts of both alternatives to fulfill the modified capital regulation²⁴ these ratios will be multiplied by the relevant assets or debts in each observation period. Because i) possible changes of interest expenses caused by a risk reduction of co-operative banks by increasing their CET1 ratio,²⁵ ii) possible changes in interest rates due to a modification of the interest yield curve or a higher degree of competition in the banking sector,²⁶ iii) possible amortization of loans, special security, reversals of accruals and long term equity investments, shares in affiliated companies and securities traded as fixed assets,²⁷ iv) a risk-orientated reduction of assets²⁸ and v) a high flexibility of working arrangement influence both the baseline and regulatory scenarios,²⁹ the explanatory power of the following analysis will not be influenced by these assumptions. Besides, an increase in the interest rates represents an alternative course of action to fulfill the regulatory capital requirements by banks (Schätzle 2012, p. 14-25). Because this course of action is not assumed by the following analysis, the stylized effects of the modified CET1 ratio on the balance sheet and the income statements of co-operative banks can be analyzed.

Moreover, the effects of the rising complexity of the reporting standards to the personal expenses on co-operative banks cannot be quantified easily: Changes in administrative expenses demand a comprehensive analysis of the affected regulatory workflows.³⁰ Otherwise an assumption of an increasing of administrative expenses would be arbitrary. Therefore, the increase of the administrative expenses is based on the percentage difference referring to the changes between the financial statement on 31.12.2010 and 31.12.2011. According to the Bundesverband der Deutschen Volksbanken und Raiffeisenbanken (BVR), the increasing complexity of the regulatory requirements is responsible for almost all the increase in

²⁴ These assumptions abstract from a change in macroeconomic circumstances (e.g. the current low interest rates, European debt crises).

²⁵ See Modigliani/ Miller 1958, 1963; Miller 1995 and Stiglitz 1969; Hartmann-Wendels 2011, p. 83-84, Sachverständigenrat 2011, p. 163 for the impacts of an increase in capital ratio to weighted average cost of capital

²⁶ Tiwari/ Buse 2000, p. 5-6 identify an increasing competition caused by direct banks and financial institutions from abroad.

²⁷ To quantify this variation, internal information of the assignment of these assets to the securities which are traded as fixed assets and which are held as provisions for liquidity are necessary.

²⁸ Furthermore, for a detailed analysis of the amortization of assets internal information on the assignment of securities traded as fixed assets or as held as provisions for liquidity are necessary.

²⁹ Moreover, the assumption of a constant tax rate is caused by a high complexity of the determination of the amount of income taxes.

³⁰ See Ellihäusen 1998 for an quantification of the operative expense caused by financial regulation.

administrative expenses between 31.12.2010 and 31.12.2011 (N.N 2012, p.340). It has to be noticed that in the years after 2011 an increase in administrative expenses will not be assumed. Moreover, different impacts depending on the size of a co-operative bank are not considered: Smaller banks could be more affected by an increase of administrative expenses than larger co-operative banks. Meaning, bigger co-operative banks may already have separate regulatory departments, while the smaller banks have to acquire additional regulatory knowledge.

3.3 Baseline scenario

A comparable scenario based on the regulatory requirements according to Basel II is needed to quantify the effects of the modified CET1 ratio. This baseline scenario assumes a constant CET1 ratio relying on the information of the regulatory disclosure of §26a KWG on 31.12.2010. Because the CET1 ratio limits the possible new business in the future, the ability to increase new loans differ in the baseline scenario from the regulatory scenarios, since the CET1 ratio is fulfilled by the banks. Furthermore, the retained earnings in the baseline scenario can be used in all observation periods for new business. Beside these differences between the scenarios, the administration expenses in the baseline scenario are not increasing. However, the personal expenses rise according to the new business in each observation period in the baseline scenario. Table 4 shows the technical terminology concerning the variation of the relevant balance sheet items and positions of the profit and loss account.

Table 4: Technical variation of the baseline scenario³¹

Balance sheet and profit and loss account positions	Technical variation
Fund of general banking risks	$\Delta FBr_{i,t} = Income * \frac{\Delta FBr_{i,t=0}}{Income_{i,t=0}}$
Reserve funds	$\Delta RF_{i,t} = Icome * \frac{\Delta sRF_{i,t=0}}{Income_{i,t=0}} + dprofit_{i,t} - div_{i,t}$
Debts	$debts_{i,t} = debts_{i,t-1} - \Delta CET1_{i,t} + \Delta assets_{i,t}$
Assets	$assets_{i,t} = assets_{i,t-1} + \frac{\Delta CET1_{i,t}}{(CET1\ ratio_{i,t=0} * RW_{i,t=0})}$
Interest expenses (ie)	$ie_{i,t} = ie\ debts_{i,t} * \emptyset\ interest\ on\ debts_{i,t=0}$
Interest income (ii)	$ii_{i,t} = ii\ assets_{i,t} * \emptyset\ interest\ on\ assets_{i,t=0}$
Current income (ce)	$ce_{i,t} = ce\ assets_{i,t} * \emptyset\ income\ on\ ce\ assets_{i,t=0}$
Amortization on assets (amo)	$amo_{i,t} = amo\ assets_{i,t} * \emptyset\ amo\ on\ amo\ assets_{i,t=0}$
General and administrative expenses (gae)	$gae_{i,t} = PE_{i,t-1} * (1 + \Delta gae\%) + assets_{i,t} * \emptyset\ pe_{i,t=0}$
Income and other taxes (T)	$T_{i,t} = Earnings\ after\ tax_{i,t} * \emptyset\ t_{i,t=0}$

The terminology concerning the change in positions of the balance sheet and profit and loss account is identical to the variation in the regulatory scenarios after complying with the modified CET1 ratio. Therefore, an analysis of the variation of the balance sheet and profit and loss account positions in the baseline scenario will not be done.

4 Empirical impact of the new capital requirements

The analyzed impact channels of an increasing CET1 capital and a decrease of RWAs by banks to comply with the new capital requirements, as shown in chapter 3, enable a quantification of the effects of the new regulatory requirements to the balance sheet and profit and loss account of co-operative banks. Therefore, the changes in the baseline scenario will be compared with the regulatory scenario. The simulation starts after the resolution of the profit distribution by the general meeting. Hence, this allocation of the earning to the reserve funds increases the CET1 ratio, which is not considered in the regulatory disclosure standard according to §26a KWG.³² Furthermore, these retained earnings can be used for additional business in the baseline scenario, whereby the earnings in the baseline scenario differ from the regulatory

³¹ See Appendix 2 for the meanings of the notations.

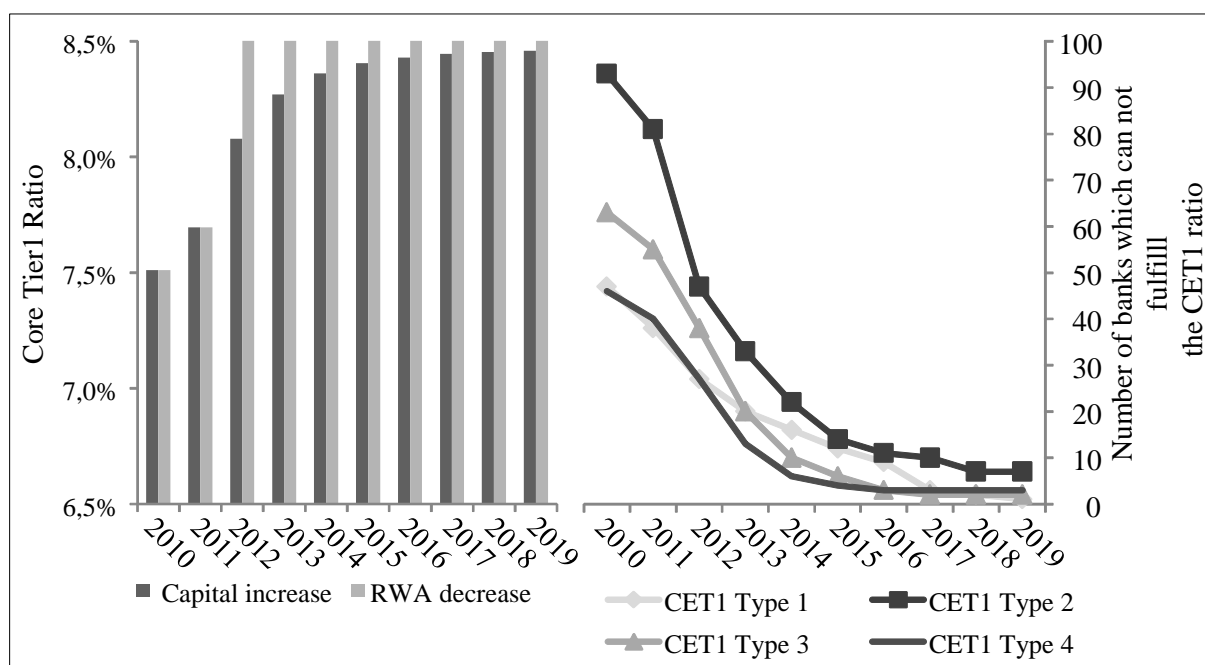
³² The earnings of a bank which are not distributed by the general meeting fulfill only the requirements of CET1 capital by specific conditions (Art. 24 CRR-E).

scenario. The period under observation is nine years, equal to the transitional period of the final implementing of Basel III (BCBS 2011, p. 78, appendix 4).

4.1 Development of the CET1 ratio

The two different possibilities to fulfill the CET1 ratio of a co-operative bank, as shown in chapter 3, differ in the time-period to comply with the new capital requirements. While a reduction of RWAs leads to an immediate fulfillment of the CET1 ratio by the banks, the period to implement the new capital requirements by retained earnings generally depends on the amount of capital shortfall. In particular, the possibility of the allocation of earnings to the reserve funds determines the horizon of the fulfillment of the new CET1 ratio. These differences between an increase of CET1 capital and a decrease of RWAs are illustrated in Figure 2. On the left side, the development of the CET1 ratio by an increase in CET1 capital and a decrease in RWAs is shown, whereas on the right side of Figure 2 the amount of banks which cannot fulfill the CET1 ratio by increasing the regulatory capital is illustrated. A differentiation between type 1, 2, 3 and 4 banks is made. This illustration is based on co-operative banks which cannot comply with the modified CET1 ratio by 31.12.2010.

Figure 2 Changes of CET1 ratio



The identical increase of the CET1 ratio in 2011 is based on the allocation of the earnings by the general meeting of the co-operative banks in the year 2010. These retained earnings reduce the amount of banks (right side of Figure 2) which cannot fulfill the modified capital requirements from 249 to 214. Furthermore, a reduction of RWAs leads to an immediate

fulfilling of the new capital requirements. In contrast, Figure 2 shows an increasing of the average CET1 ratio of the underlying banks by generating new CET1 capital in the observation period. The average CET1 ratio below 8.5% in the year 2019 depends on the banks which cannot fulfill the new CET1 by solely increasing the regulatory capital. Aggregated, 13 co-operative banks cannot comply with the CET1 ratio after the observation period by setting up retained earnings. This amount of co-operative banks which do not fulfill the CET 1 ratio until 2019 can be divided in three (two) type 4 (3) banks and seven (one) type 2 (1) banks. These banks have to take further action to comply with the new CET1 ratio by the end of the implementation period according to the time requirements of Basel III.³³

The increase of the average regulatory capital ratio between the years 2010 and 2015 can be explained by the number of banks which can fulfill the CET1 ratio by increasing regulatory capital during this period. The reduction of banks which cannot comply with the new capital requirement from 249 to 36 causes an increasing average CET1 ratio of the underlying banks from 7.51% to 8.40%. Furthermore, the time period to fulfill the CET1 ratio differs between small, medium and large banks. While the average implementation period for type 4 (3) banks accounts 3.16 (3.40) years, the type 2 (1) co-operative banks need in average 3.72 (4.53) years to comply with the new CET1 ratio. Albeit, the difference of the average CET1 ratio of small, medium and large banks is negligible, this result indicates a higher possibility for setting up retained earnings of bigger compared to smaller banks. The reason for this could be a differing MemberValue-strategy due to the interdependencies of the three MemberValue components. If smaller banks focus on direct or on indirect MemberValue, the earnings can be allocated in a smaller amount to the reserve fund.³⁴ This results in longer periods of implementing the new CET1 ratio. Furthermore, the average size depending on the fulfillment period can be traced back to a higher profitability of the underlying bigger banks. In this connection, possible regional differences in competition on the banking market have been considered. When larger banks operate in urban regions with a high degree of competition, this could result in smaller earnings compared to banks operating in rural areas. Though, this could lead to a smaller possibility of allocating the earnings to reserve funds by larger banks. Due to this, differences in profitability may not be related to the size of a bank and the implementation period.

Based on this analysis, a reduction of RWAs is dominant to an increase of CET1 capital in cases of regulatory pressure. Instead, to rise up capital by retained earnings is favorable to a

³³ Schätzle 2012, p21-25 presents an overview of different course of action to fulfill the CET1 ratio by banks.

³⁴ For detailed information to MemberValue see Theurl 2002, p. 84-86; Theurl 2005; Theurl 2010, p. 80-82 and Tschöpel 2011, p. 6-7.

decline in asset by a mid- or long term implementation period.³⁵ However, different implications between a reduction in RWAs and an increase in CET1 capital on balance sheet and gross profit positions have both been considered. Thereby, a quantification of these impacts provides important findings for the management of co-operative banks for the implementation of a business strategy in consideration of the new regulatory capital requirements.

4.2 Changes in maturity matching

As shown in chapter 3.1, an increase in CET1 capital and a decrease in RWAs influence several positions of a balance sheet. While an increase in CET1 capital for fulfilling the new capital requirement just changes the liability side of a balance sheet in periods the banks cannot comply with the modified CET1 ratio, a decline in RWAs also results in a variation of the asset side of a balance sheet. Based on this regulatory influence the structure of a balance sheet can be modified. Hence, an increase in CET1 ratio rises up the long term financing of a co-operative bank. So, the maturity matching³⁶ between the asset and liability of a co-operative bank is therefore changing. This implication does not depend on the alternative to fulfill the new regulatory capital requirements. The kind of debt substitution and the reduction of RWAs influence the magnitude of changing the maturity mismatch. However, the following analysis abstracts from an interest-bearing reduction of debts or risk orientated decrease of RWAs. Therefore, a change in the maturity matching only depends on the increasing relation between CET1 capital and the total assets. To get information about the regulatory influence of the CET1 ratio on the maturity mismatch, both the development of the maturity mismatch in the regulatory scenario and the baseline scenario is shown in Figure 3. The long term liabilities include the balance sheet positions i) debts from banks, ii) amounts owed to other depositors, iii) subordinated liabilities, iv) profit-sharing rights, v) funds for general banking risks and vi) the equity of a co-operative bank. In contrast, the long term assets in Figure 3 contain i) loans and advances to banks, ii) loans and advances to customer, iii) bonds and other fixed-income securities and iv) shares and other variable-yield securities. Because of containing both short and long term assets and debts in the balance positions above, the following analysis is reduced to balance sheet positions with a remaining time of maturity of longer than five years.³⁷ It has to be considered that detailed information about the term structure of the different assets and

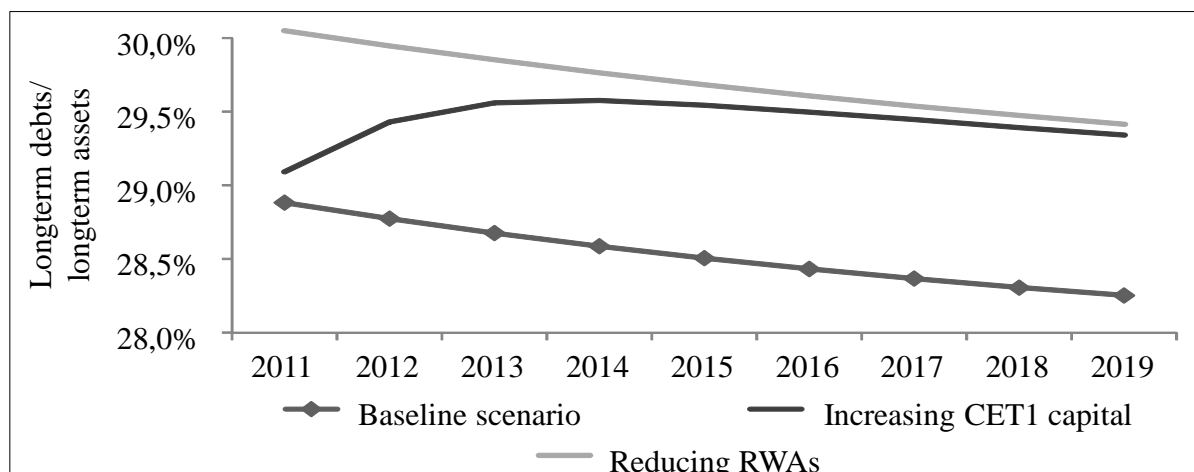
³⁵ In Basel III, transitional provisions are implemented. See BCBS 2011, p. 78, appendix 4.

³⁶ More detailed information to maturity mismatch see e.g. Süchting 1987, p. 289-293 and Becker/ Peppmeier 2011, p. 469-470.

³⁷ The maturity of loans and debt has to be published by banks in the appendix of the financial statements (§ 284-288 HGB).

liabilities of a co-operative bank is not available on public data. Therefore, the analysis in Figure 3 is just an approximation of the long term maturity mismatch between the asset and liability side of a balance sheet.

Figure 3: Changing of the maturity mismatch



As shown in Figure 3, the modified regulatory capital requirements increase the relation between long term liabilities and assets. Through this, the liquidity risk and the risk of insolvency based on a suddenly increasing amount of cash outflows (Hartmann-Wendels et.al., 2010, p. 468) may decrease for co-operative banks. If a co-operative bank's decline of liquidity risk is anticipated by investors or members of a co-operative bank, the interest expenses can decline.³⁸ Furthermore, the risk of change in interest rates may reduce due to an increasing maturity mismatch. This could lead to a further reduction of the interest expenses of a co-operative bank. Moreover, the interest surplus may depend less on a change in interest rates. A possible risk reduction of change in interest rates is based on fixed interest rates rather than on a variation of the term structure of debts (Hartmann-Wendels et.al., 2010, p. 468). Although the new CET1 ratio does not directly influence the risk of change in interest rates to the interest surplus of a co-operative bank, the structure of risk of a balance sheet should decline. The amount of future interest surplus can be affected negatively due to the modified capital requirements resulting from a decreasing possibility of term transformation.³⁹

Moreover, as shown in Figure 3, the development of the maturity mismatch differs between the alternative of increasing new CET1 capital and decreasing of RWAs. These differences are caused by the immediate fulfillment of the new capital requirements by a reduction of RWAs

³⁸ This variation doesn't take place in the following analysis.

³⁹ More detailed information about the term transformation of banks see e.g. Schierenbeck 1994, p. 1421; Schierenbeck/ Lister 2002, p. 275-279; Schierenbeck 2003, p. 83, 196; Hofmann 2009b, p. 78; Schröter/ Schwarz 2008, p. 273.

(chapter 4.1). So the relation of long term debts to total liabilities will rise immediately. Instead, the maturity mismatch increases through using the alternative of generating new CET1 capital until the modified capital requirements are fulfilled. In contrast, the differences in the maturity mismatch between the regulatory scenarios are caused by using an aggregated average. Especially this difference is caused by banks which cannot comply with the modified capital requirements in the underlying observation period by solely increasing the reserve funds. Hence, these banks have a lower maturity mismatch than the banks complying with the financial institutions which fulfill the new CET 1 ratio during the underlying observation period.

The reduction of the maturity mismatch in the course of time results out of the assumed modification of the relevant assets and liabilities after implementing the new CET1 ratio (chapter 3.1). Because of a higher share of changing assets than liabilities, the potential new business by retained earnings is allocated to assets more than to liabilities. This indicates an average surplus of liabilities for the banks which are analyzed.⁴⁰ Therefore, the growth rate of new business in assets is greater than the one in liabilities. Besides, the yearly reduction of the maturity mismatch after complying with the CET1 ratio is sinking. This is based on an adjustment of the growth rate of the relevant assets to the liabilities. But it has to be considered that the shrinking maturity mismatch in the course of time bases on the assumption of the exhaustion of the new business potential by the retained earnings in each year. If the demand on loan is smaller than the possible maximum of lending the CET1 ratio will increase over time. The relation between long term liabilities and long term assets then rises in these periods. This analysis shows possible interaction between an increasing of CET1 ratio and new liquidity requirements according to Basel III.⁴¹ Especially if new business potentials are not exploited, this mechanism of action has to be considered.

Moreover, an analysis differentiating between different time periods to fulfill the new CET shows the same development of the maturity mismatch as identified in Figure 3. Differences arise in the time period of increasing the maturity mismatch by generating new CET1 capital. Following, the increase in maturity mismatch depends on the time period in which the new capital requirements must be fulfilled. Additionally, the average maturity mismatch of type 1 and 3 banks is higher than the one of type 2 and 4 banks. Therefore, the liquidity risk of type 1 and 3 banks is less than type 2 and 4 banks. This is caused by differences in shares of liabilities and assets to total assets (Appendix 3). Because of an increasing relation of long-term assets to

⁴⁰ More detailed information about a surplus of liabilities over assets see e.g. Schierenbeck 2003, p. 225.

⁴¹ See BCBS 2011, p. 9-12 and Art. 412-428 CRR for information to the new regulatory liquidity requirements.

total assets with the size of bank, larger banks should have a higher interest income than smaller banks. This may explain the difference of the time horizon of implementing the new CET1 ratio by increasing the reserve funds between the type 1-4 banks. This argumentation abstracts from other factors influencing the interest rates.

The identification of the regulatory influence of the maturity mismatch provides important information for the strategy of a co-operative bank in the future. Albeit an increase of the CET1 ratio reduces the liquidity risk, the varying maturity mismatch has to be considered by the management of a co-operative bank. Especially interdependency with new liquidity requirement should be considered. Moreover, the decreasing liquidity risk due to the increasing capital requirement may lead to a reduction of interest expenses. Furthermore, the management of a co-operative bank has to consider the declining maturity mismatch after implementing the modified CET1 ratio. Although the argumentation above assumes an exhaust of the retained earnings for new business potential, this may cause an increase in liquidity risk. Therefore, the interest expenses can increase over time. This argumentation assumes an anticipation of the changing liquidity risk by the investors.

4.3 Regulatory impact on revenues and expenses

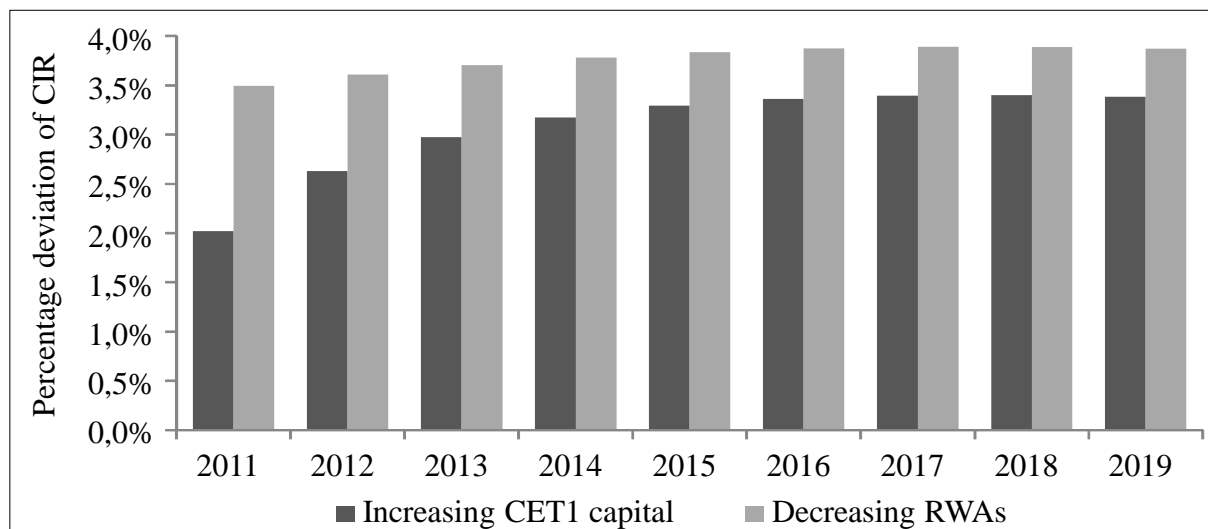
Due to the changes of the balance sheet positions by increasing the CET1 capital or decreasing RWAs, the revenues and expenses of a co-operative bank can be influenced. The empirical impacts on the administrative and general expenses and the net operating income will be quantified afterwards. Like the analysis above, the following investigation is restricted to co-operative banks which cannot fulfill the CET1 ratio by 31.12.2010.

4.3.1 Administrative expenses

Because of an increasing complexity of the regulatory reporting system and different actions to comply with the new capital requirements, the expenses of a co-operative bank can change. As shown in chapter 3.2, the following analysis only assumes a variation in administrative expenses at the beginning of the observation period by 1.7% (Chapter 3.2, N.N. 2012, p. 340). In addition, changes in administrative expenses differ between both alternatives to fulfill the new CET1 ratio (chapter 3.2.). Hence, differences in the development of the administrative expenses among the regulatory scenarios and the baseline scenario cannot be traced back to the modified CET1 ratio. For this reason the administrative expenses will be scaled by the interest surplus and the surplus of fee and commission income. Thereby, the differences among the new business potential regarding both regulatory scenarios are taken into account. An

increasing modified cost-income-ratio⁴² means a deterioration of the relation of administrative expenses and the surplus of interest and commission and fee income. Therefore, a variation of this ratio is either due to an increase in administrative expense or to a change in income. In Figure 4, the development of the percentage variation of the CIR of the co-operative banks in the regulatory scenario compared to the baseline scenario is shown. Figure 4 is based on the average CIR of co-operative banks in the several underlying scenarios.

Figure 4: Percentage changes of the CIR in the baseline to the regulatory scenarios



In short term the CIR worsens by 2.02% (3.49%) by generating new CET1 capital (reducing of RWAs). In contrast, the co-operative banks will be confronted with a long term increase in this ratio by 3.38% (3.87%). The changing of the CIR in the period between 2011 and 2014 by increasing reserve funds is caused by a reduced possibility for new business and higher administrative expenses in 2011 compared to the baseline scenario. Instead, the percentage difference after fulfilling the CET1 ratio results in the higher possibility for new business in the baseline scenario.

It has been noticed that these differences cannot solely be caused by an increase of administrative expenses. An analysis with and without regard on an expansion of the administrative expenses enables a quantification of the variation of the CIR based on the rising expenses. Without consideration of an increase in the administrative expenses the CIR rises in short term by 0.32% (1.65%) in case of an increase in the reserve funds (decrease of RWAs). Instead the CIR will be influenced by 1.76% (2.16%) by the end of the observation period. This percentage difference results exclusively from a reduction of earnings compared to the

⁴² More detailed information about the cost-income-ratio see e.g. Schierenbeck 2003, p. 445-446; Klöss/ Hühne 2003, p. 474.

baseline scenario. Instead, the variation of the CIR with and without consideration of an expansion of administrative expenses is caused by an increasing of the administrative expenses solely. A deterioration of the administrative expenses declines the net income of a co-operative bank compared to the baseline scenario. This has negative effects on the possibilities to establish reserve funds and also for new business in the future.

Moreover, Figure 4 shows different implications on CIR between the alternative of reducing the RWAs and increasing the CET1 capital. This is due to the reduction of productive assets in case of reducing the RWAs. Albeit the personal expense, as shown in chapter 3.2, will change due to a variation of assets, the percentage increase of the CIR does not depend on the alternatives of fulfilling the new CET1 ratio. Additionally, other administrative expenses do not vary in the underlying scenarios. Concluding, a decline of RWAs reduces the coverage of earnings for these expenses more than an increase in CET1 capital does to fulfill the new capital requirements. Hence, the CIR is smaller in case of increasing the CET1 capital than in reducing the RWAs. In addition, the assumption of the flexibility of the employee may have a huge influence on the variation of the CIR. Thus, a missing flexibility of employees should result in a further increase in CIR in the case of a reduction of RWAs. In the future, missing employees can influence the new business. But these impacts on CIR do not depend on the baseline or the regulatory scenarios.

An analysis differentiating between the time period to fulfill the new CET1 ratio shows a worsen CIR with an increasing time period to comply with the modified capital requirements. This finding is not influenced by the alternatives of implementing the new CET1 ratio. The decline of the CIR in the periods in which banks cannot fulfill the capital requirement is due to differences in the new business between the regulatory and the baseline scenarios: With an increasing time period in which the CET1 ratio is fulfilled, more productive assets have to be reduced and more regulatory capital is needed. Furthermore the expenses in the regulatory scenarios deteriorate with an increasing time of implementation of the CET1 ratio. This causes an additional reduction of earnings in the regulatory scenarios compared to the baseline scenario. The long term regulatory influence on the CIR is due to a bigger difference between the actual and required CET1.

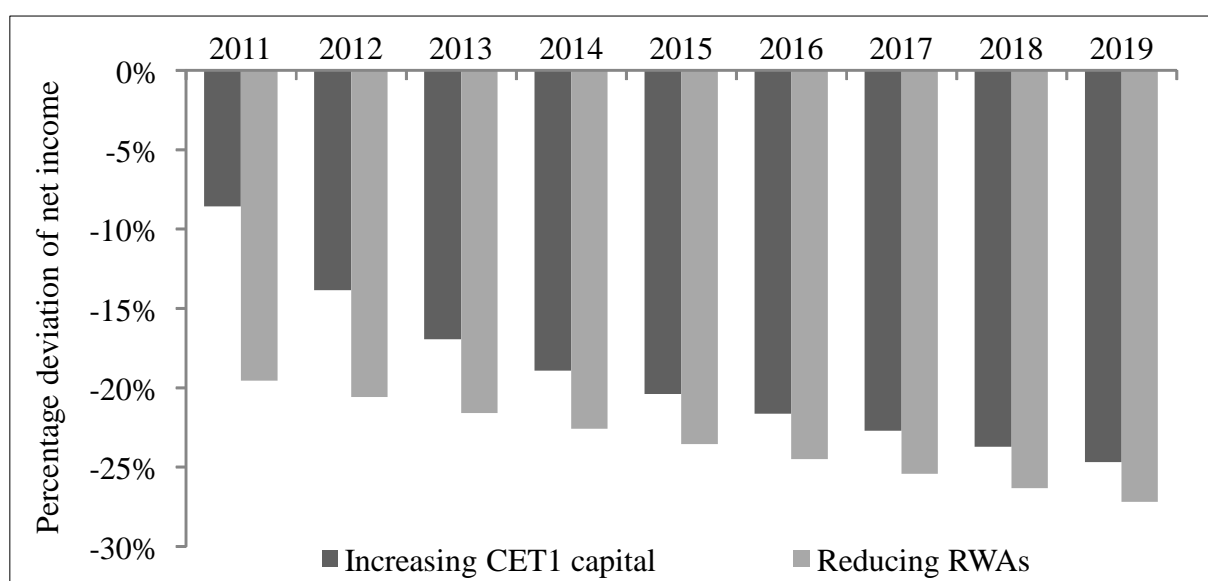
Especially in the long term, the change in CIR varies in average between the size of co-operative banks. In case of increasing the CET1 capital (decreasing RWAs), the CIR will rise compared to the baseline scenario by type 1 banks to 4.39% (5.05%), type 2 banks to 3.18% (3.67%), type 3 banks to 2,68% (2,95%) and type 4 banks to 3,77% (4,36%). To reduce the

negative impacts on the CIR by an increase of CET1 ratio, the new requirements have to be implemented cost-efficiently. This is especially relevant for the smaller banks, which are confronted with a higher increase in the CIR than larger banks.

4.3.2 Net income

An increase of CET1 capital and a decrease of RWAs may influence a co-operative bank's net income.⁴³ To quantify these impacts, in Figure 4 the average percentage difference between the net income in case of the regulatory scenarios and the baseline scenario is shown.

Figure 5: Percentage deviation of net income in the baseline compared to the regulatory scenarios



In both regulatory scenarios, the net income is decreasing. Differences in percentage concerning net income between the baseline and the regulatory scenarios in 2011 are caused by using the retained earnings for new business in the baseline scenario. In contrast, the smaller net income after fulfilling the new CET1 ratio is due to the higher amount of new business in the baseline compared to the regulatory scenarios. Because of the determination of new business by the CET1 ratio, the increasing regulatory capital reduces the possibilities to invest in productive assets.

Furthermore, the net income is negatively influenced even more in case of reducing RWAs than in case of increasing CET1 capital. This is caused by the immediate fulfillment of the new CET1 ratio by reducing productive assets. While the aggregated shortfall of the underlying co-operative banks is Euro 1.17 billion, the aggregated amount of reducing assets in 2011 counts

⁴³ The variation of net income contains both the changes in interest surplus and amortization. Therefore, the development of these items will not be analyzed.

Euro 13.8 billion (chapter 2.2). These differences are caused by the amount of capital requirements for the RWAs. Because of a positive interest margin, the absolute net income in the case of reducing assets will decline, albeit the interest-bearing debts will reduce. However, the absolute net income in case of increasing regulatory capital will increase in 2011. This is due to the substitution of debts in periods of growing CET1 capital, while the interest income is not influenced (chapter 3.1.).

The analysis, depending on the time period of implementing the new CET1 ratio, shows an increasing deterioration of the net income by an increasing time period to fulfill the modified CET1 ratio. This is caused by an increasing difference between the CET1 ratio according to Basel II and the modified one. It requires a greater amount of reduction in RWAs and generating new CET1 capital. A decline in RWAs reduces productive assets and therefore the net income. In contrast, if new CET1 capital is generated, retained earnings in periods, where the modified capital requirements were not fulfilled, will reduce new business, compared to the baseline scenario. Furthermore, banks which have a lower CET1 ratio according to Basel II need more time to comply with the new CET1 ratio. Therefore, the differences of the new business potential between the baseline and regulatory scenario increase with the time period to fulfill the new CET1 ratio.

Furthermore, an analysis of the changes in net income between small, medium and large banks shows a higher deterioration of the net income of smaller banks in the long run. This is due to the average lower CET1 ratio compared to medium and large banks. Moreover, smaller banks are also more influenced in the short term than larger banks. While the short term net income by type 4 and 3 banks is reduced in the case of increasing capital (decreasing assets) by 8,57% and 7.74% (18,68% and 18,18%), the type 2 and 1 banks are confronted with an decrease in the net income by 8,46% and 9,91% (18,94% and 23,48%). The stronger short term impacts of the net income on smaller banks could be caused by a stronger sensibility for increasing administrative expenses cost. If the expansion of administrative expenses is abstracted, larger banks are confronted with a higher decrease of the net income in the short term compared to smaller banks.⁴⁴

It has to be considered, that the deterioration of the net income can be influenced by reduced new business when compared to the baseline scenario. Therefore, a cost efficient implementation of the new CET1 ratio is necessary. A slight increase of administrative

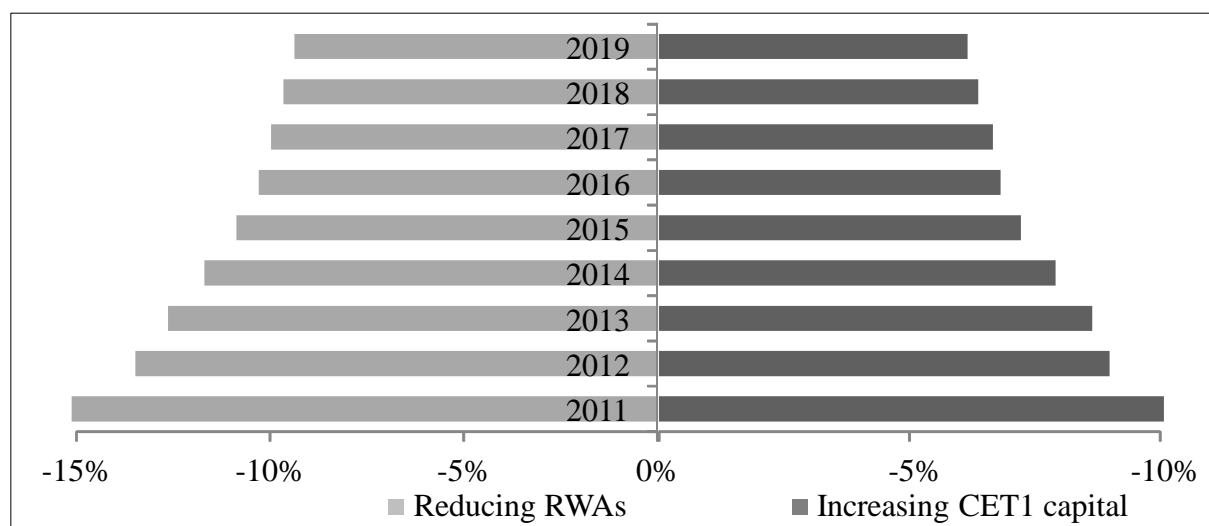
⁴⁴ In this case, the type 1 (4) banks are confronted with an average decrease in net income of 2,62% (2,89%).

expenses rises up the possibilities of retained earnings, which can either be used to fulfill the new CET1 ratio or to be invested in new business

4.3.3 Dividend payouts

The reduction of the net income, as shown in chapter 4.3.2, influences the amount of earnings which can be distributed by the general meeting of a co-operative bank. Therefore, the dividend payouts can decline. Because of the constant relevance of dividend payout of the co-operative banks, as shown in chapter 3.2, the maximum of dividend payouts are limited by the amount published on the financial data on 31.12.2010. Furthermore, the analysis abstracts from a missing dividend payout in case of a positive net income. Following this, a reduction of dividend payouts is not used to increase the reserve funds to fulfill the new CET1 ratio as assumed in the macroeconomic study (e.g. MAG 2010b, p. 10).⁴⁵ Instead, a reduction of dividend payouts is due to deterioration of the net income. Changes in dividend ratios⁴⁶ are not analyzed due to the assumption of CET1 capital increasing by not issuing new co-operative shares. Instead, Figure 6 shows the percentage changes of dividend payouts in the regulatory scenarios compared to the baseline scenario of co-operative banks in which dividend payouts are reduced due to an increase of CET1 capital and a decrease of RWAs.

Figure 6: Percentage changes in dividend payouts



Both, an increase in reserve funds and a decrease in RWAs to fulfill the new capital requirements, influence the amount of dividend payouts of 44 and 54 co-operative banks. The stronger short term deterioration in case of a reduction of RWAs is caused by the impacts of this alternative to the net income. In addition, the long term impact on dividend payouts is also

⁴⁵ More detailed information of several alternatives to fulfill the new CET1 ratio see Schätzle 2012, p. 21-25.

⁴⁶ For example see e.g. Schierenbeck 2003, p. 436 for more information to the dividend ratio.

higher in case of reducing assets than increasing CET1 capital of these banks. Therefore, in consideration of the impacts to the dividend payouts, an increase of CET1 capital is more advantageous than a decrease in RWAs to comply with the new CET1 ratio by co-operative banks.

However, the long term regulatory impact by a required increase of CET1 capital on dividend payouts is caused solely by banks which cannot fulfill the new capital requirements in the underlying observation period. For these banks (18 by increasing CET1 capital and 20 by reducing assets) the long term impact on the dividend payouts could be reduced by an additional temporary reduction of the dividend payouts. Thereby, on the one hand, the new CET1 ratio can be fulfilled faster. On the other hand, the new business can be increased after complying with the capital requirement. The latter can heighten the future net income. Because of this, the amount of net income which can be allocated by the general meeting of a co-operative bank may increase. Due to the interaction between the dividend payouts and the retained earnings, by implementing the new capital requirements, the management and the general meeting of a co-operative bank have to consider the interaction between a reduction of dividend payout and the time period to fulfill the CET1 ratio and the future new business. Therefore, it can be advantageous to abstain or reduce the dividend payouts in the short term. This illustrates that the action of complying with the new CET1 ratio has to be implemented in the MemberValue-strategy of a co-operative bank.

5 Conclusion

The increasing capital requirements according to Basel III have extensive impacts on co-operative banks. Almost 250 German co-operative banks cannot fulfill the new CET1 ratio on 31.12.2010. These banks are confronted with a capital shortfall or a reduction of RWAs. Based on a dynamic accounting approach, there are different impacts on the balance sheet and the profit and loss accounts of co-operative banks. Either an increase of CET1 capital by generating reserve fund or a decrease in RWAs causes an improvement of the maturity mismatch between the assets and the liabilities. Still, the maturity mismatch will decrease after fulfilling the new CET1 ratio. The latter one is caused by the assumption of the full utilization of the retained earnings for new business. However, the changes in maturity mismatch due to an increasing CET1 ratio have to be considered by the new liquidity requirements. Therefore, the effects of the new CET1 ratio on the new liquidity standards have to be quantified by co-operative banks.

Beside this, the new CET1 ratio impacts the earnings and expenses of a co-operative bank. Reducing assets compared to an increase in CET1 capital to comply with the new capital requirements causes stronger effects to the earnings and expenses of co-operative banks. This is due to the short term fulfillment of the new capital requirements by reducing productive assets. Compared to a reduction of RWAs, the alternative of generating new CET1 capital is advantageous due to the predefined transitional period to fulfill the new CET1 ratio. Furthermore, the new capital requirements increase the administrative expenses. This is due to a high complexity of the regulatory reporting standard. Especially smaller banks are stronger influenced by this. Resulting from the interaction of increasing administrative expenses to the possibility of retaining assets, the new capital requirements have to be implemented by the banks cost efficiently.

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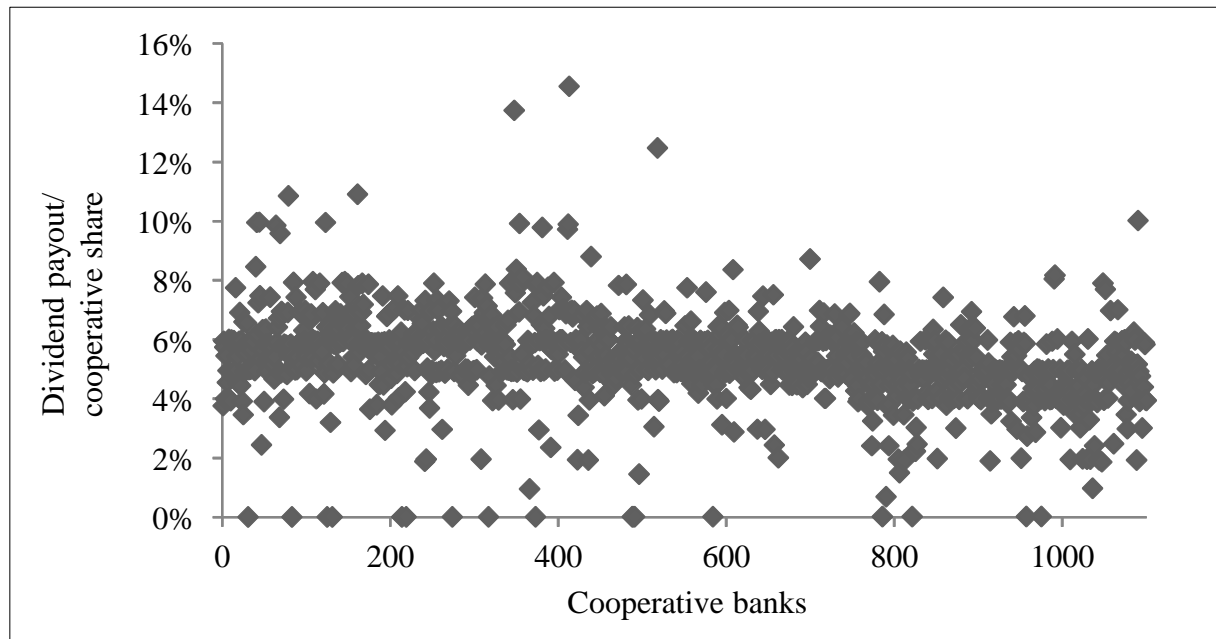
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Appendix

Appendix 1 Dividend payouts in relation to the amount of co-operative co-operative shares



Appendix 2: Notations and their meanings

Notation	Meaning
amo assets	loans to customer, bonds and other fixed-income securities, shares and other variable-yielded securities
ce assets	shares and other variable-yielded securities
div	Dividend payouts
dprofit	Distributable profit
FBr	Funds of general banking risk
ie debts	deposits from banks and from other depositors, debt certificated including bonds, subordinated liabilities, profit-sharing rights
ii assets	cash, debt instrument from public sector, loans to banks, loans to customer, bonds and other fixed-income securities
PE	Total Personal Expense
RF	Reserve Fund
RW	Risk weighted assets to total assets
sRF	Increase of reserve funds due to the requirement of the statutory of a cooperative bank

Appendix 3 Average maturity mismatch of type 1, 2, 3 and 4 banks

	Type 1 Banks	Type 2 Banks	Type 3 Banks	Type 4 Banks
Maturity mismatch	31,01%	28,46%	31,84%	25,66%
Long-term liabilities to total assets	10,21%	8,46%	9,28%	6,15%
Total long-term assets to total assets	28,44%	33,06%	35,90%	36,21%