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STRIVING TOWARDS THE MEAN? INCOME SMOOTHING DYNAMICS IN SMALL POLISH BANKS

Summary: We study the dynamics of the income smoothing process in a large sample of Polish cooperative banks between 2007 and 2012, using fixed effects panel data models. Our analysis indicates that cooperative banks use average sector profitability as a benchmark, despite the lack of market valuation pressure. The detected earnings management process is asymmetric, depending on being above or below peer performance. Income smoothing allows banks to adjust their earnings when their performance has been much lower than average sector results. This brings their profitability in line with their peers' mean ROA. In addition, the weakest banks are more prone to perform income smoothing than average and high profit makers. On the other hand, banks that are significantly above average profitability smooth income in a much more restrictive way than their peers. High earners do not understate their earnings and do not create higher loan loss provisions, even if they can afford to make sizeable reserves.

Keywords: Income smoothing, cooperative banks.

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1. Introduction

The financial crisis has shown that a lack of transparency in bank policies can lead to large losses. This has been demonstrated on the example of structured mortgage products that hid weak quality collateral under seemingly high quality securities. Transparency has been an important issue since the outbreak of the financial crisis and both regulators and bank stakeholders are increasing their pressure on improved disclosure of financial institutions.

In parallel, there has been a prolonged discussion between the accounting and banking fields regarding publishing financial data that accurately reflects bank economic performance at a given point in time [Bushman, Williams 2012]. A crucial

issue in this discussion refers to the phenomenon of earnings management, and more specifically – income smoothing. The accounting side advocates limiting the scope for all forms of earnings management, in order to make financial statements the most accurate reflection of the current financial situation of a bank. The banking side underlines the important role of forward looking reserve making that leads to income smoothing, but also provides a countercyclical tool for capital pressures and assures higher stability of banking sectors under stress [Financial Stability Forum 2009].

The aim of this paper is to analyse incentives that drive managers to smooth income. We verify if cooperative banks perform income smoothing independently, or whether they are affected by external benchmarks, such as sector performance. More specifically, we study if being different from average profitability may change the dynamics of the income smoothing process. We use a sample of 357 Polish cooperative banks in the period of 2007–2012. Banks in our sample have no majority shareholders and are not listed on the stock exchange. Thus, pressure from capital market participants or majority shareholders is inexistent. It has been proven that despite the lack of such pressure, income smoothing in cooperative banks persists and that provisioning increases in times of crisis [Skala 2014]. Thus, if investors do not urge managers to smooth earnings and it surfaces nevertheless, it is possible that managers are under some form of peer pressure from their own sector. This is the central question of our analysis. The structure of this paper is as follows: Section 2 presents a brief literature review, in Section 3 we outline the methodology and data used, Section 4 demonstrates empirical results and Section 5 concludes.

2. Literature review

Income smoothing is a form of earnings management that has been studied both in the financial and non-financial institutions context [Healy, Wahlen 1999]. Although in the non-financial institution context earnings management is regarded negatively, as a tool obscuring true economic performance of companies [Goel, Thakor 2003], banks are a special case. In banks, earnings management usually takes the form of income smoothing, which entails making loan loss provisions during prosperous times and consuming these reserves when earnings weaken. This reflects the fact that all loan portfolios include a portion of currently healthy loans that are expected to default in the future. Making forward-looking reserves may be viewed as a prudent approach to credit risk, especially that many bad loans are granted during lending booms. Many authors claim that such a dynamic approach to provisions reduces procyclicality of banks and more specifically, of capital requirements that banks face [Laeven, Majnoni 2003; Financial Stability Forum 2009; Financial Stability Board et al. 2011]. In 2000 Bank of Spain decided to introduce a form of income smoothing as an obligatory tool for Spanish banks, in order to decrease cyclicality and make income smoothing more transparent [Saurina 2009; Balla, McKenna 2009].

Income smoothing has been repeatedly confirmed empirically for banks in the US and Western Europe, especially for more recent data samples [Bikker, Metzmakers 2005; Bouvatier, Lepetit, Strobel 2014; Fonseca, González 2008; Laeven, Majnoni 2003; Olszak et al. 2014; Perez, Salas-Fumas, Saurin 2008; Quagliariello 2007]. In Central Europe, income smoothing has also been found in commercial banks from 11 countries [Skąła 2015] and cooperative banks in Poland [Skąła 2014].

A slightly different angle to earnings management in banks is demonstrated by the benchmark-beating literature [Shen, Chih 2005; Bornemann et al. 2012, 2014]. In this context, banks do not smooth income to diminish fluctuations of the bottom line. Instead, they aim to adjust profits in a certain manner, in order to exceed given benchmarks. It has been demonstrated that non-financial US firms manage earnings to avoid reporting small losses [Burgstahler, Dichev 1997] and to show positive profitability, profitability that matches previous year profits or earnings that match analyst expectations [Degeorge, Patel, Zeckhauser 1999]. Shen and Chih [2005] use such non-financial sector benchmarks in the banking sector industry for banks in 48 countries and find the threshold-beating behaviour in two thirds of the sample. Bornemann et al. [2012] study German banks and their hidden reserves, in order to verify earnings management versus four major benchmarks: positive profitability, previous year profitability, average sector profitability and variation in profits. They prove that all these thresholds are used in earnings management via hidden reserves.

In our paper, we aim to verify if external stress from sector performance also applies to institutions that are immune to capital market and investor pressure. We are thus aiming to indirectly check if income smoothing is originated mainly due to prudential concerns of conservative managers or if external peer pressure also has an effect. In addition, we want to explore the dynamics of income smoothing more in depth and verify if there are differences in the approach to earnings management between groups of more and less profitable banks. This will allow for partly answering the question if income smoothing is a “luxury” that more affluent institutions use when they can afford it, or rather if it is a way to rescue weak profitability of ailing banks.

3. Methodology and data

Income smoothing is verified empirically using the amended model of Greenawalt and Sinkey [1988], where the primary relation is the link between pre-provisioning income and loan loss provisions. In our estimation, we use a modified version of models presented by Laeven and Majnoni [2003], Fonseca and González [2008], Bikker and Metzmakers [2005], and Perez, Salas-Fumas and Saurina [2008]. The main model has the following form:

$$\begin{aligned}
 LLP_{i,t} = & \alpha + \beta_1 \text{Income}_{i,t} + \beta_2 \text{NPL}_{i,t} + \\
 & + \beta_3 \text{Loan growth}_{i,t} + \beta_4 \text{Bank control variables}_{i,t} + \\
 & + \beta_5 \text{Macroeconomic control variables}_{j,t} + v_i + \varepsilon_{i,t}.
 \end{aligned}
 \tag{1}$$

Equation (1) is a static model with individual bank fixed effects (v_i). There is no uniform approach to estimating income smoothing. Some authors apply as baseline the static approach [Leaven, Majnoni 2003], others prefer the dynamic version with lagged LLP. However, the dynamic specifications vary – Laeven and Majnoni [2003] and Fonseca and González [2008] apply the Arellano and Bond [1991] estimator, while Bornemann et al. [2012] and Bouvatier, Lepetit and Strobel [2014] use the Blundell and Bond [1998] system GMM. In addition, the number of lags to the dependent variable is not uniform, similarly to the treatment of independent variables as endogenous or exogenous. We believe the economic rationale for using a dynamic approach to income smoothing is weak, as it implies that managers make current year's provisions a function of previous year's reserves. Thus we decide against using the dynamic approach. We include bank fixed effects, which account for factors that are stable through time, such as firm corporate culture or bank risk appetite. i, j and t denote individual bank, country and year, respectively $\varepsilon_{i,t}$ is the error term.

The dependent variable, LLP, represents annual loan loss provisions that are created by banks. Pre-provisioning income (Income) is bank operating income before loan loss provisions are made. In order to avoid potential problems with endogeneity, we scale both the dependent variable LLP and pre-provisioning income by assets lagged by one period [Laeven, Majnoni 2003]. NPL are non-performing loans, which are shown as a share of non-performing loans in total customer loans. They represent default risk of the loan portfolio and thus the non-discretionary part of the loan loss provision decision. Loan growth controls cyclicity of credit policy. Bank control variables include ratios conventionally used in income smoothing models, such as the share of loans in total assets (Loans/Assets), level of equity (Equity/Assets) and bank size (Size) in the form of logarithm of total assets. Due to potential capital management issues, pointed out by Perez, Salas-Fumas and Saurina [2008], we use equity to assets ratios lagged by one year. We include the rate of unemployment (Unemployment) in the region (poviat) where the bank is headquartered to account for the local economic situation.

In order to verify if cooperative banks manage their earnings in order to align their performance with external benchmarks, we modify equation (1). We add a control variable of High ROA (Low ROA) that is a dummy variable representing cases when a bank's previous year profitability was higher (lower) from sector ROA by at least one standard deviation.¹ This relation shows whether the level of

¹ Sector ROA is the mean ROA for all banks included in our sample, associated under the same associating bank.

provisions in banks strongly diverging from the mean differs from the remaining banks. Subsequently, control variables of High ROA Smoothing (Low ROA smoothing) are interaction terms of High ROA * Income (Low ROA * Income) and inform of any changes to the dynamics of income smoothing as such. The estimated equations have the following form:

$$\begin{aligned} LLP_{i,t} = & \alpha + \beta_1 \text{Income}_{i,t} + \beta_2 \text{NPL}_{i,t} + \beta_3 \text{Loan growth}_{i,t} + \\ & + \beta_4 \text{Bank control variables}_{i,t} + \beta_5 \text{Macroeconomic control variables}_{j,t} + \\ & + \beta_6 \text{High ROA}_{i,t-1} + \beta_7 \text{High ROA Smoothing}_{i,t-1} + v_i + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

$$\begin{aligned} LLP_{i,t} = & \alpha + \beta_1 \text{Income}_{i,t} + \beta_2 \text{NPL}_{i,t} + \beta_3 \text{Loan growth} + \\ & + \beta_4 \text{Bank control variables}_{i,t} + \beta_5 \text{Macroeconomic control variables}_{j,t} + \\ & + \beta_6 \text{Low ROA}_{i,t-1} + \beta_7 \text{Low ROA Smoothing}_{i,t-1} + v_i + \varepsilon_{i,t}. \end{aligned} \quad (3)$$

Accounting for divergence from mean profitability by using dummy variables may not however fully reflect possible differences between various income smoothing approaches in banks. Thus, in the next step, we divide our bank sample into three profitability groups, according to average profitability throughout the sample period, using the 33 and 66 percentiles. In consequence, we obtain a High ROA subsample, a Medium ROA subsample and a Low ROA subsample. Then we re-estimate equation (1) using the three subgroups.

3.1. Data

We use year-end data on 357 Polish cooperative banks, over the period 2007–2012.² The sample represents over 60% of all Polish cooperative banks (at end-2012). There is considerable homogeneity within the sample, as all banks fall under the same regulatory system, they are associated under the same associating bank and have similar access to funding possibilities. Their business model bases on traditional loan-and-deposit activities, with almost 90% of assets invested in loans (Table 1). Cooperative bank members are allowed to purchase multiple shares in a bank, but the ‘one shareholder-one vote’ principle implies that shareholders with higher equity stakes do not have more voting power.

We have merged the cooperative banks dataset with macroeconomic data on regions (“poviats”), stemming from the Local Data Bank of the Polish Central Statistical Office (GUS). Polish regulations specify that cooperative banks should serve customers from their core poviats, but larger institutions are allowed to conduct their business in voivodships, or even throughout the country [Ustawa z 7 grudnia

² The dataset stems from Bank Polskiej Spółdzielczości (BPS). The author is very grateful to the BPS team for their help in compiling the dataset.

2000]. Despite this, we believe that the bulk of core business of cooperative banks comes from the poviats where they are headquartered. Table 1 presents descriptive statistics of the most important variables.

Table 1. Summary statistics of main variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Loan loss provisions (LLP)	1680	0.265	0.500	-3.125	5.745
Pre-provisions income	1680	2.114	0.786	-0.547	6.894
Loan growth	1680	14.927	25.127	-46.534	319.417
Non-performing loans (NPL)	1680	4.183	5.230	0.000	66.496
Loans/assets	1680	88.502	11.113	17.480	97.977
Equity	1680	13.244	4.861	0.851	41.468
Size	1680	18.219	0.829	16.258	21.528
Unemployment	1680	14.116	5.149	1.9	33.8

Notes: Loan loss provisions (LLP) are annual reserves (net), included in the profit and loss account, scaled by assets in $t - 1$; Pre-provisions income is operating profit before provisions scaled by assets in $t - 1$; Loan growth is annual loan growth (in %); Non-performing loans are loans classified as non-performing divided by total loans; Loans/assets are loans in year t divided by assets in year t ; Equity is the share of total equity ($t - 1$) in total assets ($t - 1$); Size is the natural logarithm of total assets; Unemployment is the share of registered unemployment in the region (poviat) where the bank is headquartered.

Source: own calculations.

The strong loan orientation of cooperative banks is represented by a mean loan to asset ratio of almost 90%. Banks in the sample are diversified, in terms of equity levels, non-performing loan portfolios and growth dynamics, but their business model is very similar. Thus, we refrain from performing centile exclusions or winsorising the data. Banks that are taking over other banks (loan growth of above 100% clearly indicates such instances) are also interesting cases for earnings management analysis and we intentionally keep them in the sample. This is a somewhat different approach from authors using Bankscope data for commercial banks [Bouvatier, Lepetit, Strobel 2014], where centile exclusions are routinely performed due to the weak quality of source data and/or inputting mistakes.

4. Results

Results from estimating the baseline equation (1) and equations (2) and (3) are presented in Table 2. Specification 1 (baseline) demonstrates clear income smoothing among banks in our sample. A positive and statistically significant coefficient of Pre-Provisions Income indicates that loan loss provisions increase when pre-provisioning

Table 2. Income smoothing and profitability deviations from mean ROA for the sector

Dependent variable: LLP	Equation (1)	Positive deviations of ROA	Negative deviations of ROA
Specification	(1)	(2)	(3)
Pre-Provisions Income	0.3112*** (0.024)	0.3191*** (0.026)	0.2734*** (0.026)
Loan growth	-0.0010* (0.000)	-0.0010* (0.000)	-0.0010* (0.000)
Non-performing loans	0.0305*** (0.004)	0.0307*** (0.004)	0.0291*** (0.004)
Loan share	-0.0031 (0.002)	-0.003 (0.002)	-0.0024 (0.002)
Equity	0.0374** (0.008)	0.0386*** (0.008)	0.0396*** (0.008)
Size	0.5085*** (0.093)	0.5018*** (0.094)	0.4910*** (0.093)
Unemployment	0.0371*** (0.009)	0.0377*** (0.009)	0.0362*** (0.009)
Positive dev ROA		0.1758 (0.166)	
High ROA smoothing		-0.0626 (0.057)	
Negative dev ROA			-0.3393*** (0.097)
Low ROA smoothing			0.2536*** (0.055)
Constant	-10.5161*** (1.641)	-10.4376*** (1.644)	-10.1920*** (1.630)
Number of observations	1680	1680	1680
Number of banks	357	357	357
R-squared	0.1837	0.1844	0.1983

Notes: Pre-provisions income is operating profit before provisions scaled by assets in $t - 1$; Loan growth is annual loan growth (in %); Non-performing loans are loans classified as non-performing divided by total loans; Loans/assets are loans in year t divided by assets in year t ; Equity is the share of total equity ($t - 1$) in total assets ($t - 1$); Size is the natural logarithm of total assets; Unemployment is the share of registered unemployment in the poviat where the bank is headquartered. *, ** and *** represent significance at 0.1, 0.05 and 0.01, respectively. Numbers in brackets are standard errors.

Source: own calculations.

income is higher. In parallel, a positive and significant coefficient for NPL proves that banks with higher credit risk make more generous reserves. At the same time, more aggressive loan growth does not imply making provisions to account for possible future losses (negative coefficient for Loan growth). Larger and better capitalised banks seem to lead a more conservative credit policy, by putting away

higher provisions. Banks situated in regions with a high level of unemployment also have higher provisioning than banks from more economically developed regions.

Results from specifications (2) and (3) in Table 2 indicate that banks use average sector profitability as a benchmark that affects their income smoothing behaviour, but only when they experience low profitability. In specification (2), banks that have experienced ROA that was over one standard deviation higher than average profitability in the sector in the previous year do not modify their level of loan loss provisions and income smoothing behaviour. Coefficients of both High Income and High Income Smoothing are statistically insignificant.

On the other hand, banks that experienced extremely low profitability (Specification (3)) are shown to modify their credit policy in the following year. The significant and negative coefficient for Low ROA indicates that these banks decrease the level of reserves made, thereby easing pressure on the bottom line. In addition, they strongly intensify their income smoothing behaviour in the next period, almost doubling it, in comparison to other banks. This proves that average sector profitability is one of the components that drive income smoothing decisions in banks which observe negative deviations from the mean. Making visibly lower reserves allows such banks to bring profitability back in line with sector performance.

Using dummy variables to display differences between highly profitable and weak banks may not fully reflect the underlying process. To complete the picture, we re-estimate equation (1) on three subsamples of banks, as described within Section 3. In order to demonstrate differences between subgroups, we present summary statistics in Table 3.

Table 3. Summary statistics of main variables throughout three bank subgroups, according to profitability

Variable	High ROA	Mid ROA	Low ROA
Loan Loss Provisions	0.212	0.247	0.331
Pre-Provisioning Income	2.747	2.064	1.572
Loan growth	15.373	14.219	15.197
NPL	2.986	3.646	5.808
Loans/assets	90.992	89.163	85.547
Equity	16.616	12.692	10.680
Size	17.849	18.297	18.476
Unemployment	14.625	14.239	13.576

Notes: High ROA subsample includes banks that have average profitability throughout the sample period above the 66 percentile; Mid ROA subsample includes banks that have average profitability between the 33 percentile and 33 percentile; Low ROA subsample includes banks that have average profitability below the 33 percentile.

Source: own calculations.

The statistics in Table 3 show that banks with the highest ROA not only have the highest pre-provisioning income, but also that their annual provisions are the lowest, in relation to their size. This may be linked to the best loan quality in their portfolios, while banks with weak earnings could also be the ones with the largest asset quality problems. Their strained profitability does not allow for putting away high retained earnings, so their equity level is much lower than that of their high ROA peers. On the other hand, the weakest banks are the largest in the sample, which may indicate that controlling their credit quality is more difficult. On average, banks with low earnings do not seem to be disfavoured in the context of their operating environment. On the contrary, unemployment in poviats in which they operate is lower than for the remaining subgroups. The results of re-estimating equation (1) on the three subgroups are displayed in Table 4.

Table 4. Income smoothing in different profitability subgroups

Dependent variable: LLP	Equation (1)	High ROA	Mid ROA	Low ROA
Pre-Provisions	0.3101*** (0.024)	0.1834*** (0.030)	0.2710*** (0.035)	0.5015*** (0.056)
Loan growth	-0.0010* (0.000)	-0.001 (0.001)	-0.0006 (0.001)	-0.0016 (0.001)
Non-performing	0.0305*** (0.004)	0.0163* (0.007)	0.0576*** (0.006)	0.0239** (0.008)
Loan share	-0.0031 (0.002)	-0.0018 (0.002)	0.0022 (0.002)	-0.0071* (0.004)
Equity	0.0376*** (0.008)	0.0186* (0.008)	0.0410*** (0.012)	0.0943*** (0.022)
Size	0.5198*** (0.092)	0.6164*** (0.122)	0.3168** (0.117)	0.5076* (0.211)
Unemployment	0.0362*** (0.009)	0.0261 (0.013)	0.0453*** (0.012)	0.0425* (0.018)
Constant	-10.7126*** (1.620)	-11.8535*** (2.072)	-7.6763*** (2.060)	-10.9314** (3.772)
Number of observations	1680	536	565	576
Number of banks	357	118	118	120
R- squared	0.1835	0.1829	0.3284	0.2177

Notes: Pre-provisions income is operating profit before provisions scaled by assets in $t - 1$; Loan growth is annual loan growth (in %); Non-performing loans are loans classified as non-performing divided by total loans; Loans/assets are loans in year t divided by assets in year t ; Equity is the share of total equity ($t - 1$) in total assets ($t - 1$); Size is the natural logarithm of total assets; Unemployment is the share of registered unemployment in the region (powiat) where the bank is headquartered. *, ** and *** represent significance at 0.1, 0.05 and 0.01, respectively. Numbers in brackets are standard errors.

Source: own calculations.

Estimations on bank subgroups bring important additional information on the income smoothing process and underline differences between these groups.

High profitability banks display the weakest link between income and provisions, although the effect remains statistically significant. In addition, credit risk is less decisive for the level of loan loss provisions in these banks. In this subgroup, larger banks are more prone to create reserves, while the coefficient for equity significantly falls, in comparison to the whole sample and the remaining subsamples.

When the profitability of banks is closer to average (“Medium ROA banks”), their tendency to smooth income increases visibly. Thus, they use periods of stronger profits to make higher reserves and diminish LLP when earnings are under pressure. In addition, in banks of medium profitability new reserves are mostly sensitive to the level of non-performing loans. A worsening of portfolio quality results in much higher LLP than in any of the other groups.

Banks with weak earnings are smoothing their income much more extensively than the two remaining subgroups. The size of the coefficient is over 2.5 times larger than for the most profitable banks group and over 1.8 times larger than for average profit makers. This indicates that banks with low profits align their provisions much more with the amount of income in a given year. Better years are used to make higher reserves, while pressure on income significantly lowers their LLP. In addition, institutions with weak equity levels are making lower provisions than banks with strong capital. Taken together this may imply an insufficient buffer of reserves, both within capital and loan loss reserves, to face problems with asset quality. In line with the intuition, banks with the lowest earnings are the most vulnerable to future credit risk deterioration.

5. Conclusions

We analyse benchmark adjustment behaviour in income smoothing of Polish cooperative banks, using a sample representing around 60% of the sector. We find that despite a lack of investor pressure from the capital market and absent majority shareholder voting power, banks engage in income smoothing to align their performance with their peers from the same associating bank. The earnings management process is asymmetric, depending on being above or below peer performance. Banks that are significantly above sector profitability do not understate their earnings and do not create higher loan loss provisions, even if they can afford to make sizeable reserves. Banks that are below sector profits in a given year decrease provisions that they make the following year. They also intensify their income smoothing behaviour, which is double of the size of remaining banks. This allows weak institutions to bring their results more in line with sector performance.

These results are confirmed in the subgroup analysis. The subgroup of weakest banks is shown to display a much more pronounced income smoothing tendency than

the highest earning group. In addition, banks with vulnerable earnings also diminish provisions in parallel to their falling equity. This indicates an important vulnerability of these institutions and shows that loan loss reserves are not substituted by capital buffers, but rather move alongside with them.

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WYRÓWNYWANIE DO ŚREDNIEJ? DYNAMIKA WYGŁADZANIA DOCHODÓW W MAŁYCH POLSKICH BANKACH

Streszczenie: W badaniu analizowana jest dynamika procesu wygładzania dochodów w dużej próbie polskich banków spółdzielczych w okresie 2007–2012, z wykorzystaniem modelu efektów stałych dla danych panelowych. Wyniki wskazują, że banki spółdzielcze wykorzystują średnią dochodowość sektora jako benchmark, pomimo braku presji wyceny rynkowej. Wykazane zarządzanie dochodami ma charakter asymetryczny, zależny od położenia dochodowości banku względem grupy porównawczej. Wygładzanie dochodów pozwala bankom na dostosowanie ich wyników, gdy dochodowość jest znacznie niższa niż wyniki sektora. Wygładzanie pozwala na zrównanie wyników ze średnim zwrotem na aktywach. Ponadto, banki o najniższej dochodowości wykazują wyższe skłonności do wygładzania dochodów niż podmioty o średnich lub najlepszych wynikach. Z drugiej strony, banki o zyskach znacznie powyżej przeciętnych wygładzają dochody w znacznie mniejszym stopniu niż te z grupy porównawczej. Wysokochodowe podmioty nie zaniżają swoich zysków i nie tworzą wyższych rezerw, nawet jeśli posiadają wystarczające środki na te cele.

Słowa kluczowe: wygładzanie dochodów, banki spółdzielcze.