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## THE IMPACT OF NON-FINANCIAL ENTERPRISE SECTOR EARNINGS ON BANKING SECTOR EARNINGS: AN EVIDENCE FROM POLAND

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**Summary:** Polish financial system is characterized by the leading role of banking sector and strong connections between it and the non-financial enterprises sector. The earnings of enterprise sector influence the earnings of banking sector in the long run both directly and indirectly with a certain lag. The paper aims at investigating the long-run relations between earnings of non-financial enterprises sector and banking sector in Poland over the period 2002–2011. The obtained empirical results indicate that the one-year lagged net earnings of enterprise sector were a significant factor influencing the net earnings of banking sector in the analyzed period, which implies the possibility of practical implementation of the revealed association in the short-term financial planning in banks.

**Keywords:** non-financial enterprises, banks, earnings.

### 1. Introduction

The financial performance of banks is determined by many internal and external factors. In particular, the role of banks as financial intermediaries exposes them to fluctuations of economic position of other market participants resulting from the business cycle. Most studies on the external determinants of banking sector profitability focus on the broad macroeconomic variables, while the potentially more direct impact of the performance of non-financial enterprise sector remains unexplored.

The model of financial system developed in Poland is characterized by the leading role of banks and a relatively close relations between them and the non-financial enterprises sector. The financial position of enterprises influences the performance of banking sector both directly and indirectly. The direct impact is exercised when enterprises undertake cooperation with banks, while the indirect one occurs if the economic performance of enterprises affects the ability of households to use banks' services.

The aim of this paper is to examine the long-run relations between the earnings of non-financial enterprises sector and banking sector in Poland over the period 2002–2011. The study appears to be the first attempt to address this issue directly. An additional contribution of the paper is the enhancement of the international literature on the determinants of banking sector profitability.

The remainder of the paper is composed of five sections. Section 2 provides a review of related literature on external determinants of banking sector profitability. The theoretical background of impact of non-financial enterprise sector earnings on banking sector earnings is presented in section 3. Section 4 describes the data sources and research methods. The main findings of the study are presented in section 5. The paper is closed with a brief summary in section 6.

## **2. External determinants of banking sector profitability**

The existing literature on determinants of banks' profitability distinguishes between internal factors, that directly depend on the decisions made by the management, and external factors that result from objective market conditions beyond banks' control [Staikouras, Wood 2004, p. 57]. Among most frequently investigated internal factors in the related studies are the scale of banks' activity, the level of risk to which they are exposed, and their operational efficiency [Dietrich, Wanzenried 2011, p. 309]. The external factors usually cover the macroeconomic variables (inflation, market interest rates, and national income growth) and those characterizing banking sector (market concentration, industry size, and ownership status) [Athanasoglou et al. 2008, p. 123].

The majority of relevant studies report a positive impact of GDP growth, inflation, and central bank interest rates on banks profitability [Bourke 1989; Molyneux, Thornton 1992; Demirguc-Kunt, Huizinga 1999; Athanasoglou et al. 2008, Albertazzi, Gambacorta 2009], indicating that banking sector earnings are determined by the course of the business cycle.

Given the role of banks as financial intermediaries, one of the external factors determining their profitability is the financial position of non-financial enterprises sector. It appears that the fluctuations in financial performance of enterprises should be more directly related to banking sector earnings than the broad macroeconomic variables. To date no studies, however, attempted to investigate this impact empirically.

## **3. Theoretical background of the influence of non-financial enterprise sector earnings on banking sector earnings**

The model of financial system developed in Poland is characterized by the leading role of banks and a relatively close relations between them and the non-financial

enterprises sector. Almost all enterprises cooperate with banks, at least in order to fulfill their legal obligation of holding a bank account for settlements imposed by the Economic Freedom Act [*Ustawa...* 2004, Art. 22, Par. 1]. Additionally, according to the Central Statistical Office of Poland, the majority of non-financial enterprises keeping the accounting ledgers use bank loans (52,83% out of 54.189 surveyed firms) [*Financial results of economic entities...* 2012, p. 17]. The direct loans and advances to enterprises on December 31, 2011 accounted for 33,04% of total loans and advances of banking sector to non-financial sector [*Dane miesięczne...* 2012].

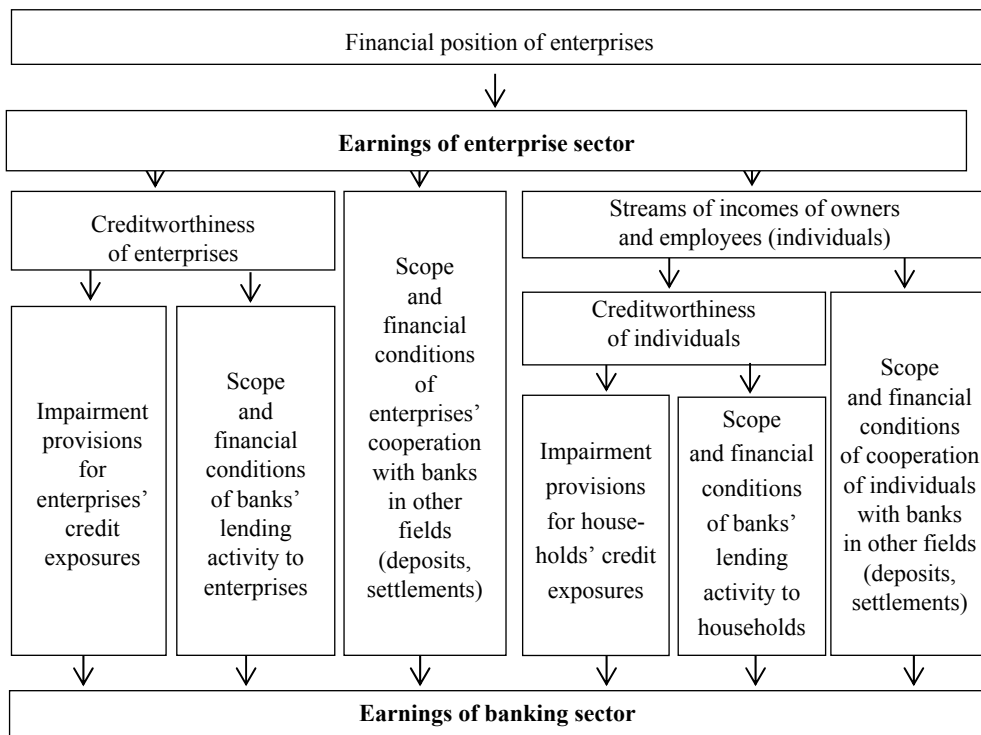
The financial position of enterprises determines the scale, scope, and conditions of their cooperation with banks, which directly influences the earnings of banking sector. A comprehensive measure of the financial position of enterprises are accounting earnings. They are a key component of enterprises' creditworthiness assessment, influencing such parameters as return on assets and equity, debt service coverage ratios, capital structure, and liquidity ratios [*Zarządzanie...* 2007, p. 232; Beaver et al. 2005, p. 98; Mądra 2009, p. 622-625]. Additionally, earnings are one of the most important parameters determining the level of rating assigned to enterprises by banks [Brunner et al. 2000, p. 8] and rating agencies [Poon 2003, p. 609]. The rating of an enterprise, in turn, affects not only the price terms of available bank services, but also the level of impairment provisions and reserves for its credit exposures created and recovered by banks, and ultimately, the earnings of banking sector [Kopiński 2008, p. 108; Iwanicz-Drozdowska 2012, p. 54].

The earnings of enterprise sector may also affect the earnings of banking sector indirectly. In the long run the earnings of enterprises determine the streams of incomes of their owners and employees [Rekowski 2009, p. 142; Zalega 2011, p. 245], and therefore influence their personal creditworthiness and conditions of cooperation with banks. On December 31, 2011 the non-financial enterprises in Poland employing at least 10 persons accounted for 63,59% of all employed in the national economy [*Zatrudnienie...* 2012, p. 37], whereas the loans and advances to households accounted for 66,44% of total loans and advances of banking sector to non-financial sector [*Dane miesięczne...* 2012].

A comprehensive diagram of the impact of earnings of enterprise sector on the earnings of banking sector is shown in Fig. 1.

The impact of changes in the enterprise sector earnings on the banking sector earnings is exercised with a lag resulting from objective conditions of financial reporting process and the long-run character of the relation between these changes and the employment and payroll policies of firms.

Due to the time-consuming nature of document circulation and financial reporting, banks' decisions about engaging or changing the scope of cooperation with enterprises are usually made on the basis of more or less out-of-date information. This issue regards in particular the processes of credit decision making, credit exposures monitoring or impairment identification. Banks encounter additional



**Figure 1.** Impact of enterprise sector earnings on banking sector earnings

Source: own elaboration.

problems with the assessment of financial position of smaller firms, resulting from the lower quality of their interim reports, and a higher level of information asymmetry in relations with banks [Gama, Geraldes 2012, p. 730; Berger, Frame 2007, p. 5]. Annual reports of some enterprises are also audited by expert auditors, which usually leads to the improvement of reporting quality. These facts imply that, despite the unavoidable lag in conveyance of annual reports of corporate clients, banks treat them as the most reliable and complete source of information, especially in the case of firms characterized with a significant seasonal fluctuations of revenues or earnings, as in construction sector.

#### 4. Data and methods

The analysis was based on the publicly available data of the Central Statistical Office of Poland (GUS), National Bank of Poland (NBP), and Polish Financial Supervision Authority (KNF). The data on the earnings of enterprise sector over

the period 2002–2011 were obtained from the publications *Financial results of non-financial enterprises...* [2003–2012] by GUS, covering enterprises employing more than 9 persons. The data on Polish banking sector earnings, balances of impairment provisions and reserves, and the share of impaired loans to enterprises were obtained from *Report on the conditions of Polish banks...* [2008–2012] and *Summary evaluation of the financial situation of Polish banks...* [2004–2007] by KNF for the individual years of the period 2003–2011. The balances of loans and advances of banks to enterprises were determined on the basis of the monthly data on loans and advances provided by NBP on its website. The additional source of data were the reports *Average paid employment and average gross wages and salaries in enterprise sector...* [2003–2012] by GUS for the individual years of the period 2002–2011.

To evaluate the strength of association between the examined variables, the classical statistical tools were applied – the Pearson correlation coefficient, the Spearman's rank correlation coefficient, the ordinary least squares linear regression analysis, and the adjusted coefficient of determination. The normality of distribution of variables was verified with the Shapiro-Wilk test.

## 5. Empirical results

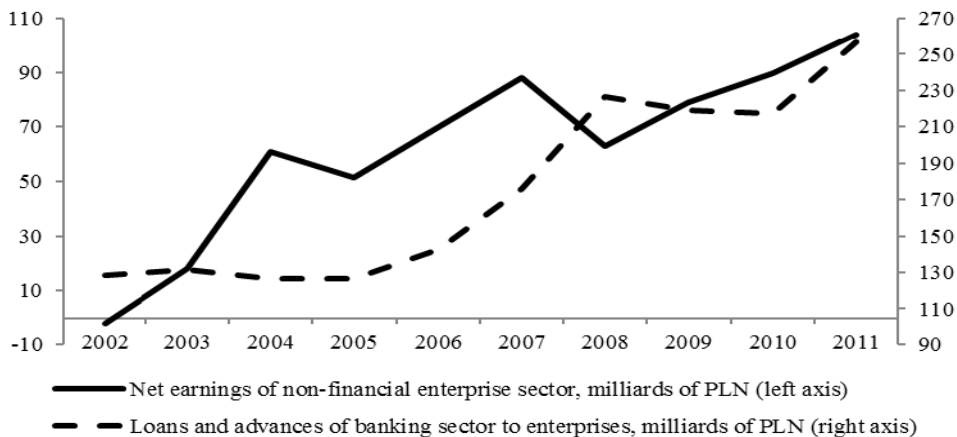
The analysis of changes in the net earnings of Polish enterprise sector and the balances of banks' loans and advances to enterprises sector over the period 2002–2011 confirm a positive association between these two categories (Fig. 2). The growing trend of earnings, reflecting the improvement in the overall financial position of enterprises, enabled banks to expand lending activity to enterprises.

The growth of the non-financial enterprise sector earnings corresponded with the improvement of the quality of enterprise loans portfolio (Fig. 3). Until 2008 the share of impaired loans to enterprises revealed a strong decreasing tendency. The significant fall of enterprises' earnings in 2008, mainly due to the large financial costs resulting from the strong depreciation of Polish zloty, caused a significant deterioration of the quality of enterprise loans portfolio in 2009.

The growing tendency of earnings corresponded with the increase of the average paid employment (Fig. 4) and the average gross wages and salaries (Fig. 5) in the non-financial enterprise sector. Moreover, the average paid employment reacted with an approximately one-year lag to the changes in the sector's earnings. These observations support the claim that the earnings of enterprise sector might strongly influence the incomes of its employees and therefore their personal creditworthiness.

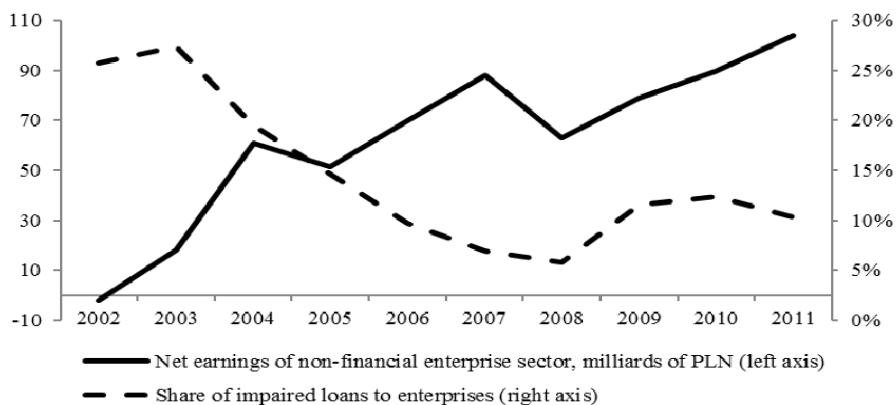
Fig. 6. presents the changes of earnings of the non-financial enterprise sector and the balances of impairment provisions and reserves in the banking sector. Over





**Figure 2.** Non-financial enterprise sector net earnings and balances of loans and advances of banking sector to enterprises in the years 2002–2011

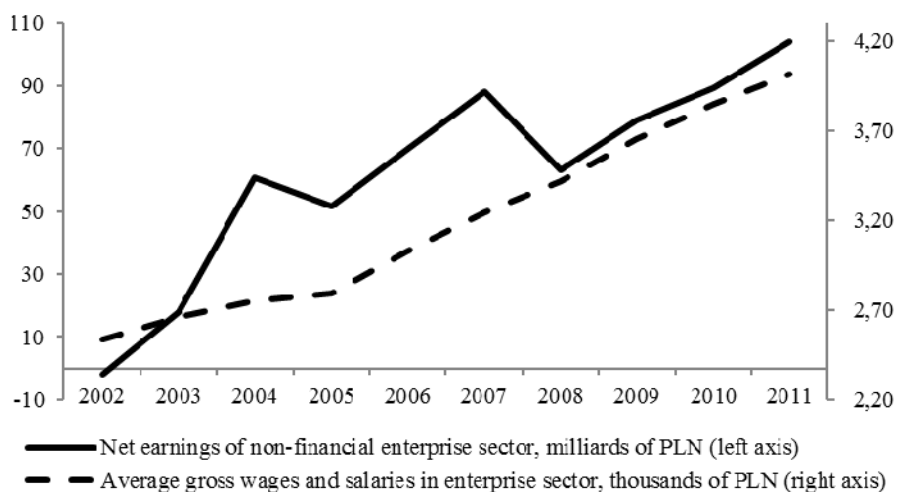
Source: own elaboration.



**Figure 3.** Non-financial enterprise sector net earnings and share of impaired bank loans to enterprises in the years 2002–2011

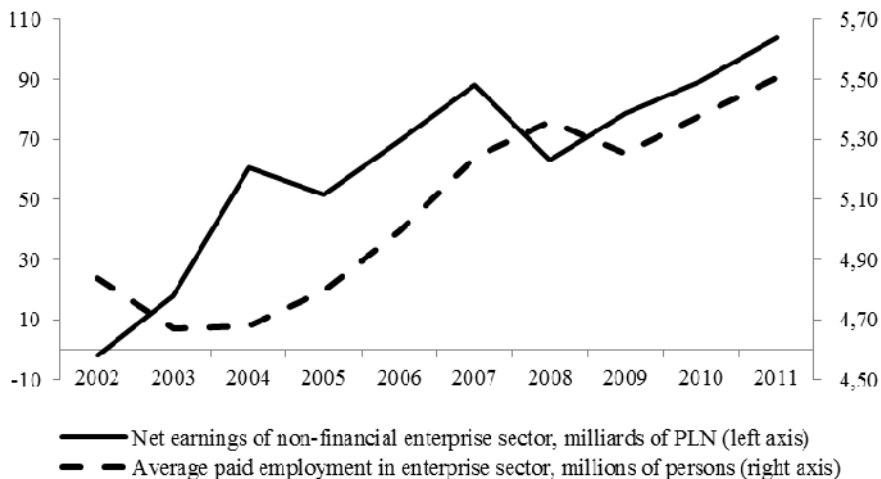
Source: own elaboration.

the period 2002–2007 the growing tendency of earnings caused a systematic decrease of the negative balances of impairment provisions and reserves. The period 2008–2009, however, brought a strong increase of the negative balances of impairment provisions and reserves corresponding with the significant fall of the enterprises' earnings in 2008. A gradual growth of earnings during the following years allowed for some decrease of these negative balances.



**Figure 4.** Average gross wages and salaries and net earnings in non-financial enterprise sector in the years 2002–2011

Source: own elaboration.

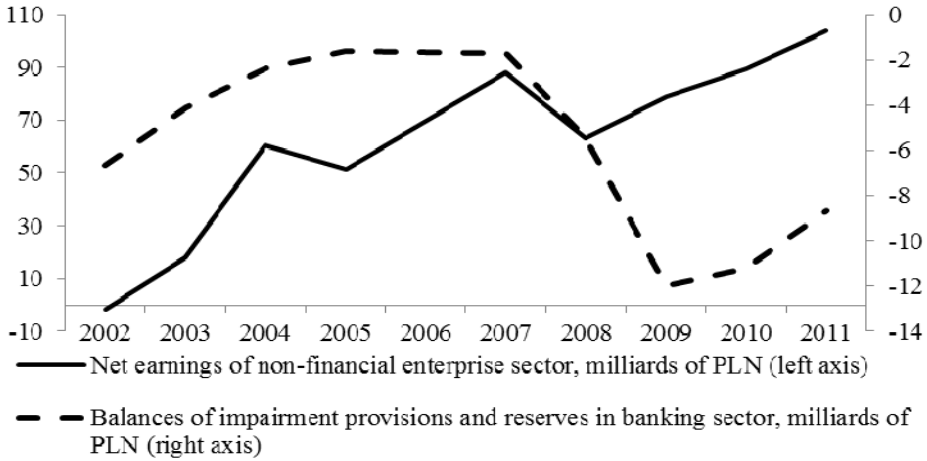


**Figure 5.** Average paid employment and net earnings in non-financial enterprise sector in the years 2002–2011

Source: own elaboration.

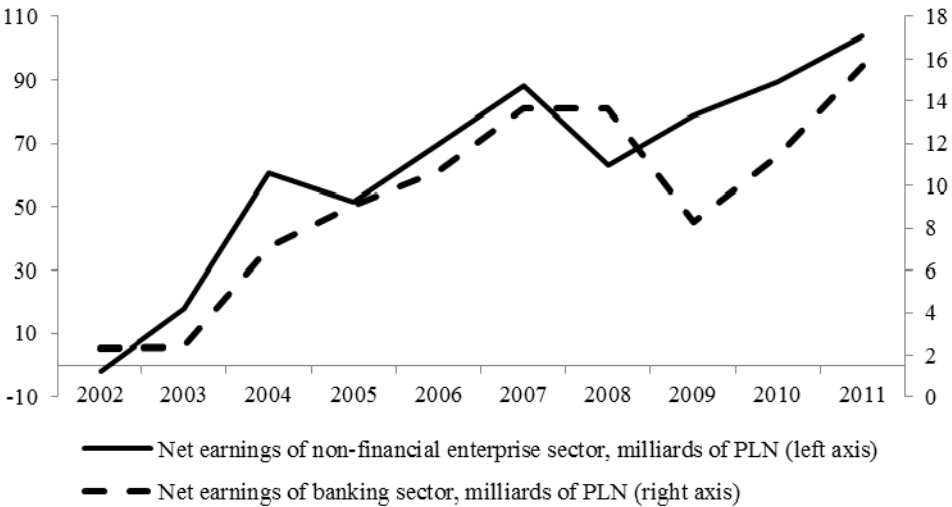
The comparison of changes in the net earnings for both analyzed sectors over the period 2002–2011 supports the claim that the earnings of banking sector reacted with a lag to changes in the non-financial enterprise sector earnings (Fig. 7).

In order to make the above association more apparent, Fig. 8 presents the comparison of banking sector earnings in the period 2003–2011 with the one-year lagged earnings of non-financial enterprise sector.



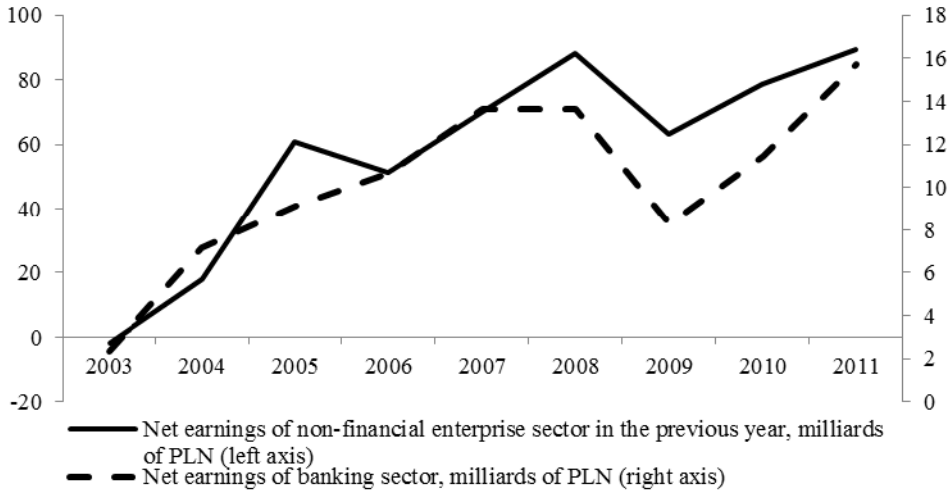
**Figure 6.** Non-financial enterprise sector net earnings and the balances of impairment provisions and reserves in banking sector in the years 2002–2011

Source: own elaboration.



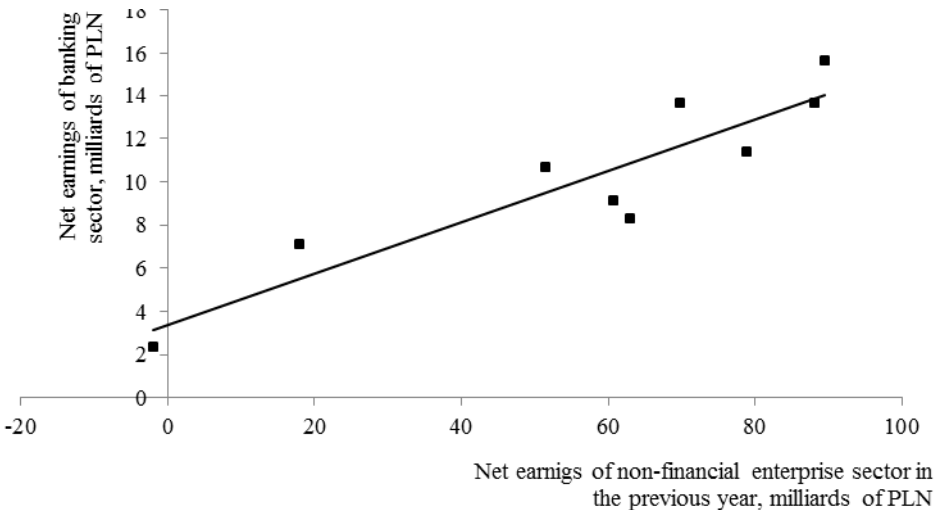
**Figure 7.** Net earnings of non-financial enterprise sector and banking sector in the years 2002–2011

Source: own elaboration.



**Figure 8.** Lagged earnings of non-financial enterprise sector and earnings of banking sector in the years 2003–2011

Source: own elaboration.



**Figure 9.** Correlation between one-year lagged net earnings of non-financial enterprise sector and earnings of banking sector in the years 2003–2011

Source: own elaboration.8

The scatter plot of the one-year lagged earnings of non-financial enterprise sector and the earnings of banking sector over the period 2003–2011 presented in Fig. 9 confirm the explicit positive correlation between these two categories. Due

to a low number of observations the conducted test of normality of distribution of both analyzed variables did not allow for rejection of the hypotheses on normality. The estimated Pearson linear correlation coefficient and the Spearman's rank correlation coefficient equaled 0.912 and 0.917, respectively, and they were both statistically significant at the level of 0.01.

In order to deepen the assessment of strength of the analyzed association, the structural parameters of the linear regression model between the one-year lagged net earnings of non-financial enterprise sector (NEES) and the net earnings of banking sector (NEBS) were estimated:

$$\widehat{NEBS}_t = 0.119 \cdot NEES_{t-1} + 3381.953$$

(0.020)(1306.310)

Both estimated parameters turned out to be statistically significant (the regression coefficient at 0.01 level and for the intercept at 0.05 level). The adjusted  $R^2$  of the model equaled 0.807, indicating that the variability of the one-year lagged net earnings of non-financial enterprise sector explained almost 81% of the variability of the net earnings of banking sector in the analyzed period. The increase of the net earnings of non-financial enterprise sector by one milliard of PLN resulted, on average, in the increase of the net earnings of banking sector of 119 million PLN in the following year.

The obtained results confirm that the one-year lagged earnings of non-financial enterprise sector were a significant factor influencing the earnings of banking sector in Poland in the analyzed period.

## 6. Conclusions

The conducted theoretical research and empirical analysis suggest a significant impact of the non-financial enterprise sector earnings on the banking sector earnings in Poland over the period 2002–2011. The estimated Pearson correlation coefficient (0.912) as well as the Spearman's rank correlation coefficient (0.917) between the one-year lagged net earnings of non-financial enterprise sector and the net earnings of banking sector revealed a strong positive and statistically significant association. The variability of net earnings of non-financial enterprise sector allowed for explanation of almost 81% of variation in net earnings of banking sector. The obtained results indicate that the historical data on the earnings of non-financial enterprise sector could serve as a valuable source of information for the short-term financial planning in banks.

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## **WPLYW WYNIKÓW FINANSOWYCH SEKTORA PRZEDSIĘBIORSTW NIEFINANSOWYCH NA WYNIKI FINANSOWE SEKTORA BANKOWEGO NA PRZYKŁADZIE RYNKU POLSKIEGO**

**Streszczenie:** Polski system finansowy charakteryzuje się wiodącą rolą sektora bankowego i silnymi powiązaniem między nim a sektorem przedsiębiorstw niefinansowych. Wyniki finansowe sektora przedsiębiorstw w długim okresie oddziałują z opóźnieniem na wyniki sektora bankowego zarówno bezpośrednio, jak i pośrednio. Celem artykułu jest określenie wpływu wyników finansowych sektora przedsiębiorstw niefinansowych na wyniki sektora bankowego w Polsce w okresie 2002–2011. Uzyskane rezultaty empiryczne wskazują, że opóźnione o 1 rok wyniki finansowe netto sektora przedsiębiorstw były istotnym czynnikiem kształtującym wyniki finansowe netto sektora bankowego w analizowanym okresie, co implikuje możliwość praktycznego wykorzystania stwierdzonej zależności w krótkookresowym planowaniu finansowym banków.

**Słowa kluczowe:** przedsiębiorstwa niefinansowe, banki, wynik finansowy.