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## Are Bank Fees in the Czech Republic Excessive?

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### Abstract

This paper deals with both theoretical and practical aspects of bank fee and commission income in the European Union with a special emphasis on the Czech Republic. Since fee income represents the largest part of non-interest income earned by banks, it remains a major challenge for bank management to set and maintain an appropriate fee policy. However, solving for the optimal fee structure has not yet been accomplished either on a theoretical level, or in actual practice. In the empirical part of the paper, we analyse banking fee income in EU banking sectors based on three different indicators: the magnitude of net fee and commission income relative to total operating income, to total assets and to gross domestic product. Our results show that the Czech banking sector was not abnormally dependent on fee income compared to other EU countries in the period 2007-2012. As a result, we argue that the high profitability of Czech banks cannot be attributed to abnormal banking fees and commission income, but rather that other factors should be considered. We also concluded that the market concentration of the Czech banking sector declined since the Herfindahl index decreased in last years. The rise in competition was caused mainly by new entrants we refer to as 'low-cost banks' that offer a limited product portfolio and provide a large part of their services without fees and commissions. Consequently, we have determined that the business models of some low cost banks in the Czech Republic are not sustainable from a longer term perspective.

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## 1. Introduction

The main aim of this paper is to analyze bank fee and commission income across EU countries with a special emphasis on the Czech banking sector. We investigate whether the level of bank net fee and commission income (NFCI) is higher in the Czech Republic than in the European Union. In the theoretical part, we discuss the fee puzzle regarding the optimal fee structure in theory and deal with the rationality of imposed fees in different banking business models with their positive and negative aspects. In the empirical part we investigate banking fee income across EU banking sectors in the 2007-2012 period. Moreover, we discuss the impact of market concentration on the magnitude of banking fees on both the EU and country levels. We also focus on the development of banking fee income in the Czech Republic and pose a question how new entrants influence the overall level of NFCI in the Czech banking sector in last years.

The rest of the paper is structured as follows. Section 2 describes the theoretical background, where philosophy of a fee is defined and the optimal level of fees in different banking businesses discussed. In Section 3 we provide empirical research and analyze banking fees in EU-27 based on three different indicators. Besides basic descriptive statistics, we also analyse the relation between NFCI and bank's profitability, as well as the influence of banking sector concentration on the magnitude of banking fees. In the second part of the section we examine banking fee income in the Czech Republic in more detail and discuss different fee policies of selected Czech banks. Section 4 summarizes the paper and states final remarks.

## 2. Theoretical background

### 2.1. *Philosophy of a fee*

Fees accompany people all around the world for very long time. Thomson (1911) defines a fee as the sum of money which is to be paid for a service rendered. The difference between fee and charge is the professionalism of the service provided. Whereas charge is simply a price demanded for a thing or service, fee requires the service to be from a professional provider. In most cases we deal with lump sum fees that are usually paid as remuneration for services which are used just by a given number of customers or which exact price would be difficult or inefficient to quantify. One can distinguish many different categories of fees that can be paid either to public or private entities such as governmental fees for public services or licences and permits, fees for telecommunication services, fees for above-standard medical care or banking fees.

Clients do not perceive some fees anymore. However, some other fees, such as banking fees, are from the customers' point of view very difficult to accept. Still, banks provide services with added value and therefore they charge a fee for it. Banking fees are used not only as a price for services but also as a penalty. For instance, when the account balance is under a required amount, the client may be asked to pay a fee as a compensation for non-fulfilment of the demanded limit. There are also fees encouraging bank's customers to use automated services.

Banks report in their financial statements NFCI as part of operating income. It should be noted that fee and commission are not the same. Whereas a fee refers to a fixed payment, commission is mostly calculated as a percentage of the value of each transaction that the client orders. Fees are mainly applied in valuation of those products whose nature is not transferring a certain risk on a bank including non-sufficient funds fees, overdraft charges, late fees, monthly service charges, account research fees, payment cards-related fees (Půlpán, 1998). On the other hand, commission applies to products by which the bank accepts certain level of risk including commissions from insurance activities, commission for agency service regarding selling products of external financial entities, commission due to guarantees granted, commission on trust and fiduciary activities.

## 2.2. Literature review

When studying the optimal level of NFCI from a bank's point of view it is important to look which structure of income leads to highest financial stability of a bank. Gambacorta and van Rixtel (2013) differentiate three main business models: i) commercial banks, ii) investment banks and iii) universal banks.<sup>1</sup> For a long time universal banking seemed to be a perfect solution that offers an optimal income diversification and financial stability. In response to the financial crisis the economic costs and benefits of universal banks were reassessed and several alternative models that should separate certain banking activities were considered. The main three alternatives of such separation are as follows: the Volcker rule in the United States, the Liikanen Report suggested by the European Commission and the Vickers Commission proposed in the United Kingdom. The Volcker rule forbids the deposit taking institutions the proprietary trading. The restriction is not very broad but is quite strict, because the trading activities are not allowed to exist neither in different subsidiaries within the same group. The Liikanen Report restricts besides the proprietary trading also market-making, but is not so strict. The activities are allowed to be executed within the same group as long as they are in separate subsidiaries. The Vickers Commission's approach is even boarder as it excludes a large set of banking activities from the protected entity. The activities can exist in different subsidiaries within the group but subject to intragroup constraints (Gambacorta and van Rixtel, 2013).

One can argue whether the separation of commercial and investment banking would really improve the financial stability or whether the less diversified entities would be more sensitive to market changes. In other words, a question remains whether non-interest income (NII) - a very rough proxy for more investment banking-like activities - increases or decreases the riskiness of a bank. Lepetit et al. (2007) claim "*banks expanding into non-interest income activities present higher risk and higher insolvency risk than banks which mainly supply loans*". Higher NII may also lead to increased earnings volatility since it is usually more volatile than interest income. Moreover, they claim that a positive link with risk is more accurate for small banks and essentially driven by commission and fee activities.

On the other hand, Köhler (2012) argues that banks will become more stable if they increase their non-interest income and that the effect decreases with the bank size. In his later paper Köhler M. (2013) provides a more detailed research and finds substantial benefits from income diversification for smaller and more retail-oriented banks in Germany. Those banks can become more stable by increasing their share of NII. On the contrary, larger and more investment-oriented banks should increase their share of interest income to become more stable. Smith et al. (2003) state that the income diversification can reduce the risk and stabilize the profitability of banks only if the different earnings are independent. They found a negative correlation between interest and non-interest income. NII therefore seems to stabilize bank's total operating income.

Some of the above claims are supported by past US empirical evidence. DeYoung and Rice (2004b) concluded that reliance on fee-based activities tends to increase the volatility of banks earnings streams. Moreover, DeYoung and Rice (2004a) found that well managed commercial banks expand more slowly into non-interest activities. On a related note, Stiroh (2002) said that greater reliance on NII is riskier. He also claimed that the declining volatility of net operating income did not reflect the diversification benefits from non-interest income, but rather reduced volatility of net interest income.

Thus we can say that the NII and especially NFCI seems to influence bank's stability and riskiness. The exact impact of the level of non-interest income is dependent on the business model and size of the bank, however. Whereas commercial banks, mainly dependent on interest income, can gain by increasing their fees and commission income, investment banks should rather rely more on the interest income to stabilize their profits. All in all, the question which business model and which level of NII is optimal has not been solved.

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<sup>1</sup> Note that investment banks make their money mainly on trading and net fee and commission income (with an approx. >40% NFCI/total income ratio) whereas commercial banks make their profits mainly on interest income, universal banks stand somewhere in between.

### 3. Empirical analysis

In this section we provide an analysis of banking fees based on data taken from the European Central Bank (ECB) and the Czech National Bank (CNB). The paper includes the EU-27 data from 2007 to 2012.<sup>2</sup> For better transparency we divided the EU into five different groups (PIIGS, CEE, EU-17, EU-27 and CZ<sup>3</sup>) that are compared to each other. First, we compare fee income of EU-27 banking sectors based on different ratios and indicators.<sup>4</sup> Besides the basic ratios we also discuss the relation between fee and commission income magnitude and return on average equity (ROAE) and the influence of the market concentration on the NFCI magnitude. Third, we take a narrow view on banks' fee income in the Czech Republic. We start by looking at the development of the fee income in the Czech banking sector as a whole in the 2007–2012 period and then we compare the fee income strategies of different Czech banks. Unlike many EU countries, the Czech bank sector has reported high capital and liquidity buffers in recent years as highlighted by Mandel and Tomšík (2014) or Mejstřík et al. (2014).<sup>5</sup>

#### 3.1. Bank fees in the EU

This part analyses the NFCI levels of different groups of EU countries. Total banking income is split up into 3 categories: i) net interest income, which represents the major part of total operating income in banks in all European countries, ii) NFCI, which is the most important part of non-interest income in the examined group of countries and iii) other net income that stands for all income of a bank that is different from the previous two, in other words the income from non-core businesses.

##### 3.1.1. Comparison of fee income magnitude in different EU countries

When assessing banking fee income in the EU, we investigate three indicators: net fee and commission income to total income ratio (NFCI/TI), net fee and commission income to total assets ratio (NFCI/TA) and net fee and commission income to gross domestic product ratio (NFCI/GDP).

Fig. 1 shows that in 2007–2012 the average NFCI/TI ratio amounted to 23.9% in the Czech Republic. It means that it was lower than in most of other countries included in the EU-27 where the average level reached 24.6%. Only CEE countries posted lower average NFCI/TI ratio (22.5%). The difference seems to come rather from the earlier years, because in 2012 the Czech Republic reported lower NFCI/TI ratio than other CEE countries.

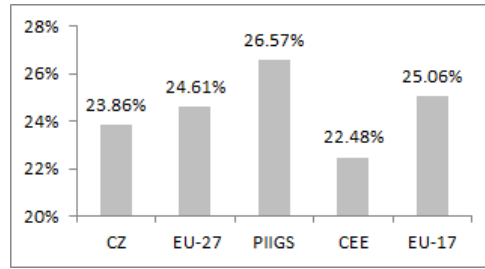
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<sup>2</sup> The yearly total operating income for Denmark was not available in the ECB database. We took the semi-annual data from 2010 to 2012 (which were the only data available) and approximated them to yearly data by multiplying by two. The 2008 and 2009 yearly total operating income was approximated by the averages obtained from 2010 and 2012 entries.

<sup>3</sup> The exact composition of each group can be found in Appendix A.

<sup>4</sup> The data for some countries were available starting from year 2008 and not already from 2007. Starting from 2007 we got data for – BE, BG, CZ, FI, FR, IT, LT, MT, PL, PT, RO, SK, SI, starting from 2008 we got data for – AT, CY, DE, DK, EE, EL, ES, HU, IE, LU, LV, NL, SW, UK. The descriptive statistic and all other analyses were adequately adjusted to take into account this fact.

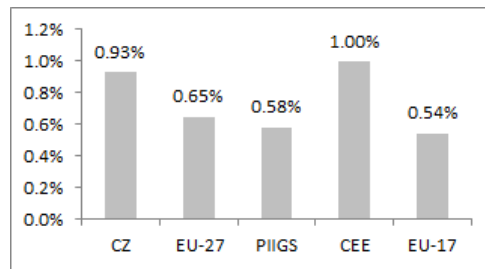
<sup>5</sup> For more details on regulation of the Czech banking sector see Dvořák (2010), Mandel and Tomšík (2014), Bláhová (2012), Rippel et al. (2012), Teplý (2012) or Šutorová and Teplý (2013; 2014a; 2014b); for related risk management practices we refer to Málek et al. (2007), Cimburek and Řežábek (2008), Daňhel and Ducháčková (2010), Stavárek and Vodová (2010), Buzková and Teplý (2012), Čermohorská et al. (2012; 2014), Jakubík and Teplý (2011), Janda et al. (2013), Janda and Zetek (2015), Baran and Witzany (2014), Diviš and Teplý, (2005), Schlossberger (2011), Stádník (2013; 2014), Vodová (2013), Zamrazilová (2014) or Teplý and Tripe (2015).



Source: Authors using data from the ECB

Fig. 1: Net fee and commission income/Total income – averages for 2007–2012

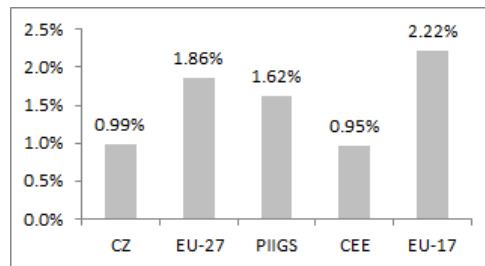
On the other hand, the Czech Republic reported the NCFI/TA higher than most of other EU-27 countries, what can be explained by a lower size of banks in the Czech Republic measured by total assets. This can be illustrated when comparing the Czech Republic and Finland. Both countries post nearly the same NCFI and NCFI/TI remained at approximately 24% on average in both of them in 2007–2012, but the NCFI/TA was in Finland almost three times lower than in the Czech Republic. So we conclude that the primary reason for different NCFI/TA ratios stems in a relative smaller bank intermediation in the Czech Republic compared to EU-17 countries. On the other hand, when comparing the Czech Republic with other CEE countries, the Czech Republic does not report an extraordinarily high NCFI/TA ratio (Fig. 2).



Source: Authors using data from the ECB

Fig. 2: Net fee and commission income/Total assets – averages for 2007–2012

The third indicator we are using to analyse net fee and commission income in EU countries is NCFI/GDP. In the 2007–2012 period, the Czech Republic together with Finland, Poland, Romania and Slovakia reported the lowest NCFI/GDP ratios of all EU-27 countries. The Czech Republic and CEE are the only countries that reported NCFI/GDP ratios below 1.0%, whereas the other groups’ ratios exceeded 1.5% as documented in Fig. 3. This figure indicates that banks resided in the Czech Republic do not report a higher-than-average NCFI/GDP ratio.



Source: Authors using data from the ECB

Table 1 summarizes results of the above-mentioned indicators and provides evidence that the Czech banking sector does not rely on NFCI more than the other EU banking sectors measured by NFCI/TI, which is probably the most important indicator in context of banking fees, and the NFCI/GDP. Nevertheless, the Czech banking sector reported a higher-than-average NFCI/TA what is caused chiefly by a relatively lower size of Czech banks compared to their EU peers.

Table 1: Average net fee and commission income ratios of different groups of EU countries compared to EU-27 averages (years 2007–2012)

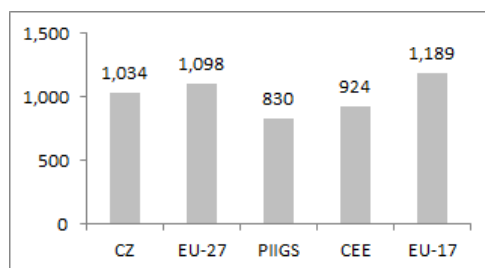
	NFCI/TI	NFCI/TA	NFCI/GDP
CZ	-	+	-
PIIGS	-	-	-
CEE	+	+	-
EU-17	+	-	+

Source: Authors' computations

### 3.1.2. Influence of the market concentration on the magnitude of fee income

The relationship between the competition and the magnitude of NFCI may be analysed in several ways. For instance, the ECB provides the Herfindahl index (HI) as a measure of market concentration through assessing the size of firms in relation to the industry. The HI's values range between 0–10,000. Values below 1,000 indicate low concentration, values of 1,000 to 1,800 correspond to moderate concentration, and a HI over 1,800 indicates high concentration (Neven and von Ungern-Sternberg, 1998).

Fig. 4 displays that – on average – there is a moderate market concentration in the European Union (EU-27 HI averages around 1,100). The Czech Republic lies with the HI of 1,030 slightly below the average which means that the Czech banking sector is more competitive than banking sectors of other EU countries, but still it belongs to the group with moderate concentration. PIIGS and CEE report the HI even lower than the Czech Republic. On the other hand, EU-17 countries post average HI of nearly 1,200 but they still count to moderate concentration group. The relatively high HI is caused mainly by Finland, Estonia and Netherlands with HIs above 2,000.



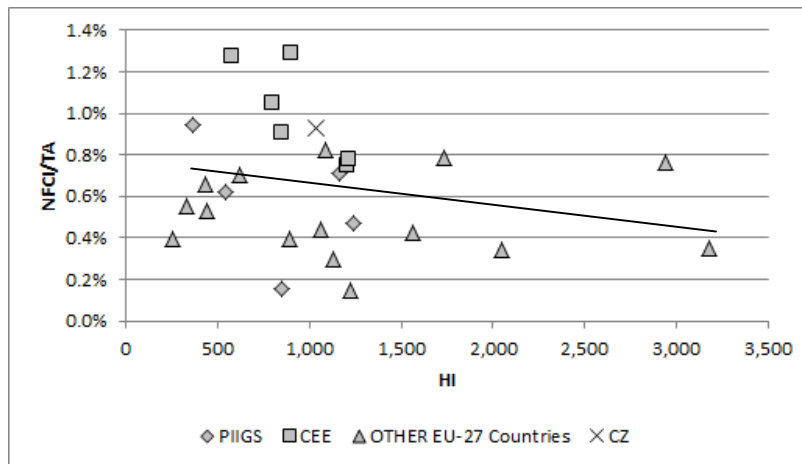
Source: Authors using data from the ECB

Fig. 4: Average Herfindahl index from 2007 to 2012

Increasing competition is assumed to be one of the main reasons forcing banks to switch to non-traditional fee bearing activities (Edwards and Mishkin, 1995, Davis and Tuori, 2000). Therefore, we hypothesize that higher competition is connected with higher level of fee income in the banking sector. Still, the relationship between NFCI and HI need not to be necessarily the one stated above since the lack of competition may enable to charge high banking fees. On highly concentrated markets cartels may prohibit the players to reduce their prices; therefore, a possibility to switch to a cheaper provider of banking services remains limited. We also assume that most clients are

conservative and not enough flexible to deposit their money or take a loan from abroad because of financial fragmentation in EU markets. Moreover, in case of high concentration the bank will take the advantage of its market power not only by charging higher fees, but it will most probably exhibit also higher interest margins. Therefore, the share of fee income does not need to increase. Consequently, we expect to find a negative relation between NFCI and HI.

Fig. 5 demonstrates empirical results. We regressed the average HI on the average NFCI/TA ratio. In order to obtain convenient results, we have chosen a NFCI/TA ratio as an indicator of the magnitude of net fee and commission income because the Herfindahl index is constructed by the ECB for credit institutions in terms of total assets. At the first sight, it can be seen that the relation between HI and NFCI/TA ratio, if there is any, is not statistically strong (the points on the Fig. 5 are distributed very randomly). For example, the most concentrated banking sectors (such as Estonia and Finland both with the HI approximately 3,000) do not have higher NFCI/TA than the EU-27 average.



Source: Authors using data from the ECB

Fig. 5: EU-27 – Relation between Net fee and commission income/Total assets and the Herfindahl index based on average data from 2007 to 2012

Fig. 5 plots the following regression line:

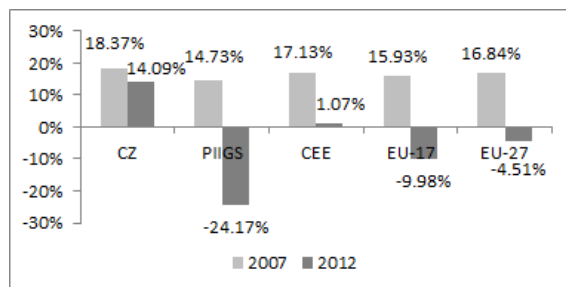
$$\text{NFCI/TA} = -0.9\text{E} - 07 \text{ HI} + 0.007 + e, \text{ where } e \text{ is the disturbance.} \quad (1)$$

The relation between NFCI/TA and HI seems to be in line with what we have expected. Anyhow, the regression results are not convenient because its  $R^2$  amounts only 0.0405 meaning that approximately 4% of total variation in the dependent variable is explained by the variation in independent variable.<sup>6</sup> Moreover, the coefficient of HI is very low in absolute terms and insignificant (the p-value is 0.314). This implies that the HI influences the NFCI/TA ratio only marginally, if at all. There are other factors that are omitted in our regression that could explain the magnitude of fee and commission income much better. To conclude, when examining the impact of the market competition on the magnitude of NFCI on international level, the obtained results show no real dependency between those two variables. This surprising result implicates that even concentrated markets in terms of assets might be competitive in terms of NFCI.

<sup>6</sup> Adjusted  $R^2$  is 0.0021.

### 3.1.3. Comparison of profitability of EU banking sectors

Fig. 6 depicts the change in ROAE between 2007 and 2012 in different groups of EU countries. In 2007, the differences in ROAE in the individual countries were not so strong. Moreover, in 2007 all examined banking sectors were in black numbers and ROAE of the Czech Republic was just slightly above the EU-27 average (18.4% vs. 16.8%). This changed heavily during the global crisis. In 2012, nine of the twenty-seven EU countries reported a negative ROAE. Furthermore, the losses of those countries were so huge that the overall average ROAE for EU-27 resulted negatively (especially in PIIGS countries with average ROAE at -24.2%). On the other hand, CEE countries remained in black numbers in 2012, but also their average ROAE dropped heavily by more than 16% to a mere 1%. In 2012, the Czech Republic reported the second largest ROAE in the European Union after Estonia (14.1% vs. 14.2%).



Source: Authors using data from the ECB and the IMF

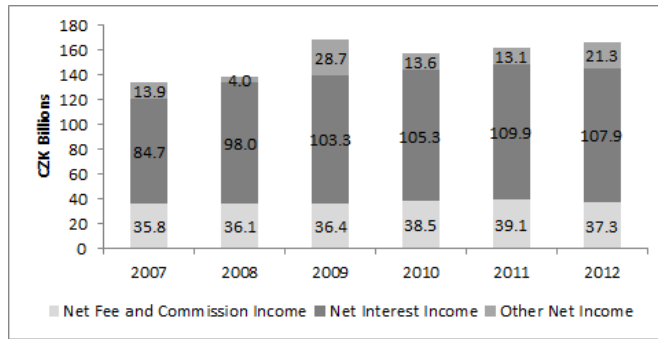
Fig. 6: ROAE in different groups of European countries in 2007 and 2012

The pending soundness of the Czech banking sector can be attributed mainly to banks' proper risk management and high cost efficiency (EBF, 2012). This has also prevented the Czech banking market from large losses during the global financial crisis. In this aspect, the following reasons played a significant role: i) a relatively small exposure to toxic assets and PIIGS countries, ii) traditional conservative commercial banking concentrated on domestic market and related low exchange rate risk, iii) centralized 'under-one-roof' and conservative supervision, iv) conservative clients and high liquidity surplus (with a low dependency on inter-bank market or central bank, loan-to-deposit ratio is constantly under 80%), v) sufficient capital buffers (the capital adequacy ratio is higher than 15% in the Czech Republic) and a high quality of capital (EBF, 2012). All in all, we can say that the high profitability of the Czech banking sector may be attributed to proper risk management rather than to a high level of banking fees as will be discussed also below.

### 3.2. Bank fees in the Czech Republic

In this section, we describe the NFCI in the Czech Republic based on data provided by the CNB. As in previous sections, total operating income is split up into three groups: i) net interest income, ii) net fee and commission income and iii) other income. Fig. 7 depicts that – as in other EU countries – interest income forms the largest part of total income in the Czech banking sector, what corresponds to the applied commercial banking model in these countries. The second greatest part of income is acquired from banking fees that account for the most important non-interest income of banks. The figure illustrates that the NFCI increased slightly in the 2007–2012 period by from CZK 35.8 billion to CZK 37.3 billion, what implies a mere CZK 1.4 billion rise or a 0.8% compound annual growth rate.

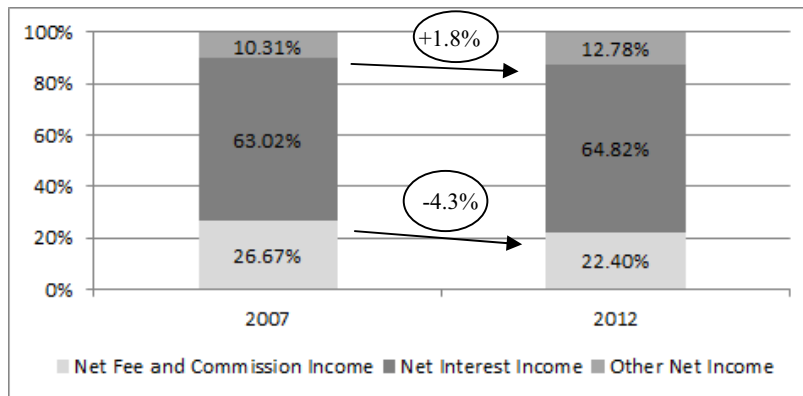




Source: Authors using data from the CNB

Fig. 7: Czech banking sector – Total operating income decomposition 2007–2012

It is worthwhile to note that despite the fact that the NFCI increased in absolute values between 2007 and 2012, in relative values its share on the total income fell by 4.3% (from 26.7% in 2007 to 22.4% in 2012). This decline can be seen in Fig. 8. On a related note, interest income share went up by 1.8% during the same time period. From this we can conclude that the NFCI/TI has been decreasing in the Czech banking sector, which has been caused by higher competition as analysed below.



Source: Authors using data from the CNB

Fig. 8: Czech Republic – Total operating income decomposition 2007 and 2012 in Percent

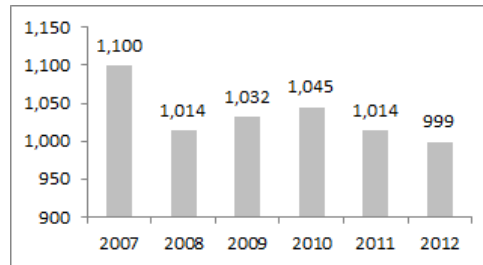
### 3.2.1. Different banking models in the Czech Republic

As of December 31st 2012, the Czech banking sector consisted of 43 bank institutions, there of 18 banks, 20 foreign bank branches and 5 building societies. The CNB recognizes five banking types in the Czech Republic: i) large banks, ii) medium-sized banks, iii) small banks, iv) foreign bank branches and v) building societies.<sup>7</sup> About 80% of the capital in the Czech banks originates in foreign countries. The TOP 4 banks dominated the market with almost 60% share. However, their share was steadily declining over the last few years due to relatively strong competition from medium and small sized banks (CNB, 2013).

Fig. 9 shows the development of HI in the Czech Republic from 2007 to 2012. In all considered years, there was moderately high market concentration in the Czech banking sector since HI fluctuated from 999 to 1,100. The

<sup>7</sup> For a complete list see CNB (2013, p. 105). Financial Market Supervision Report 2012

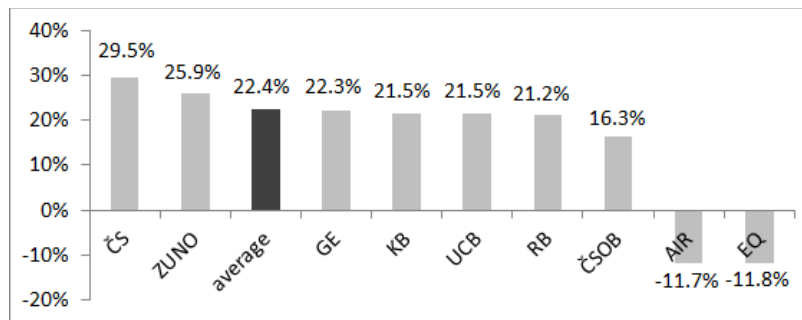
decrease in HI between 2007 and 2012 can be attributed mainly new market entrants which we call low cost-banks,<sup>8</sup> i.e. the banks offering a limited product portfolio and providing a large part of their services without fees. The first low-cost bank – mBank – came to the Czech Republic in 2007 and filled the gap on the Czech market; nowadays there are about five low-cost players in the Czech banking market. To attract new clients, these banks often offer high interest on saving accounts. Therefore, these excessive rates might be perceived as acquisition costs rather than a money making business.



Source: Authors using data from the ECB

Fig. 9: Development of the Herfindahl index in the Czech Republic between 2007 and 2012

Not surprisingly, the low-cost banks and other banks differ in their income structures. Due to their basic ‘zero-fee policy’ strategy, the low-cost banks’ NFCI is marginal or even negative. Fig. 10 shows that ‘traditional’ banks (Česká spořitelna, ČSOB, Raiffeisenbank, Komerční banka, UniCredit Bank, GE Money Bank) reported in 2012 positive NFCI/TI in a range from 16.3% (ČSOB) to 29.5% (ČS). On the other hand, low-cost banks Equa Bank (EQ) and Air Bank (AIR) reported negative NFCI in the same year. ZUNO Bank (ZUNO), with NFCI/TI of 26% seems to be rather one of the ‘traditional’ banks that rely heavily on NII. In reality, the high ratio is only due to the fact that ZUNO Bank was in red numbers in 2012. It had fee and commission expense of CZK 6 million but due to the operating loss the ratio resulted positive.



Source: Authors using data from individual banks and the CNB

Fig. 10: Net Fee and Commission Income/Total Operating Income in Czech Banks in 2012

The future development of low-cost banks remains a big question mark, however. First, they often rely on funding from savings accounts, i.e. risky instruments that cannot be hedged by standard risk mitigation techniques (Džmuráňová and Teplý, 2013). Second, low-cost banks offer a limited product portfolio (e.g. savings and current accounts, consumer loans, mortgages) what makes them vulnerable to competition and low prices. Sometimes this is called ‘commoditization’ defined as a lack of meaningful differentiation in these products, i.e. a client focuses on

<sup>8</sup> Sometimes called as ‘electro’ or ‘internet’ banks.

product price rather than product quality. Last but not least, some low cost banks report risky portfolios since they rely solely on interest income and most likely lend money to risky borrowers (often rejected by traditional banks). We argue that many low-cost banks in the Czech Republic serve as special purpose vehicles within their financial groups rather than banks maximizing their profits.

#### **4. Conclusion**

This paper focused on both theoretical and practical aspects of banking fee and commission income in the European Union with a special emphasis on the Czech Republic. Since fee income represents the largest part of non-interest income earned by banks, it remains a major challenge for bank management to set and maintain an appropriate fee policy. Nevertheless, solving for the optimal fee structure has not yet been accomplished either on a theoretical level, or in actual practice.

In the empirical part of the paper, we analysed banking fee income in EU banking sectors based on three different indicators: the magnitude of net fees and commission income relative to total operating income, to total assets and to gross domestic product. Our results show that the Czech banking sector was not abnormally dependent on fee income compared to other EU countries in the period 2007-2012. As a result, we argue that the high profitability of Czech banks cannot be attributed solely to abnormal banking fees and commission income, but rather that other factors should be considered (e.g. banks' sound risk management, good strategy of cost optimization, high liquidity and capital buffers).

We also concluded that the market concentration of the Czech banking sector is moderate despite it declined during the last years (the Herfindahl index decreased). The rise in competition was caused mainly by new entrants we refer to as 'low-cost banks' that offer a limited product portfolio and provide a large part of their services without fees and commissions. Consequently, we have determined that the business models of some low cost banks in the Czech Republic are not sustainable from a longer term perspective.

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#### **Appendix A.**

EU-27

Austria (AT)

Belgium (BE)

Bulgaria (BG)

Cyprus (CY)

Czech Republic (CZ)

Denmark (DK)

Estonia (EE)

Finland (FI)

France (FR)

Germany (DE)

Greece (EL)

Hungary (HU)

Ireland (IE)

Italy (IT)

Latvia (LV)

Lithuania (LT)

Luxemburg (LU)

Malta (MT)  
Netherlands (NL)  
Poland (PL)  
Portugal (PT)  
Romania (RO)  
Slovakia (SK)  
Slovenia (SI)  
Spain (ES)  
Sweden (SW)  
United Kingdom (UK)

EU 17  
Austria (AT)  
Belgium (BE)  
Cyprus (CY)  
Estonia (EE)  
Finland (FI)  
France (FR)  
Germany (DE)  
Greece (EL)  
Ireland (IE)  
Italy (IT)  
Luxemburg (LU)  
Malta (MT)  
Netherlands (NL)  
Portugal (PT)  
Slovakia (SK)  
Slovenia (SI)  
Spain (ES)

CEE  
Bulgaria (BG)  
Czech Republic (CZ)  
Hungary (HU)  
Poland (PL)  
Romania (RO)  
Slovakia (SK)  
Slovenia (SI)

PIIGS  
Portugal (PT)  
Ireland (IE)  
Italy (IT)  
Greece (EL)  
Spain (ES)

## References

- Baran, J., Witzany, J., 2014. Yield Curve Construction After Crisis. *Politická ekonomie* 62, 67–99.  
Bláhová, N., 2012. Liquidity Risk – Measurement and Control. *European Financial and Accounting Journal* 7, 41–61.

- Buzková, P., Teplý, P., 2012. Collateralized Debt Obligation's Valuation Using the One Factor Gaussian Copula Model. *Prague Economic Papers* 21, 30-49.
- CNB, 2013. Financial market supervision report 2012. Czech National Bank.
- Cimburek, J., Řežábek, P., 2008. Currency in circulation: global trends and the situation in the Czech Republic, *Politická ekonomie* 56, 739-758
- Černohorská, L., Teplý, P., Vrábel, M., 2012. The VT Index as an Indicator of Market Liquidity Risk in Slovakia. *Journal of Economics* 60, 223–238.
- Černohorská, L., Linhartová, V., 2014. The Impact of Corruption on Soundness of Banking Sector. In: Jircikova, E et al.: 6th International Scientific Conference on Finance and the Performance of Firms in Science, Education, and Practice. Tomas Bata University Zlin, Czech Republic, 199-208.
- Daňhel, J., Ducháčková, E., 2010. Financial Crisis Changed the Role and Statement of Individual Segments of Financial Services. *Ekonomický Časopis (Journal of Economics)* 58, 17-29.
- Davis, P.E., Tuori, K., 2000. The Changing Structure of Banks' Income – An Empirical Investigation. Department of Economics and Finance Research Papers, Brunel University.
- DeYoung, R., Rice, T., 2004a. Noninterest Income and Financial Performance at U.S. Commercial Banks. *The Financial Review* 39, 101–127.
- DeYoung, R., Rice, T., 2004b. How do banks make money? The fallacies of fee income. Federal Reserve Bank of Chicago, *Economic Perspectives*, 34–51.
- Diviš, K., Teplý, P., 2005. Information efficiency of Central Europe stock exchanges. *Czech Journal of Finance* 55, 471-482.
- Dvořák, P., 2010. What to Expect from Basel III? *European Financial and Accounting Journal* 5, 4–6.
- Džmuráňová, H., Teplý, P., 2013. Risk management of savings accounts. Internal research paper, Institute of Economic Studies, Prague: Charles University.
- EBF, 2012. European Banking Sector Facts and Figures 2012. European Banking Federation, available at: <http://www.ebf-fbe.eu/uploads/FF2012.pdf> [Accessed 15.9.2013].
- Edwards, F.R., Mishkin, F.S., 1995. The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy. *Economic Policy Review* 1, 27–45.
- Gambacorta, L., van Rixtel, A., 2013. Structural bank regulation initiatives: approaches and implications. *BIS Working Papers – Monetary and Economic Department* 412.
- Jakubík, P., Teplý, P., 2011. The JT index as an indicator of financial stability of corporate sector. *Prague Economic Papers* 20, 157-176.
- Janda, K., Michalíkova, E., Skuhrovec, J., 2013. Credit Support for Export: Robust Evidence from the Czech Republic. *World Economy* 36, 1588–1610.
- Janda, K., Zetek, P., 2015. Microfinance Revolution: Controversies and Challenges. (In *Czech Mikrofinanční revoluce: kontroverze a vyzvy*), *Politická ekonomie* 63, 108-130.
- Köhler, M., 2012. Which banks are more risky? The impact of loan growth and business model on bank risk-taking. *Deutsche Bundesbank, Discussion Paper* 33.
- Köhler, M., 2013. Does non-interest income make banks more risky? Retail- versus investment-oriented banks. *Deutsche Bundesbank, Discussion Paper* 17.
- Lepetit, L., Nys, E., Rous, P., Tarazi, A., 2007. Bank income structure and risk: An empirical analysis of European banks. *Journal of Banking & Finance* 32, 1452-1467.
- Mandel, M., Tomsík, V., 2011. Regulation of the banking sector from the economic theory's point of view. *Politická ekonomie* 59, 58-81.
- Mandel, M., Tomsík, V., 2014. Monetary Policy Efficiency in Conditions of Excess Liquidity Withdrawal. *Prague Economic Papers* 23, 2-23.
- Málek, J., Radová, J., Štěrba, F., 2007. Yield curve construction using government bonds in the Czech Republic. *Politická ekonomie* 55, 792-808.
- Mejstřík, M., Pečená, M., Teplý, P., 2014. *Banking in theory and practice*. Prague: Karolinum Press.
- Neven, D., von Ungern-Sternberg, T., 1998. The competitive impact of the UBS-SBC mergers. HEC University of Lausanne, available at: <http://www.hec.unil.ch/deep/textes/9805.pdf> [Accessed 14.3.2014].
- Půlpán, K., Ducháčková, E., Musílek, P., Půlpánová, S., Veselá, J., 1998. *Slovník bankovníctví, pojišťovnictví a kapitálových trhů*. Praha: Public History.
- Rippel, M., Suchánková, L., Teplý, P., 2012. The Role of Insurance in Operational Risk Mitigation - A Case Study. *Politická ekonomie* 60, 523-535.
- Schlossberger, O., 2011. Cross-border payment system cuts state boundaries, 9th International Conference on Hradec Economic Days 2011 - Economic Development and Management of Regions Location: Univ Hradec Kralove, Fac Informat & Management, Hradec Kralove, Czech Republic.
- Smith, R., Staikouras, C., Wood, G., 2003. Non-interest income and total income stability. Bank of England, Working Paper 198.
- Stádník, B., 2013. Market Price Forecasting and Profitability – How To Tame Random Walk? *Verslas: Teorija ir Praktika/Business: Theory and Practice* 14, 166–176.
- Stádník, B., 2014. The Puzzle of Financial Market Distributions. *Ekonomický Časopis (Journal of Economics)* 62, 709-727.
- Stavárek, D., Vodová, P., 2010. Analysis of Long-run Relationships on the Credit Market. *E + M Ekonomie a Management* 13, 83–95.
- Stiroh, K.J., 2002. Diversification in Banking Is Noninterest Income the Answer? *Journal of Money, Credit, and Banking* 36, 853-82.
- Šutorová, B., Teplý, P., 2013. The Impact of Basel III on Lending Rates of EU Banks. *Czech Journal of Finance*, 63, 3, 226-243.
- Šutorová, B., Teplý, P., 2014a. The Level of Capital and the Value of EU Banks under Basel III. *Prague Economic Papers*, 23, 2, 143–161.
- Šutorová, B., Teplý, P., 2014b. EU Banks' Profitability and Risk Adjustment Decisions under Basel III. *Ekonomický časopis (Journal of Economics)* 62, 667–692.

- Teplý, P., 2012. The Application of Extreme Value Theory in Operational Risk Management. *Ekonomický časopis (Journal of Economics)* 60, 698-716.
- Teplý, P., Tripe, D., 2015. The TT Index as an Indicator of Macroeconomic Vulnerability of EU New Member States. *Ekonomický časopis (Journal of Economics)* 63, 19–33.
- Thomson, W., 1911. *Dictionary of Banking; a concise encyclopaedia of banking law and practice*. London, New York, Sir I. Pitman & Sons, Ltd, digitalized in 2008, available at: <https://archive.org/details/dictionaryofbank00thomrich> [Accessed 23.4.2014].
- Vodová, P., 2013. Liquid Assets in Banking: What Matters in the Visegrad Countries? *E + M Ekonomie a Management* 16, 113–129.
- Zamrazilova, E., 2014. Monetary policy: short-term stabilization versus long-term risks, *Politická ekonomie* 62, 3-31