

The importance of banking fee income in the EU banking industry - does market concentration matter?

(part 1: Determinants of fee income magnitude)

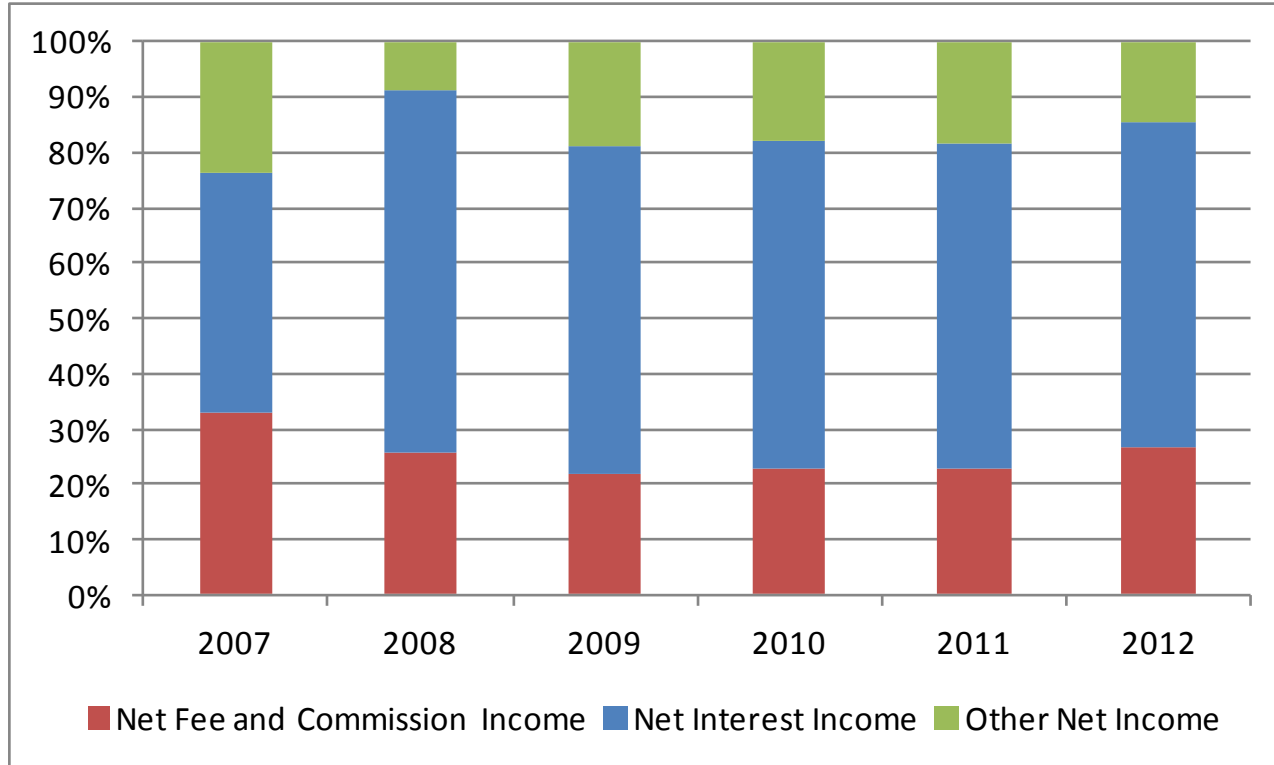
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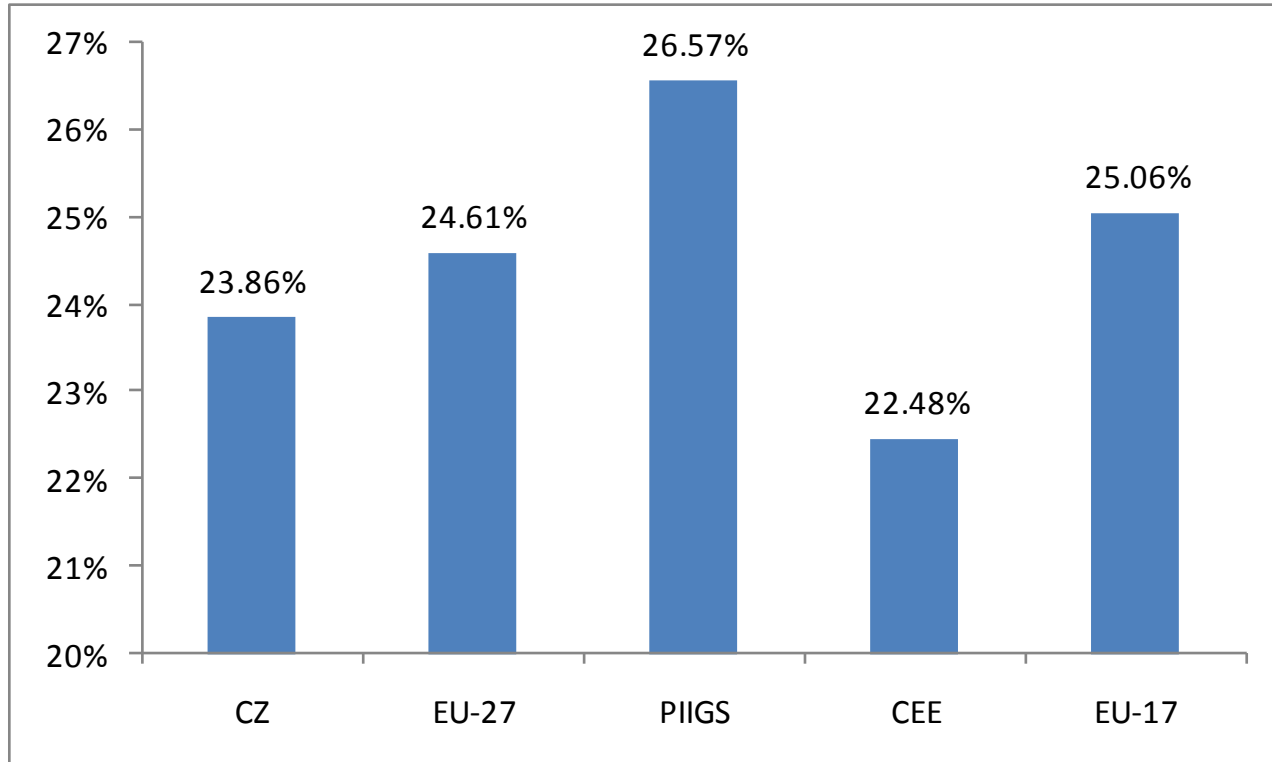
Importance of the topic

- In consequence of banking deregulation and increased competition, profitability of traditional banking activities decreased → expansion into non-traditional activities
- In Europe, non-interest income share increased from 26% to 41% between 1989 and 1998
(Lepetit L., Nys E., Rous P., Tarazi A. (2005), *Product diversification in the European banking industry: Risk and loan pricing implications*, Working paper series)
- Fee income represents the largest part of non-interest income earned by banks
- **Solving for the optimal fee structure has not yet been accomplished either on a theoretical level, or in actual practice**

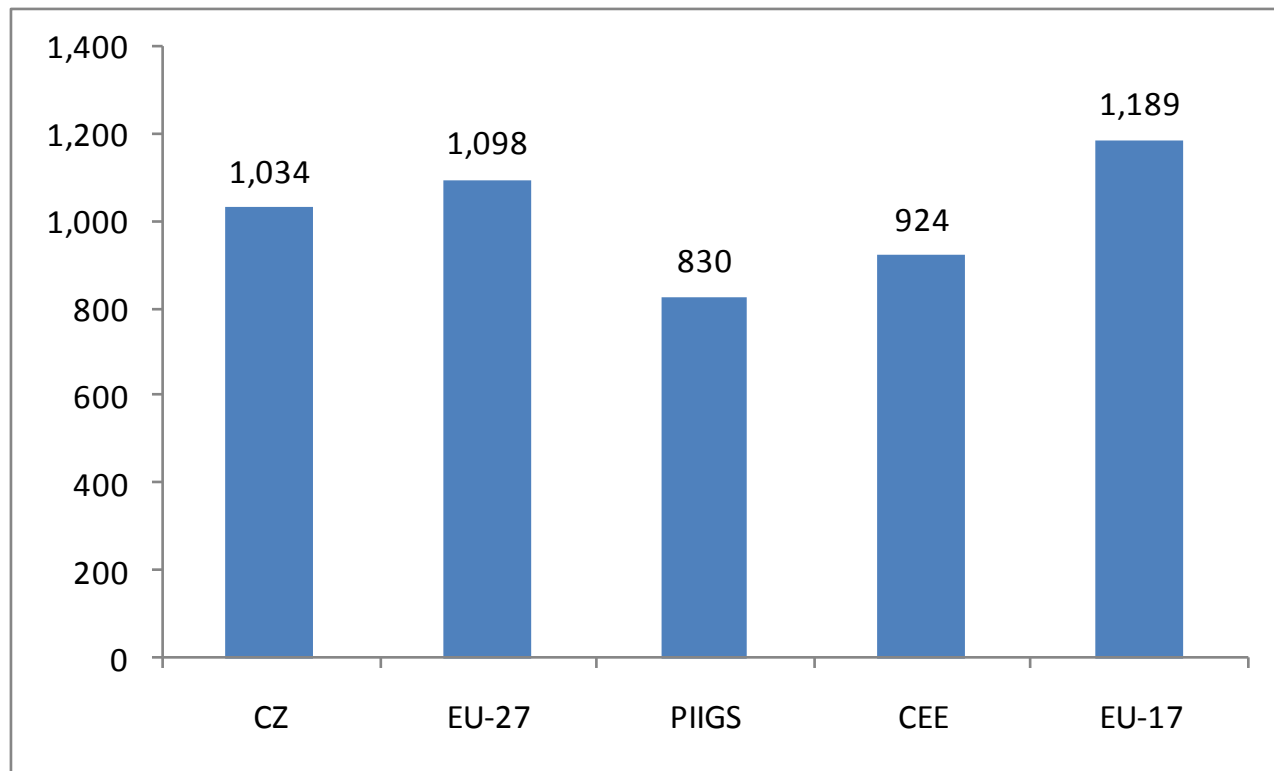
EU-27 - Total operating income decomposition 2007-2012 in Percent of Total income



Net fee and commission income/Total income - averages for 2007-2012



Average Herfindahl index from 2007 to 2012



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

Hypotheses

- The magnitude of banking fees depends largely on the applied business model as well as on banking sector specific and macroeconomic conditions.
- Banks facing high competition tend to have higher shares of income represented by fee.

Literature

- First papers examining determinants of fee income magnitude deal only with bank internal features
- Nowadays, banking sector and macroeconomic conditions are standardly added
- Most of the literature examines the US or emerging countries data – no other study devoted to EU
- Only one paper considered market concentration as an important determinant of fee income share

Dataset

- Data source: BankScope, Eurostat, ECB, World Bank
- Annual data from 2007 to 2012
- All banks with negative fee income were excluded from the final data set
- Together, data for 185 EU banks (925 observations)
- Balanced panel dataset

Methodology

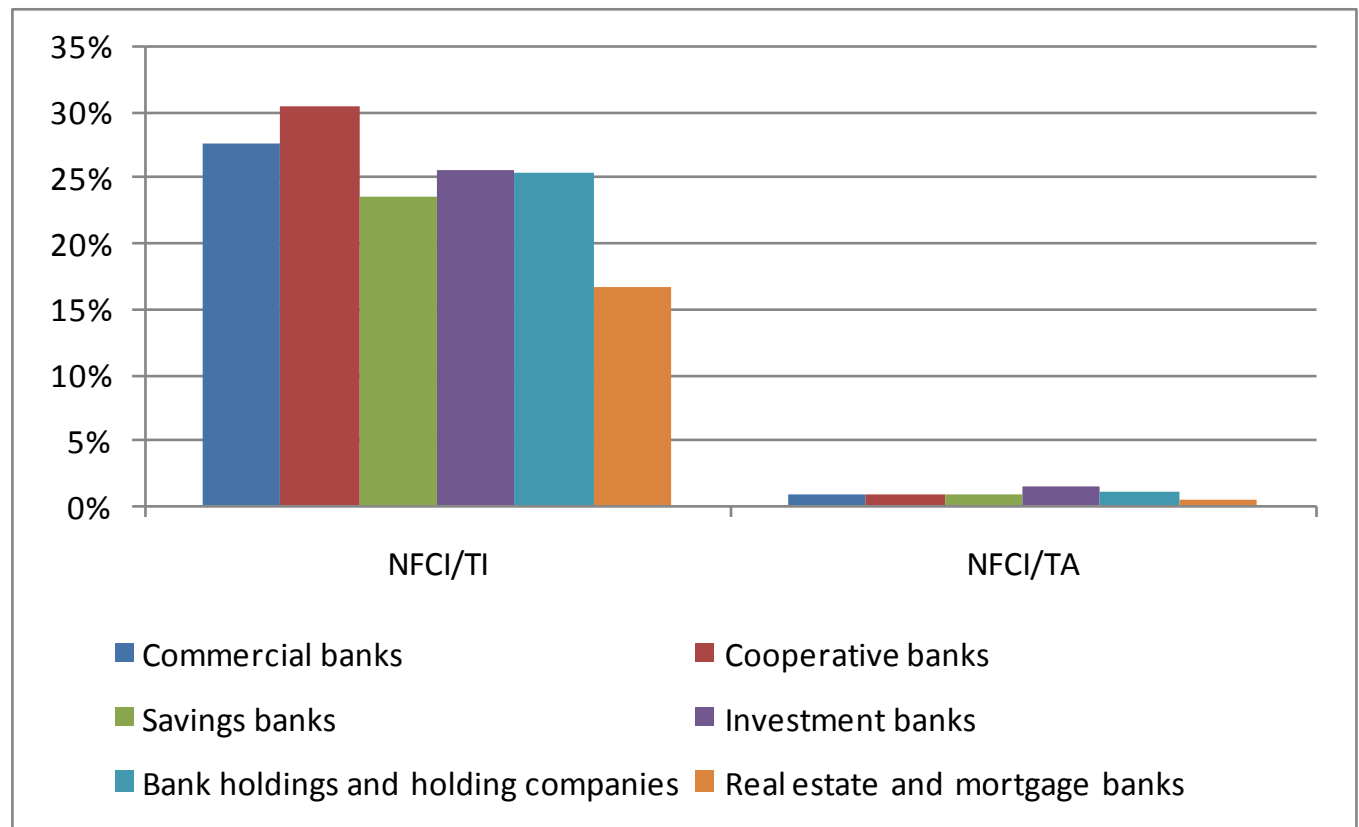
- Approaches for static panel data (FE, RE, OLS) standardly used in literature
- Fee income share persistent in time – standard methods cannot be used due to endogeneity (used only for robustness check)
- Dynamic panel estimation method System GMM – removes endogeneity and allows for time invariant variables

$$y_{i,t} = \alpha y_{i,t-1} + X'_{i,t} \beta + \varepsilon_{i,t}$$

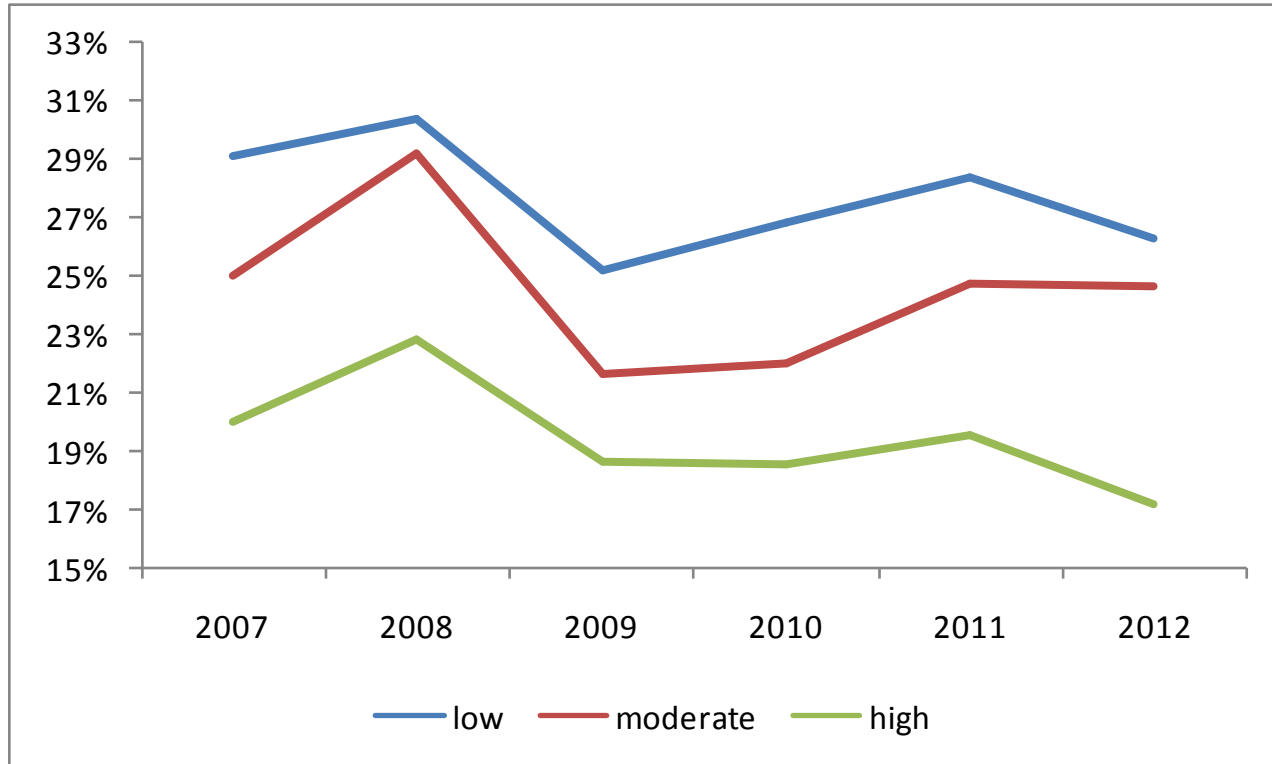
Variables

- Dependent:
 - Net fee and commission income/Total income
 - Net fee and commission income/Total assets
- Explanatory:
 - Bank-specific:
 - NIM
 - Equity to assets ratio
 - NPL to total loans ratio
 - Cost to income ratio
 - Deposits to assets ratio
 - Bank-type dummy variables
 - Banking sector-specific:
 - Herfindahl index
 - Country specific
 - Lagged inflation rate
 - Lagged GDP growth rate

Average Net fee and commission income/Total income and Net fee and commission income/Total assets by bank type



Development of average Net fee and commission income/Total income by market concentration



Results

Independent variables	Dependent variable	
	nfc_i_ti	nfc_i_ta
lag_DV	0.4385***	0.6655***
nim	-1.3637	0.0074
eq_ass	0.4006***	0.0094***
npl_loans	-0.1700	-0.0024
cost_inc	0.0809	-0.0001
depos_ass	9.4005*	0.3025***
hi	-0.0025***	-0.0000***
lag_gdp	-0.2604	-0.0009
lag_inf	-0.0547	0.0001
dcom	7.9208***	0.1486**
dcoop	9.7720***	0.16223**
dsav	3.73	0.0927
dinv	6.2117*	0.0766
dhold	5.03	0.1378**
_cons	3.14	-0.1204

- Banks facing higher competition tend to have higher shares of fee income
- Arellano-Bond AR tests – significant AR (1) and insignificant AR (2)
- Hansen test - instruments are valid (exogenous)

Estimation diagnostics	nfc_i_ti	nfc_i_ta
Number of observations	925	925
Number of groups	185	185
Observations per group	5	5
Number of instruments	107	122
F-test	43.94***	361.13***
Arellano-Bond AR (1)	-1.79*	-1.51
Arellano-Bond AR (2)	-1.53	0.07
Hansen test	99.13	121.44

P-value of AR (1) in nfc_i_ta is 0.131 – we assume the test was less efficient due to the crisis

Conclusions

- Banks operating in more competitive markets are not able to make sufficient profits on traditional interest bearing activities and they tend to expand into non-traditional activities more aggressively -> consequently, they have higher shares of fee income.
- Besides the bank interior factors such as bank type, the market conditions seem to play an important role for fee income magnitude determination.

Further research opportunities

- Increase the dataset – mainly prolong the examined period
- Study the determinants separately for different bank types
- Include other banking sector-specific explanatory variables that were excluded due to their correlation with Herfindahl index