

# The Chosen Factors Determinative Competitive Bank

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## 1 Introduction

The competitiveness is actual topic at this time because all economy sectors including banking notify necessary changes. They discuss their readiness relative to competitiveness with expand to European Union. The aim of this paper is to introduce hypothesis which differentiate competitive and non-competitive banks.

## 2 The selection of suitable indicators

It is not possible to have an easy formula that says which bank is competitive or non-competitive. Instead of it is possible to identify critical indicators which differ successful and unsuccessful banks.

The measurability of this criterions is important. That is the reasons why we will use only financial indicators of business of a bank. We will suppose that this financial indicators include together non-financial aspects of bank. This is because non-financial characteristics prove in financial indicators.

We proceeded with selection of suitable indicators in following way. We considered of this indicators which is possible to calculate from public accessible sources. We use Czech bank's report. Primary point of view in selection of indicators was that value of indicators is positively indicate it is competitive or non-competitive bank. We wanted to consider complex activity of the bank so we chose indicators of all critical group of indicators. We chose following indicators on a research basis of professional literature and on consultation basis with specialist from banking.

### 2.1 Profitability and productivity indicators

Profitability indicators belong to basic indicators of bank's business because included the profit which is generally the main aim of business. We chose the indicators that positively show successful or unsuccessful bank. It is:

- Return on average equity – higher value predicates competitive bank in reverse long-term lower value (or even negative) predicate non-competitive bank.
- Return on average assets – the value of this indicator is moving logically in smaller interval than the value of previous indicator with impact of higher denominator. The relation to competitiveness is the same.
- Profit per employee indicator – the higher value of this indicator shows higher productivity of a bank – the bank is more competitive from this view.
- Operational profit/assets indicator – the higher value of this indicator shows positive relation to competitiveness, smaller value (or negative) means negative relation to competitiveness.

### 2.2 Liquidity indicators

We couldn't miss out in this analysis these indicators because the rules of liquidity belong to the one of the most important indicators in the banking. The violating of liquidity positively

makes weak competitive position of the bank and usually it is important consequences for the bank. So we chose the following indicators:

- quick assets/total assets – quick assets are cash, receivables from central bank, treasury bills, receivables from banks payable on demand, receivables from clients payable on demand. The higher share of quick assets on total assets should indicate more competitive bank.
- receivables from clients/total assets – We can generally say the more loans was given, the less is liquidity of the bank. Offering of loans belong to basic activity of commercial bank that it is not possible to apply a rule that the smaller share, the better for the bank. It is necessary to determine interval. We determined interval 45 -65 % on professional literature basis [BABOUČEK, 1996]. If the real share is smaller than lower limit the bank demonstrate excessive liquidity. It could be negative influence no profitability. If the real share is higher the liquidity of the bank is inadequate and the bank takes increased risks on itself.
- basic deposits/total liabilities – (basic deposits are liabilities to banks, liabilities to clients, emitted securities) – the higher share of basic deposits on total liabilities the better for the bank. It means the bank has enough stable sources. It could mean that the bank attract clients on high interests and this interests excessive make financial situation of the bank worse.

### **2.3 Assets quality indicators**

These indicators primarily include loan loss reserves. Banks create loan loss reserves in order to balance bad quality of its assets or in order to take precautions against risks. Public accessible sources testify only indirectly about quality of assets. It is better to use data about non performing loans as data of asset quality. But these data recently were not published. In next analysis we used following indicators:

- provisions charge/total assets – the value of this indicator should be smaller at competitive bank. In reverse bank with bad asset quality should be higher value of this indicator.
- provisions charge/receivables from client – this indicator is more sensitive than the first indicator because receivables from client comprise only one part of assets. This indicator is important because the main aim of activity of commercial bank is giving loans. The interpretation is the same like previous indicator.

### **2.4 Role on market indicators**

Role on market is one the factors of competitiveness. It is possible to define it with the aid of various balance sheet and profit and loss account items. We chose these indicators for our analysis:

- market share from the point of view of balance sheet size – we can suppose that competitive bank will have higher market share from the this point of view and in reverse non-competitive bank will have smaller market share from this point of view.
- market share from the point of view of given loans – the numerator includes receivables from banks and receivables from client. The interpretation is similar to previous indicator.
- market share from the point of view of accepted deposits – the value of numerator includes liabilities to banks and liabilities to clients. The interpretation is similar to previous indicator again.

We can't take these indicators like dogma. Bank can successfully exist with small market share. But this bank has to be different from other competitors. It can be price policy, offer of new specific products (only momentarily) and focus on some part of market. We can say that the small bank has more different position than bank with wide range of activities.

## **2.5 *Income and expense indicators***

These indicators undoubtedly characterize competitiveness in point of view of expense and income. Expenses are one of the most monitoring aspects by bank management in present. There are many income and expense indicators. In this paper we used these indicators which positively characterize in this point of view competitive bank. We chose these indicators:

- income/total assets indicator – competitive bank should have the value of this indicator higher than non-competitive bank.
- expense per employee indicator – it is possible to suppose that competitive bank should have the value of this indicator smaller than non-competitive bank. It is necessary to compare this indicator with return per employee indicator or profit per employee indicator because high costs per employee needn't mean non-competitive bank if profit per employee is adequate. It means high productivity in reverse.

## **2.6 *Activity indicators***

These indicators reflect ability of bank to use its sources. More competitive bank is a bank which uses its sources better. In this paper we used turnover ratio of loans. This indicator is proportion between receivables from banks and clients and return divided 365 days. The value of this indicator is in days. Smaller value – it means faster recoverability of loans - should signal more competitive bank. We mustn't forget that bank can direct at providing of long-term loans.

## **2.7 *Structure of assets and structure of liabilities indicators***

Each balance sheet has its structure which characterizes focus of bank and its role on interbank market. It is necessary analysis of assets and analysis of liabilities. We know wide range of assets structure indicators and liabilities structure indicators. It usually monitors share of constituent items of balance sheet on total assets or liabilities, the biggest assets (liabilities). It usually monitors proportion between equity and liabilities too. In our analysis we use structure of liabilities indicator – proportion between liabilities to banks and liabilities. It is valid if bank lose credibility on interbank market (one of the factors of competitiveness) other banks will deposit smaller sum of temporarily free money in this bank. It means that this indicator should be smaller by non-competitive bank than by competitive bank.

## **3 *Analysis of average values of selected indicators in a time***

The first step was in selection of the banks. We will measure commercial banks because they substantial sight is to offer all types of commercial or investing products. The existence on a market of others types of the banks is quite different.

Next step was to initiate concrete hypothesis of a solution. The bank that operate on the date of December 31<sup>st</sup> 2003 we will consider as competitive in the first case. That bank which doesn't work to this date we will think about it like non-competitive. We appreciate that many banks had problems in their business during the nineties of 20<sup>th</sup> century.

The competitiveness is a long-term phenomenon, that is why we can't involve just in one year, but we need medium-term at all.

Next step was to divide banks for existing and bankrupt in this analysis. We calculated frequency of their existence in the year of 1995 – 2002. It means number of years when the bank was existed. We have to say that last banks which went bankrupt were Union bank and Plzenska bank in year 2000.

When we calculate number of years when banks existed we can get the number of values of the indicators that characterized working banks, it is number 122. When we count number of

years of the banks that became bankrupt we will have number 46, it means number of years when these banks had existed.

After that we count arithmetical average of the indicator when we count the values of concrete indicator [values from CNB's Bank supervision] through all the bank in the concrete group of the banks and through all the years and this count we divide with the number of values of the indicators (number 122 or 46). Than we have average value of the indicator that characterize existing banks in all the years or average value of the indicator that characterize all non existing banks (table n. 1).

We counted differences among the averages for existing and non existing banks in the next step of our analysis. We divided these differences with total average of concrete indicator for all the banks for all the years because we did not influence the selection of indicators by the total difference of existing or non-existing banks. See following table.

**Table. num. 1 The selection of suitable indicators**

	Profitability and productivity				Liquidity			Assets quality	
	ROAA	ROAE	Profit per employee (thousands CZK)	Operational profit/total assets	Quick assets/total assets	Receivables from clients /total assets	Basic deposits/total liabilities	Provisions charge/total assets	Provision charge/receivables from clients
Average (existing)	-0,0039	-0,0083	416	0,0173	0,1837	0,8053	0,3691	0,0254	0,1136
Average (bankrupt)	-0,0644	0,1959	-916	0,3954	0,1299	0,7571	0,4828	0,0781	0,1993
Average for all banks	-0,0192	0,0433	179	0,1129	0,1701	0,7931	0,3978	0,0387	0,1349
Difference existing - bankrupt	0,0605	-0,2043	1332	-0,3781	0,0538	0,0481	-0,1137	-0,0527	-0,0857
(difference/average all) x 100	315,6%	471,9%	743,7%	335,1%	31,6%	6,1%	28,6%	136,1%	63,5%

	Role on market			Income and expense		Activity	Structure of liabilities	
	Market share – balance sheet size	Market share - loans	Market share - deposits	Incomes/total assets	Expenses per employee	Turnover ratio of loans	Liabilities to banks/total liabilities	Liabilities to clients/total liabilities
Average (existing)	0,0416	0,0703	0,0666	0,1300	9430	3876	0,3230	0,4522
Average (bankrupt)	0,0189	0,0279	0,0321	0,6641	35064	20050	0,1780	0,5607
Average for all banks	0,0359	0,0596	0,0579	0,2650	13995	7594	0,2864	0,4796
Difference existing - bankrupt	0,0227	0,0424	0,0346	-0,5341	-25634	-16174	0,1451	-0,1085
(difference/average all) x 100	63,4%	71,1%	59,7%	201,6%	183,2%	213%	50,7%	22,6%

Source: own computing

We chose indicators where we will premise that we can distinguish between existing or bankrupt banks with help of this rate. These indicators are shown in next chapter.

### 3.1 Chosen indicators

The aim of shown analysis was to choose the indicators that characterize differences between bankrupt (non competitive) and existing (competitive) banks. We wanted to choose one suitable indicator from the group of all indicators to preserve the widest view on the bank as is possible.

We chose two following indicators from the group of all indicators

- return on average assets,
- profit per employee.

The indicator of return on average equity wasn't chose because its values are higher at the bankrupt bank then at the existing banks. It opposes that way that existing banks should be more competitive. We didn't choose operational profit/total assets indicator from the same reason because this indicator is more influenced by wrong economy of existing banks in the first years of the analysis.

We chose two indicators from the group that shows liquidity:

- quick assets/total assets,
- receivables to clients/total assets.

We chose these indicators because they embody relative difference about 30 % in the analysis then we can use it like sufficient. Basic deposits/total liabilities indicator shows insufficient relative difference between existing and bankrupt banks. It is just 6,1 %. We did not use this indicator in our analysis.

We chose one indicator from the group of the indicators of assets quality:

- provisions charge/total assets.

Relative difference for this indicator is 136 % at the analysis. We didn't choose provisions charge /receivables from clients indicator. The reason is that there is strong correlation between these two indicators at most of the years and at this group.

We chose one indicator from the group that indicates the situation of the bank on the market:

- market share from the point of view of given loans.

The higher relative difference between existing and non existing banks is shown in the analysis

(71,1 %) and this is the reason why we chose the indicator like more apposite. We did not choose last two indicators because there is very tight correlation between these indicators, it doesn't fall under the value of 0,97.

We chose the indicator from the group of indicator of incomes and expenses:

- expenses per employee.

We can see relative difference 183,2 % for the existing banks. The indicator incomes/total assets difference between existing and bankrupt banks at opposite point of view than we can presume. We will not use this indicator for relevant to determine of difference of competitive of non competitive banks.

We had principled just turnover ratio of loans of indicators of activity. This indicator differentiates well what is existing bank and what is bankrupt bank according to our analysis because the value of relative difference is 213 %. We have to know that the value of this

indicator could be strong influenced by financial situation of the bank or by their strategy in the area of offering of credits.

We chose the indicator from the group of structure of liabilities:

- liabilities to banks/total liabilities.

This indicator show unique differences between existing and bankrupt banks. Relative difference according to total average is more than 50 %. Additional indicator liability to clients/total liabilities represents the differences strong but it doesn't so well rate as chosen indicator. One indicator from this group is enough.

### ***3.2 Determination of hypothesis***

We determined following hypothesis on the basis of our analysis.

Chosen financial indicators should be markedly different by the group of non competitiveness bank and by the group of competitive banks by following way:

- 1) Rentability of competitive bank is higher than rentability of non-competitive bank. We can see this on following indicators:
  - a) The indicator return on average assets of competitive banks is higher than indicator of non competitive banks.
  - b) The indicator profit per employee is higher for competitive banks than for non competitive.
- 2) Liquidity of competitive banks is higher than liquidity of non competitive banks how we can see:
  - a) The indicator quick assets/total assets is higher for competitive banks than for non competitive.
  - b) The indicator receivables from clients/assets is lower for competitive banks than for non competitive.
- 3) Competitive banks have higher quality of assets than non-competitive banks how we can see by following indicators.
  - a) The indicator provisions charge to assets is lower for competitive bank than for non competitive.
- 4) Competitive banks have higher relative position on the market than non-competitive banks.
  - a) The indicator market share from the point of view of given loans is higher for competitive banks than for non competitive.
- 5) Expenses of bank business is lower for competitive banks than for non competitive banks:
  - a) The expenses per employee indicator is lower for competitive banks than for non competitive.
- 6) There is faster circulation of financial instrument for competitive banks as we can see.
  - a) The turnover ratio of loans is faster for competitive banks. We have to respect different strategies which are related to offering of credits.
- 7) Competitive bank is more authentic for others banks because
  - a) The indicator liabilities to banks/total liabilities is higher for competitive banks than for non competitive banks.

We used multidimensional statistic method of cluster analysis for verify defined hypothesis. We could better divide sets of objects (group of banks in our case) to some inside homogeny groups. Output is that inside the groups are objects (banks) similar and on the contrary of objects of different clusters are different each other. We can create clusters of competitive banks and clusters of non-competitive banks.

### 3.3 Creation of methods of cluster analysis

Starting values for every bank are average values of every indicator in the years 1995-2002 or shorter time of existence of their dates. Following step was transformation of part of indicator by the way all indicators had same tendency. It means their higher value means negative development and lower value means positive development. We used following formula for transformation.

$$y_i = \max\{x_1, x_2, \dots, x_n\} - x_i, \quad i = 1, \dots, n$$

We had to make transformation of indicators to compare modules. We used following formula to make standardized magnitude.

$$x_{ik}^* = \frac{x_{ik} - \bar{x}_k}{s_k}$$

We will use these values in next steps.

We can count distance between single objects at this moment. We calculate this by force of Euclidean distance, it could be count by this relation  $d(X_i, X_j) = \sqrt{\sum_{k=1}^n (x_{ik} - x_{jk})^2}$ . We can get matrix of distances in this manner. We will make clustering of objects by method of average distances, distance of objects will be counted by this relation:

$$d(S_h, S_k) = \frac{1}{n_h n_k} \sum_{x_i \in S_h} \sum_{x_j \in S_k} d(X_i, X_j) \quad [\text{KUBANOVÁ, 2003}]$$

The diagram of representation of progression of clustering is a graph that represents the clusters of the banks.

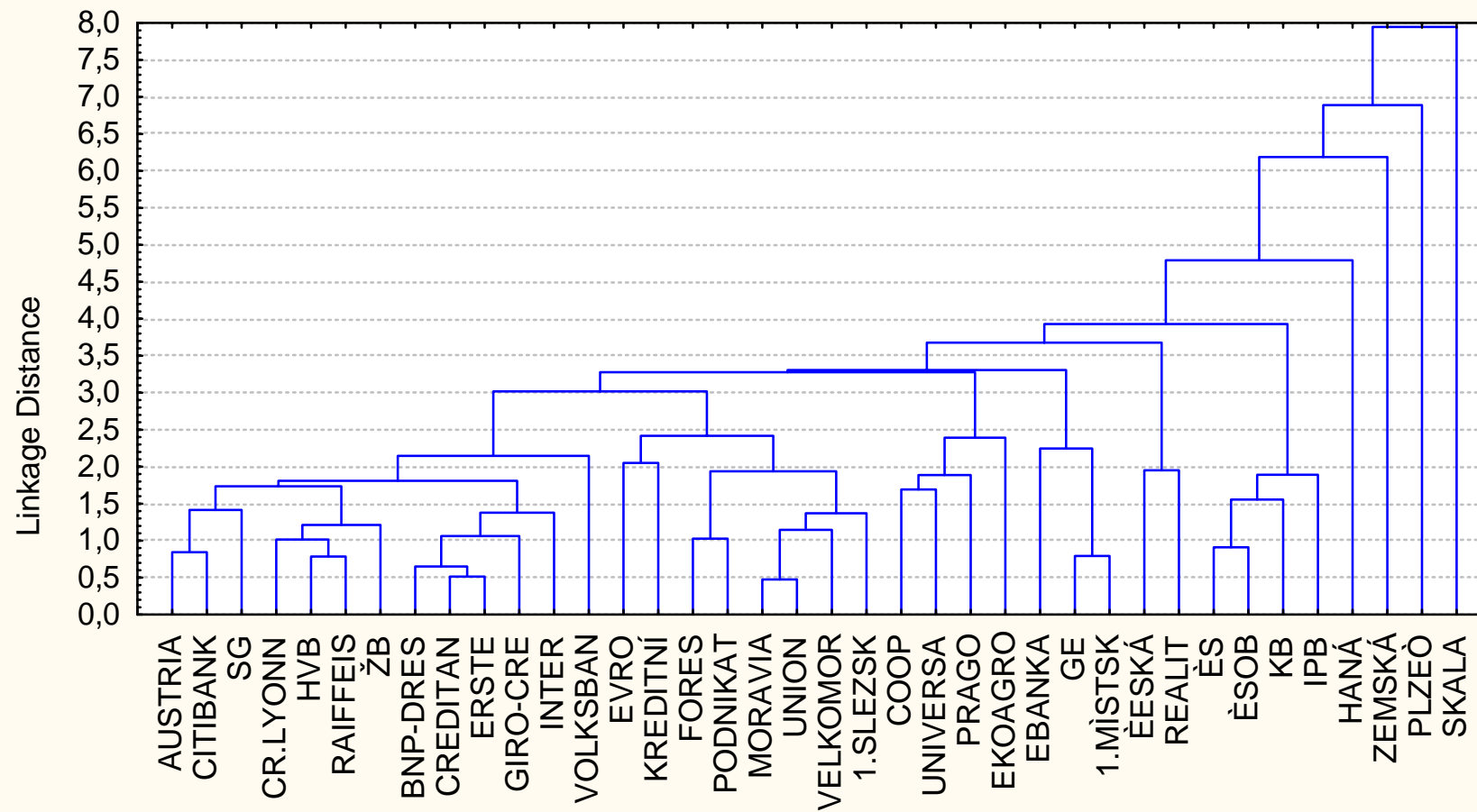
We divided banks into six groups on the principle of selected indicators. At every group is existing bank or bankrupt but there is one exception in this case (IPB).

We can explain this exception in this manner. We don't have so long-term data, there were some nonstandard accounting procedures that resulted problems of this bank did not show itself in data of the bank

We can say that selected indicators classified well differences between competitive and non competitive bank if we know that competitive bank is the bank existing and non competitive bank is bankrupt.

Pic. num. 1

Tree Diagram for 38 Cases  
 Unweighted pair-group average  
 Euclidean distances





## 4 Conclusion

We get to some hypothesis during defining differences between competitive and non-competitive bank. These hypotheses proved true with support of cluster analysis. It can say with respect to some conditions which influence information capability of used method. Number of banks is not too extensive (38 banks), time series of indicator's value are 1 – 8 year long (depending on period of data existence of concrete bank). Next reason is that banking went through complicated evolution during transformation of economic and also banks quantify as competitive had considerable problems in its activity. State even had to help big banks to hold its position on market. Next factor is buying banks by new owners and their financial recovering – it means before this operation bank had financial problems and was non-competitive and after this operation bank is competitive. Next aspect is credibility of accounting statements – we can't suppose with 100 % probability that all of data published in balance sheets and profit and loss accounts are true and correspond to accounting principles.

Nevertheless let's hope that this paper get follow-up research in field of competitiveness of bank.

## References

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