

Mereuta, Cezar; Capraru, Bogdan

**Working Paper**

## Romanian banking competition. A new structural approach

Working Papers, No. 120722

**Provided in Cooperation with:**

“Costin C. Kirişescu” National Institute for Economic Research (INCE), Romanian Academy, Bucharest

*Suggested Citation:* Mereuta, Cezar; Capraru, Bogdan (2012) : Romanian banking competition. A new structural approach, Working Papers, No. 120722, Romanian Academy, National Institute for Economic Research, Bucharest

This Version is available at:

<https://hdl.handle.net/10419/110440>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



THE ROMANIAN ACADEMY  
THE NATIONAL INSTITUTE OF  
ECONOMIC RESEARCH

WORKING PAPERS

*Romanian Banking Competition.  
A New Structural Approach*

Cezar Mereuță  
Bogdan Căpraru

Bucharest  
2012

INCE – CIDE  
Bucharest, Calea 13 Septembrie, No. 13, Sector 5



# ROMANIAN BANKING COMPETITION. A NEW STRUCTURAL APPROACH<sup>1</sup>

CEZAR MEREUȚĂ\*, BOGDAN CĂPRARU\*\*

*In this work, we evaluate the competition in the Romanian banking system as regards the distortions in terms of market shares and the origin of capital, for the period 2000-2010, using the methodology of the structural analysis of the markets promoted by Mereuță (2012). Thus, we firstly check the features of structural distributions of the market shares in the case of the Romanian banking system, in the period 2000–2010; then we apply the Mereuță universal concentration matrix (2012) where we analyse the competition on the Romanian banking market, using two indicators: the M index and the degree of the structural dominance of the market leader (Gdl), and finally we conclude a "nodal" analysis of the Romanian banking system. Our approach demonstrates that all the structural peculiarities of the distributions of macro-experiment are confirmed in the Romanian banking system during the period 2000 - 2010 and that, in the period under review, the competition has continuously grown on the Romanian banking market, in particular due to the phenomenon of penetration of foreign capital. The distortions of competition in the light of the origin of the capital show that the penetration of foreign capital also increased its vulnerability and the risk of contagion. As regards policy recommendations for regulatory and supervisory authority, we suggest a very careful monitoring of soundness of all foreign banks, not only those from nodal countries; a close collaboration of National Bank of Romania (NBR) with the regulatory and supervisory authorities in the countries of origin of foreign banks branches; as well as a higher emphasis on the conduct of business of the banks and consumer protection. As for the banks management, we recommend that the stability of banks should be the main concern, rather than the preservation or increase in market shares.*

Keywords: *competition, banks, structural approach, Romania*

JEL: *G21; L11*

## 1. Introduction

After 1990, with the change of the political regime, the foundations for the change in the Romanian economy have been laid by means of the adoption of the principles of market economy. These events also represented

---

<sup>1</sup> This work was supported by the project „Post-Doctoral Studies in Economics: training program for elite researchers – SPODE” co-funded from the European Social Fund through the Development of Human Resources Operational Programme 2007 – 2013, contract no. POSDRU/89/1.5/S/61755

\*Romanian Centre for Economic Modelling, Bucharest, Romania, [cezar.mereuta@yahoo.com](mailto:cezar.mereuta@yahoo.com)

\*\* „Al. I. Cuza” University of Iași, România, [csb@uaic.ro](mailto:csb@uaic.ro)

the creation of the structure of the banking system on two levels and the beginning of the banking reform in Romania. The banking reform in Romania was based on two coordinates: a reform imposed by the transition from the centralised economy to the market economy and, subsequently, the second one, as a result of the process of accession of our country to the European Union. The increase in the number of banking institutions, the penetration of foreign capital and the creation of a banking market operating by the principles of the market economy gradually led to increased competition in banking.

In the present paper we aim to analyse the competition on the banking market of Romania, in the period 2000-2010, from a structural perspective, using the methodology of the structural analysis of the markets promoted by Mereuță (2012).

The work is structured as follows: in the second section we presents a short literature review; the third section is a brief description of the structural evolution of the Romanian banking system; the fourth section describes the approach methodology of the structural analysis of the banking competition in Romania; in the fifth section the results of the analysis and discussions are presented; and, lastly, there are the conclusions and policy recommendations for the decision makers.

## **2. Literature review**

The literature relating to the measurement of the competition may be divided into two broad categories: structural methods and non-structural methods. The main structural approaches are "Structure-Conduct-Performance Hypothesis" (SCP) and „Efficient Structure Hypothesis" (ESH). The structural method, as shown in the description, analyses the banking competition starting from some structural indicators such as the rate of concentration (the market share held by the top three or five banks in the system) or the Herfindhal-Hirschman Index (HHI) and assumes that a concentration banking within the banking system implies a weaker competition in the banking system and an increase in profitability. The SCP model was promoted for the first time by Bain (1956).

The second model, ESH, was developed by Demsetz (1973) and Peltzmann (1977), and considers that the superiority in terms of profitability of the market leader determines the structure of the market, suggesting that the high efficiency leads to an increase in the degree of concentration and a greater profitability.

The "non-structural models" or "the new approach to empirical industrial organization" (The New Empirical Industrial Organization approach) considers that the banks behave differently in terms of a particular market structure. The non-structural indicators with regard to competition are based on ways of measuring the market power developed by Lerner (1934) - Lerner Index - and Rosse Panzar (1987) - H statistics. There are a large number of studies which address these indicators for measuring competition. Thus, for the Lerner index we should mention: Angelini and Cetorelli (1999), Padoa-Schioppa (2001), Carbo et al. 2003, Maudos and Perez (2003), Toolsema (2003), Carbo et al. (2005), Carbo et al. (2006); Humphrey, et al. (2006), Fernandez de Guevara et al. (2007); Carbo and Rodriguez (2007), Maudos and Fernandez de Guevara (2007), Carbó et al. (2009). There are a number of studies using the H-statistical measurement of banking competition. Some of them analyze the banking competition in European countries such as those of Shaffer's (1993), Molyneux et al. (1994), Bikker and Groeneveld (2000), De Bandt and Davis (2000), Weill (2004), and Koutsomanoli-Fillipaki and Staikouras (2004), Carbó et al. (2009), Claessens and Laeven (2004), Bikker and Haaf (2002), Bikker and Spierdijk (2008), Sun (2011). In addition, studies were undertaken also on single countries such as: for Germany – Hempell (2002), Gischer and Stiele (2008); for Italy – Coccorese (2004), for Greece Hondroyiannis et al. (1999), Coccorese (2005); for Spain-Maudos and Perez (2003), Carbo et al. (2003); for Finland to Vesala (1995); for Canada – Nathan and Neave (1989); for Japan - Molyneux et al (1996).

Some studies approach the banking competition in Central and Eastern Europe (CEE) using the non-structural indicators, such as: Mamatzakis et al. (2005); Drakos and Konstantinou (2005); Delis (2010). In the samples of countries examined in these studies Romania appears as well. As regards the studies carried out exclusively at the level of Romania, they are very scarce. Thus, we can mention: Andrieș and Căpraru (2011), who use both the structural indicators (CR5 and HHI) as well as the non-structural indicators (Lerner index and H-statistical), designed to measure the degree of banking competition in the period 2003-2009, reaching the conclusion that throughout the period considered, the competition in the Romanian banking system grew, being characterized by a monopolistic type competition; Doltu (2000), following the analysis of the evolution of the Romanian banking system during the period 1991-1998 makes some considerations concerning the level of banking competition, its causes and effects.

### **3. Structural developments of the Romanian banking system**

The first decade following the profound changes occurring after 1990 has been quite eventful, the Romanian banking system being shaken by a series of bankruptcies. The actions of rehabilitation of the banking system in 1999 mainly targeted two directions: on one hand, the rehabilitation of banks in difficulty, for which the new or existing shareholders have managed to secure the financial resources necessary for their recovery (Banca Agricolă, Banca Dacia Felix), and on the other hand, the elimination, through legal procedures, of non-viable banks (Banca Turco-Română, Banca Română de Scont, Banca Columna etc.).

These bankruptcies have had multiple causes that can be located both in the unfavourable macroeconomic environment, in the area of specific banking activities, in the state intervention on banks' operations as well as in the inadequate banking regulation and supervision and the absorption of balance-sheet commitments.

From the perspective of restructuring the banking system, an essential element will be the mutations in regards to the nature of property, such as an increased growth in the number of private banking companies and the share of private capital in the Romanian banking industry and, in particular, of foreign capital.

The presence of the increasingly higher private capital can be confirmed at the level of capitalisation of the banking system, the share of private capital in the aggregate capital being at the end of 1998 of 47.9%, and, by the time of the adherence of our country to the European Union in 2006, of 85.1%. The result was due both to the increasing presence of foreign banks on the Romanian market and to the measures taken by NBR to gradually raise the minimum limit of the social capital up to the amount of 370 billion old lei (the NBR norm no. 16/10/2002). At the same time, it highlights the dominance of the foreign capital, including branches of foreign banks, which increased as a weight of total aggregate capital from 35.8% in 1998 to 78.8% in 2006.

The competitive environment has been also influenced by the increase in the number of competitors on the market. If in 1990 there were 7 Romanian banks as legal entities and 5 branches of foreign banks, in 2006 there were 31 legal Romanian banks and 7 branches of foreign banks.

The methods of introduction of foreign capital in the banking system were different: establishment of branches; establishment of subsidiaries or the acquisition of control of a Romanian capital bank. During this period, a number of foreign banks opened branches in Romania: Chemical Bank (1992), ING Bank N. V. (1994), Chase Manhattan Bank (1992), National

Bank of Greece (1996), United Garanti Bank International. V. Amsterdam (1998), Banca di Roma SpA, Italy (2000), Bank of Cyprus Public Company Limited Nicosia (2006).

The end of the 1990s and the beginning of the new millennium was the start of the privatization process of large state-owned banks. This process began with the Romanian Bank for Development, through the acquisition of the majority package (51%) by the French Group Société Générale, acquisition completed in March 1999. Also in 1999, the State Property Fund sold a 45% package of the share capital of BancPost by General Electric Capital Corporation (35%) and Banco Portugues de Investimento (10%). Two years later, APAPS sold 17% of the share capital to EFG Eurobank Ergasias. In July 2001, RZB-Austria and Romanian American Investment Fund (FRAI) took over from the Authority for Privatization and Management of State Holdings (APAPS) over 98.84% of the shares of the third Romanian bank included in the process of privatization, namely Banca Agricola. In 2003, the process of privatisation of the Banca Comercială Română has advanced through the purchase by the EBRD and IFC of 25% of the share capital of the Bank. A pack of at the most 8% will be subsequently taken by the BCR employees. In late October 2006 the completion of privatisation of the Banca Comercială Română took place through the payment of the equivalent of the majority of shares by Erste Bank. Later on, the Austrian bank made a bid to buy the BCR employees' shares and managed to take from these 7.27%, reaching 69.15% of the BCR capital at the end of 2006.

For some domestic banks, the foreign capital has acquired the majority of shares: West Bank and și Banca Comercială Unirea, which became a year later Nova Bank (2001); Demirbank Romania, which became UniCredit Romania (2002); Libra Bank (2003); Daewoo Bank (2003), which was later purchased (2006) by the Cassa de Risparmio di Firenze S.p.A.; MISR Romanian Bank București by the Egyptian branch of the Blom Bank Egypt, becoming Blom Bank; Mindbank by ATE Bank, Eurom Bank by Leumi Bank; Romexterra Bank by MKB Bank (2006).

There were also mergers at the system level, such as that between Raiffeisen Bank Romania and the Banca Agricolă - Raiffeisen (2002), the Anglo-Romanian Bank Ltd with Frankfurt Bukarest Bank AG and subsequently with Banque Franco-Roumain SA (2004), the Banca Românească with the Romanian branch of the National Bank of Greece (2005), HVB Bank Romania and Ion Țiriac Bank (2006).

On 1 January 2007 Romania accedes to the European Union. Together with the Romanian banking market liberalization and implementation of the single banking license, the foreign banks may penetrate more easily on the



territory of our country, and the competition is enhanced by the possibility to provide banking services without direct implantation.

By the end of 2010, a total of 230 foreign institutions have notified their intention to engage in banking activity directly on the territory of Romania, of which 212 banks, 3 non-banking financial institutions and 15 electronic money-issuing institutions.

Thus, a number of other foreign banks have opened branches in Romania: Fortis Bank SA/NV, Caja de Ahorros Y Pensiones de Barcelona (LA CAIXA), Blom Bank France, Finicredito-Instituicao Financeira de Credito Portugal (2007), Depfa Bank (2008), Citibank Europe plc. Dublin by transforming Citibank Romania from a subsidiary – Romanian legal entity, in a branch of a foreign bank (2009). The Romanian subsidiary of the Banco Comercial Portugues (Millenium bpc) is also established as Millennium Bank (2007) and Garanti Bank begins its activity as a Romanian legal entity by taking on the task of the entire transfer of the foreign branch - GarantiBank International N. V. (2010).

Some examples of major acquisitions and mergers during this period are: the merger by absorption by the HVB Ţiriac Bank of UniCredit Romania Bank as a result of their European merger, the new entity performing its activity under the name UniCredit Ţiriac Bank; Blom Bank's closure and its transfer to the Blom Bank France S.A. Paris, Romanian branch (2007); the taking over of the activity of Banca di Roma Bucharest branch by UniCredit Ţiriac Bank as a result of the merger at European level between the shareholders of the two institutions (UniCredit and Capitalia Group); the acquisition of ABN Amro by the Royal Bank of Scotland (2008); the merger of Raiffeisen Banca pentru Locuinte and HVB Banca pentru Locuinte through the absorption of the latter (2009).

Thus, in 2010, the share in aggregate capital of banks with foreign capital majority becomes 74.6 percent, from 71% in 2006. The foreign bank assets, alongside with those of branches of foreign banks, have suffered a slight decline, from 78.8% in 2006 to 76.9% in 2010. The number of institutions has remained relatively constant compared with 2006, as a result of entries and exits from the market, with 32 banks Romanian legal entities and 9 branches of foreign banks.

#### **4. Methodology**

In the present paper we will use the methodology of structural analysis of markets promoted by Mereuță (2012), in order to assess the competition within the Romanian banking system, as far as the competition distortions

from the perspective of market shares and the capital origin are concerned, for the period 2000-2010. This methodology was applied on a sample of 553 subsystems of active companies, with over 30 companies, on non-financial markets, for the period 2004-2009. It was applied to the world GDP over a period of 40 years (1970-2010), fully validating the research results, too.

Thus, our approach will be organised on *three stages*: firstly we will verify whether all the characteristics of structural distributions of market shares from Mereuță's macro-experiment (2012) can be traced in the Romanian banking system during 2000-2010; then we will apply the Mereuță universal concentration matrix, by means of which we will analyze the competition on the Romanian banking market, using two indicators: the M index and the degree of the leader's structural domination (Gdl); in the end we will undertake a "nodal" analysis of the Romanian banking system.

Following the developed macro-experiment, Mereuță (2012) obtained a series of fundamental statistical particularities of the market shares' distributions from the perspective of competition. Thus, all the distributions of the market shares of active companies classified with over 30 companies between 2004 - 2009 are characterised by the supra-unitary value of the variation coefficient

$$V = \frac{s}{m} \quad (1),$$

where s is the standard deviation and m – the mean.

Starting from the relation:

$$V = \sqrt{n} \cdot \sqrt{\frac{n \sum p_i^2 - 1}{n-1}} \geq 1 \quad (2),$$

where p represents the market shares, it results that Herfindhal index

$$H = \sum_1^n p_i^2 \geq \frac{2n-1}{n^2} \quad (3)$$

and for  $n > 30$ , this turns into

$$H \geq \frac{2}{n} \quad (4).$$

Thus, for the markets classified with  $n > 30$  of active companies, *the Herfindhal index is approximately equal or higher than the double of the minimum Herfindhal index*, corresponding to the uniform distribution (the market shares of companies are equal).

The determination of the number of intervals of standard deviations situated below, or respectively above the mean, represents another important aspect to be considered from the perspective of the analysis of competition.

Considering that

$$p_{\min} = m - K''s \quad (5),$$

$K'' > 0$ ,

and having  $V = \frac{s}{m}$  and  $m = \frac{1}{n}$ , we get

$$K'' = \frac{1 - Np_{\min}}{V} \quad (6)$$

and at  $V \geq 1$  it results that  $K'' < 1$ .

Thus, another empirical law is deduced, which asserts that all distributions of market shares of the company subsystems on the market classified with  $n > 30$  are characterised by the fact that the *group of companies with market shares smaller than the mean is concentrated within a single interval of standard deviation*.

Since the value of the market shares' mean is higher than the median's value, the value of company weights from the macro-experiment shows that all the market shares distributions that were mentioned have a positive asymmetry.

When determining the number of  $K'$  intervals of standard deviations for the companies with market shares superior to the mean, we use the relation

$$p_{\max} = m + K's \quad (7),$$

$K' > 0$ ,

and having  $V = \frac{s}{m}$  and  $m = \frac{1}{n}$ , we get

$$K' = \frac{Np_{\max} - 1}{V} \quad (8).$$

We may infer that the number of  $K'$  intervals has a statistically significant trend of growth by the number of companies ( $n$ ) and the leader's market share ( $p_{\max}$ ).

The methodology also promotes a *universal concentration matrix of the non-grouped market shares* starting from two indicators, the *M index* and the *degree of the structural dominance of the market leader (Gdl)*.

In order to eliminate the drawbacks due to the high variability and especially the high values of the multiple of max/min values of the Herfindhal index, Mereuță (2012) proposes a new concentration coefficient, defined by means of the natural logarithmation of each term of the definition of the normalized Herfindhal index.

Thus, the normalized Herfindhal index

$$H_n = \frac{H - \frac{1}{n}}{1 - \frac{1}{n}} \quad (9)$$

becomes:

$$M = \frac{\ln(H) + \ln(N)}{\ln(N)} \quad (10).$$

The *M indicator* corresponds to the normalized Rényi quadratic entropy, its average value on the scale 0 – 1, being 0.5.

This allows a general classification of concentration in 5 classes as follows:

Class A<sup>+</sup>- systems with a very reduced concentration with  $0 < M \leq 0,2$

Class A - systems with a reduced concentration with  $0,2 < M \leq 0,4$

Class B - systems with an average concentration with  $0,4 < M \leq 0,6$

Class C - systems with a high concentration with  $0,6 < M \leq 0,8$

Class C<sup>-</sup> - systems with a very high concentration with  $0,8 < M \leq 1$ .

The *degree of the structural dominance of the market leader* is defined by means of the relation:

$$Gdl = \frac{\frac{p_1^2}{H} - \frac{p_{\min}^2}{H_{\min}}}{\frac{p_{\max}^2}{H_{\max}} - \frac{p_{\min}^2}{H_{\min}}} = \frac{\frac{p_1^2}{H} - \frac{1}{n}}{1 - \frac{1}{n}} \quad (11),$$

$0 \leq Gdl \leq 1$ .

The average value of the indicator on the scale 0 – 1 is around 0.50.

The symmetric scale of evaluation of the leader's influence on the competition can be described as follows:

Gdl Value	Influence on the competition	Class
$0 < Gdl \leq 0,2$	Very reduced	A <sup>+</sup>
$0,2 < Gdl \leq 0,4$	Reduced	A
$0,4 < Gdl \leq 0,6$	Average	B
$0,6 < Gdl \leq 0,8$	High	C
$0,8 < Gdl \leq 1$	Very high	C <sup>-</sup>

With the increase in the degree of aggregation of classification, which corresponds to the increase in the number of companies, Gdl registers a decreasing trend.

The two previously analyzed indicators, M and Gdl, allow the elaboration of a *universal concentration matrix of non-grouped market shares composed of 5 areas*, through the application of a symmetric scale within the interval 0 – 1.

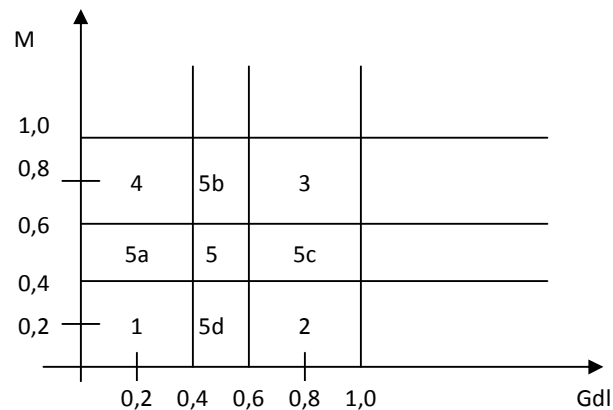


Figure 1. The universal concentration matrix of non-grouped market shares

*The significance* of the 5 areas is the following:

Area 1 has very reduced and reduced values for the M and Gdl coefficients

Area 2 has reduced and very reduced values for the M coefficient and high and very high values for the Gdl coefficient

Area 3 has high and very high values for the M and Gdl coefficients

Area 4 has high and very high values for the M coefficient and reduced and much reduced values for the Gdl coefficient.

Area 5 has average values for the M and Gdl coefficients

Area 5a has average values for the M coefficient and reduced and very reduced values for the Gdl coefficient

Area 5b has high and very high values for the M coefficient and average values for the Gdl coefficient

Area 5c has average values for the M coefficient and high and very high values for the Gdl coefficient

Area 5d has reduced and very reduced values for the M coefficient and average values for the Gdl coefficient

From the perspective of the degree of distortion of competition, we may classify the areas as follows:

Area 1- very reduced distortion of competition

Areas 5a, 5d – reduced distortion of competition

Area 5 – average distortion of competition

Areas 5b, 5c, 2, 4 – high distortion of competition

Area 3 – very high distortion of competition.

From the point of view of market accessibility, the significance of the matrix areas is the following:

Area 1 corresponds to the quasi-perfect competition, with minimal entry barriers and reduced influence of the leader, instituting a clear opportunity for the SMEs.

Area 3 corresponds to a competition with large entry barriers and great influence of the leader and it does not represent an opportunity for the SMEs.

Areas 2, 4, 5a, 5b, 5c, 5d present opportunities and risks.

Area 5 corresponds to a competition with average entry barriers.

In the end, we will conduct a "nodal" analysis of the Romanian banking system, starting from the *Pareto rule 20/80*, both from the perspective of institutions that define the global performance of the system covering 80% of the market share and of the core countries as far as the capital origin is concerned. *The data source* used was represented by the Annual Reports of the National Bank of Romania, as well as by the financial reports of banks.

## **5. Results and discussion**

### **5.1. The distortion of competition in the light of market shares**

The data synthesis regarding the structural distributions of market shares concerning the net assets for banks in Romania during the period 2000 - 2010 is shown in Table 1.

Table 1.

The structural distributions of market shares concerning the net assets for Romanian banks in in the period 2000–2010

No.	Year	No. of institutions	Leader share of market	Average	Standard deviation	Coefficient of variation	Median share	$\rho_{80}$	$N_{80}$	$H_{80}$	H	M	GDL	Zone
1	2010	42	0,197830	0,02381	0,039300	1,65059	0,00787	26,1905	11	0,0848	0,0871	0,3471	0,4357	5d
2	2009	42	0,190524	0,02381	0,038848	1,63160	0,00815	26,1905	11	0,0832	0,0857	0,3426	0,4096	5d
3	2008	43	0,203280	0,02326	0,040539	1,74317	0,00728	25,5814	11	0,0893	0,0923	0,3664	0,4347	5d
4	2007	41	0,237420	0,02439	0,044638	1,83014	0,00709	26,8293	11	0,1015	0,1041	0,3908	0,5301	5d
5	2006	39	0,261407	0,02564	0,048904	1,90726	0,00753	25,6410	10	0,1138	0,1165	0,4132	0,5756	5
6	2005	40	0,256373	0,02500	0,047088	1,88352	0,00770	27,5000	11	0,1095	0,1115	0,4053	0,5791	5
7	2004	40	0,261228	0,02500	0,046994	1,87978	0,00769	25,0000	10	0,1085	0,1111	0,4044	0,6042	2
8	2003	39	0,293151	0,02564	0,051172	1,99571	0,00831	25,6410	10	0,1227	0,1252	0,4327	0,6785	5c
9	2002	39	0,314015	0,02564	0,054409	2,12194	0,00695	23,0769	9	0,1352	0,1381	0,4597	0,7063	5c
10	2001	41	0,305772	0,02439	0,053127	2,17819	0,00534	24,3902	10	0,1350	0,1373	0,4653	0,6731	5c
11	2000	41	0,298900	0,02439	0,053167	2,17987	0,00603	21,9512	9	0,1351	0,1375	0,4656	0,6412	5c

Source: NBR Annual Reports, 2000-2010

### 5.1.1. The features of structural distributions of market shares

The 11 structural distributions of market shares have positive asymmetry (left) with the average rates higher than those median, belonging to the general feature of structural distributions.

The coefficient of variation  $V = s/m$  is supraunitary for all distributions, also checking for the banking system the experimental law which says that  $H \geq \frac{2}{n}$ . Indeed, all Herfindahl index values are greater than twice the minimum value of the corresponding uniform distribution.

In the case of all structural distributions under analysis, the values of market shares smaller than the average are concentrated within one standard deviation interval, because the variation coefficient is supraunitary.

Finally, the Herfindahl indices of the institutions whose combined market share is equal to 80% of the total market share have in all cases examined values greater than 95% of the value of the entire Herfindahl distribution index. Thus, the structural information of the banking system is defined by these banks.

Our conclusion is that all the features of the structural distributions of market shares within the Mereuță (2012) macro-experiment are found in the banking system in the period 2000–2010.

### 5.1.2. The universal matrix of the competition structural analysis in the Romanian banking system during 2000-2010

The M and GDL values place the Romanian banking system in the competition distortion matrix in the zones of 5c (2000-2003), 2 (2004), 5 (2005-2006), 5d (2007-2010).

The major significance of the matrix zoning is that, overall, the Romanian banking institutions have evolved from zone with high competition distortion towards zones with low competition distortion.

It appears that the M and GDL values continuously decreased over the period considered, with the observation that in the first part of the range (2000-2004) the competition was distorted because of the degree of dominance in the structure of the leader. In 2010, the competition had a reduced distortion. Thus, the results obtained are in compliance with those obtained by Andrieș and Căpraru (2011).

Throughout the analysis period the leader remained unchanged – Banca Comercială Română (BCR) and subsequently, after privatization, BCR Erste. In the period 2000-2006, it was a state-owned bank and a "market-maker", fact translated into a high degree of structural dominance and distortion of competition. Thus, BCR has been used on countless occasions as an instrument of intervention and influence of the market by the State. Starting with 2007, the competition has a lower distortion, due to a range of factors:

- the accession of our country to the European Union, a fact which led to the entry of European competitors on the Romanian banking market immediately before the accession (the Millennium Bank) and after (on the basis of the single banking licence);
- a number of mergers and acquisitions with outstanding implications, based on market shares (the merger of HVB Țiriac Bank-UniCredit Romania (2007), the taking over the activity of the branch Bank di Roma – Bucharest by UniCredit Țiriac Bank (2008), the merger of Raiffeisen Banca pentru Locuinte and HVB Banca pentru Locuinte through the absorption of the latter (2009));
- the privatisation and restructuring of BCR and loss of market shares to other competitors;
- the promotion by some banks of aggressive growth strategies of market shares (2007-2008);
- the effects of the international financial crisis (2009-2010), which affected mainly banks with oversized networks and which have betted heavily on resources received from parent banks when placing assets on Romanian market during the period before the crisis; with the increased turmoil, external support has decreased considerably. They have lost and will lose market shares to other competitors.

The year 2010 brings a slight increase in the degree of dominance in the structure of the leader. Although the first two positions were dominated throughout the period analysed by two players - BCR and BRD-GSG – the top 10 positions have continuously changed.

From the viewpoint of market accessibility, the significance of matrix areas suggests that the Romanian banking system is found in areas of opportunities and risks. Thus, the Romanian banking system remains attractive to foreign capital, but it does not lack risks coming from the distortion of arising competition.



### 5.1.3. The nodal analysis from the perspective of the institutions which define the overall performance of the system

The "nodal" banks, namely those which define the overall performance of the system, covering 80% of the market share have been between 9 and 11, having a share ( $\rho_{80}$ ) ranged between 27,5% and 21.9% of the total number of institutions (Table 2.). Thus, we can consider that the asymmetry of the Romanian banking market is close to that in many cases resulting from the 20/80 paradigm, with a tendency to become less accentuated.

In 2010, the "nodal" institutions of the banking system in Romania were:

Table 2.

"Nodal" Institutions of the banking sector in Romania (2010)

Nr crt	Bank	Source of capital	Market share
1	Banca Comerciala Romăna	Banks with major foreign capital - Austria	0,19783
2	BRD Groupe Soci�t� G�n�rale	Banks with major foreign capital - France	0,13889
3	Raiffeisen Bank Romănia	Banks with major foreign capital - Austria	0,06370
4	CEC Bank	State-owned banks	0,06341
5	Banca Transilvania	Banks with major Romanian privat capital	0,06314
6	Alpha Bank Romania	Banks with major foreign capital - Greece	0,06236
7	UniCredit Tiriac Bank	Banks with major foreign capital - Austria	0,05972
8	Volksbank Romănia	Banks with major foreign capital - Austria	0,05777
9	Bancpost	Banks with major foreign capital - Greece	0,03937
10	ING Bank N.V.	Foreign bank branch - Netherlands	0,03523
11	Piraeus Bank Romănia	Banks with major foreign capital - Greece	0,02743

### 5.2. The distortion of competition in the light of the origin of capital

The synthesis of values on capital structural distributions according to the countries of origin is given in Table 3.

Table 3.

The structural distributions of Romanian banking capital according to the countries of origin, 2000-2010

No.	Year	No. of countries	Leader share of market	Average	Standard deviation	Coefficient of variation	Median share	$\rho_{80}$	$N_{80}$	$H_{80}$	H	M	GDL	Zone
1	2010	16	0,382926	0,0625000	0,102001	1,6320128	0,0166965	25,0000	4	0,2143	0,2186	0,4515	0,6489	5c
2	2009	16	0,381331	0,0625000	0,102526	1,6404175	0,0129961	25,0000	4	0,2160	0,2202	0,4542	0,6378	5c
3	2008	17	0,388492	0,0588235	0,101195	1,7203162	0,0130695	23,5294	4	0,2180	0,2227	0,4698	0,6577	5c
4	2007	15	0,403437	0,0666667	0,109515	1,6427240	0,0184563	26,6667	4	0,2276	0,2346	0,4646	0,6720	5c
5	2006	14	0,421761	0,0714286	0,114522	1,6033117	0,0155059	28,5714	4	0,2328	0,2419	0,4623	0,7149	5c
6	2005	15	0,379854	0,0666667	0,102873	1,5430959	0,0213063	26,6667	4	0,2023	0,2148	0,4321	0,6482	5c
7	2004	15	0,381971	0,0666667	0,102176	1,5326457	0,0282802	26,6667	4	0,1984	0,2128	0,4286	0,6631	5c
8	2003	14	0,420319	0,0714286	0,111971	1,5675905	0,0269828	28,5714	4	0,2212	0,2344	0,4503	0,7347	5c
9	2002	16	0,436085	0,0625000	0,109882	1,7581122	0,0147572	25,0000	4	0,2305	0,2436	0,4907	0,7660	5c
10	2001	15	0,438105	0,0666667	0,112884	1,6932597	0,0317649	26,6667	4	0,2364	0,2451	0,4807	0,7677	5c
11	2000	13	0,491149	0,0769231	0,133707	1,7381928	0,0286510	38,4615	5	0,2869	0,2915	0,5193	0,8133	5c

Sources: own calculations based on NBR Annual Reports 2000-2010 and commercial banks web sites

### 5.2.1. *The features of structural distributions according to the countries of origin of banking institutions*

The 11 structural distributions also confirm in the case of capital the features of structural distributions of market shares in our macro-experiment:

- Positive asymmetry (left-handed), because the value of the average market shares is higher than the median value
- Coefficient of variation  $s/m$  supraunitary
- $H \geq \frac{2}{n} > 0.154$ , the Herfindhal index for all structural distributions is greater than the index of the corresponding distribution uniform Herfindhal (market shares of companies are equal and we have the maximum value of  $H_{\min}$  within all structural distributions, if the number of countries of origin capital is minimum – 13 countries).
- The lower than average market shares are concentrated within a single standard deviation interval because the coefficient of variation is  $V > 1$  in all cases, resulting  $K'' < 1$ .
- The  $H_{80}$  index (Herfindahl index of countries whose total market shares reach 80%) is greater than 95% of the total value of the Herfindahl index. Thus, the structural information of the banking system are defined by banks whose capital comes from the countries whose total market shares reach 80%.

### 5.2.2. *The universal matrix of competition structural analysis of the Romanian banking system over the period 2000-2010 depending on the country of origin of the capital*

The M and GDL values constantly place the competition distortion in the area 5c – great distortion based exclusively on the level of dominance of the leader country. In the period 2000-2005, the leading country was Romania with market shares ranging from 37.99% (2005) and 49.12% (2000). Since 2006, the leader country has been Austria with a high degree of structural dominance throughout the period 2006–2010 (64.9 % – 71.5 %).

### 5.2.3. *The nodal analysis from the perspective of the countries of origin of the banking institutions*

In the period 2000-2010, except for one year (2000), the "nodal" countries in terms of the origin of the capital were 4 (Table 4.).

The institutions from these countries covered each year 80% of the market share of all banking institutions. On average, the source of the capital may be found in 13 to 17 countries.

In 2010, the “nodal” countries were:

*Table 4.*

“Nodal” countries of the Romanian banking system

No.	Country	Market share
1	Austria	0,3829
2	Greece	0,1603
3	Romania	0,1497
4	France	0,1399

Our approach yields two conclusions of great strategic significance. The first one concerns the main vulnerability of the Romanian banking system, being strong dependent on 3 countries: Austria, France, Greece, especially due to the crisis in the EURO area. The presence of Greece, among the 4 countries, cannot be either disregarded, being represented by a significant market share. Taking into account also the various signals given by Austrian banks regarding the reduction of exposures on the Central and Eastern European markets, we can consider this a vulnerability of the Romanian banking system.

The Romanian capital has suffered a major decline from a 49.1% market share in 2000 to only 14.97% in 2010. This requires a very careful monitoring of the condition of banks in all the countries of origin, and not only of those from the nodal countries. It also involves a close cooperation within the regulatory and supervisory authorities from the countries of origin of foreign banks branches.

Thus, we may ascertain that although the penetration of foreign capital was a factor in the competition growth in the Romanian banking system, it has increased its vulnerability and the risk of contagion as well.

## 6. Conclusions

Our approach proves that all the features of structural distributions of market shares within the Mereuta macro-experiment (2012) are to be found in the Romanian banking system in the period 2000–2010. It appears that the M index and GDL values continuously decreased over the period considered, with the observation that in the first part of the interval (2000-2004) the competition was distorted because of the high degree of dominance in the structure of the leader. Thus, the competition has continuously grown on the Romanian banking market, in particular due to the phenomenon of penetration of foreign capital. From the point of view of market accessibility, the significance of matrix areas suggests that the Romanian banking system is found in areas of opportunities and risks.

In terms of distortion of competition in the light of the capital origin, the M index and GDL values rank it consistently in the area 5c – great distortion due to the exclusive degree of dominance of the leading country, which was in turn Romania (2000-2005) and Austria (2006-2010). In the period 2000-2010, except for one year (2000), there were 4 "nodal" countries in terms of the origin of the capital (Romania, Austria, Greece and France). This fact suggests that the Romanian banking system has a high vulnerability due to the dependence of capital on the three countries in the Euro area, in particular Greece, country with major macroeconomic imbalances. Thus, we can state that although the penetration of foreign capital was a factor in the growth of competition in the Romanian banking system, its vulnerability and the risk of contagion have increased at the same time.

As regards policy recommendations for the regulatory and supervisory authority, we suggest a very careful supervision of the condition of banks in all countries of origin, not only of those from the nodal countries, due to the dominance of the Romanian banking system by foreign banks, as well as a close collaboration of NBR with the regulatory and supervisory authorities in the countries of origin of foreign banks branches. Taking into account the challenges of the competition growth in the EU member countries, we propose an increased concern of NBR so as to ensure fair competition on the market, assuming more powers in relation to the business conduct and the protection of consumers or the creation of a "twin peaks" institutional arrangement. At present, these powers are divided among NBR, the National Authority for the Protection of Consumers and the Competition's Council. As regards recommendations for policymakers in the banks, particularly for foreign banks subsidiaries, we suggest resizing the bank networks, a balanced management of assets and liabilities, adapted to the new realities of domestic resources, in terms of price for sustainable resources. Thus, we recommend a focus on the bank stability, rather than on the preservation or increase in market shares.

#### BIBLIOGRAPHY

1. Angelini, P. and Cetorelli, N. (1999) Bank Competition and Regulatory Reform: The Case of the Italian Banking Industry. Working Paper, Research Department, Federal Reserve Bank of Chicago, December WP-99-32.
2. Andrieș A., Căpraru B. (2007) Competition in Romanian banking sector, *Annals of Faculty of Economics*, 1:1, 455-460

3. Bain, J. (1956) *Barriers to New Competition*. Cambridge, Mass.: Harvard Univ. Press.
4. Bikker, J., Haaf, K. (2002) Competition, concentration and their relationship: an empirical analysis of the banking industry. *J Bank Financ* 26: 2191–214. doi:10.1016/S0378-4266(02)00205-4.
5. Bikker, J. and Groeneveld, J.M. 1998. Competition and concentration in the EU banking industry. Research Series Supervision No. 8, De Nederlandsche Bank.
6. Bikker, J., Spierdijk, L. (2008). How Banking Competition Changed over Time. DNB Working Paper 167
7. Bonin J.P. (2004) Banking in the Balkans: the structure of banking sectors in Southeast Europe, *Econ Syst* 28(2): 141-153. doi: 10.1016/j.ecosys.2004.03.005
8. Carbo, S., Humphrey, D. and Rodriguez, F. 2003. Deregulation, bank competition and regional growth. *Regional Studies* 37: 227–237.
9. Carbo, S., Fernandez, J., Humphrey, D. and Maudos, J. 2005. Estimating the Intensity of Price and Non-price in Banking: an Application to the Spanish Case. DT 02-05. Fundacion BBVA.
10. Carbo, S., Humphrey, D. and Lopez del Paso, R. 2006. Electronic payments and ATMs: changing technology and cost efficiency in banking. In: Balling, M., Lierman, F., Mullineaux, A. (Eds.), *Competition and Profitability in European Financial Services. Strategic, Systemic and Policy Issues*. Routledge, Abingdon (UK), pp. 96–113
11. Carbo, S. and Rodríguez F. 2007. The determinants of bank margins in European banking, *Journal of Banking and Finance*, 31: 2043-2063
12. Carbo S., Humphrey, D., Maudos, J. and Molyneux, Ph. (2009) Cross-country comparisons of competition and pricing power in European banking. *J Int Money Finance* 28: 115–134. doi: 10.1016/j.jimonfin.2008.06.005
13. Claessens, S. and Laeven, L., 2004. What drives bank competition? Some international evidence? *Journal of Money, Credit, and Banking* 36: 562-583.
14. Coccoresse, P. 2004. Banking competition and macroeconomic conditions: a disaggregate analysis. *Journal of International Financial Markets, Institutions and Money* 14: 203- 219.
15. Coccoresse, P. 2005. Competition in markets with dominant firms: A note on the evidence from the Italian banking industry. *Journal of Banking and Finance* 29: 1083-1093.
16. Delis, M. D. (2010) Competitive conditions in the Central and Eastern European banking systems. *Omega*, vol. 38(5): 268-274. doi: 10.1016/j.omega.2008.09.002
17. De Bandt, O. and Davis, P.E. 2000. Competition, contestability and market structure in European banking sectors on the eve of EMU. *Journal of Banking and Finance* 24: 1045- 1066.
18. Demsetz, H. (1973) Information and efficiency: Another viewpoint. *J Law Econ* 10: 1–22. doi:10.1086/466657
19. Doltu C., (2000) The evolution of the banking system in Romania, Romanian Center for Economic Policies Working Papers no.8
20. Drakos, K., Konstantinou, P. T. (2005) Competition and contestability in transition banking: An empirical analysis. *S E Eur J Econ* 2: 183–209.
21. Fernandez de Guevara, J., Maudos, J. and Perez, F. 2007. Integration and competition in the European financial markets, *Journal of International Money and Finance* 26: 26-45.
22. Gischer, H., Stiele, M. (2008) Competition tests with a non-structural model: the Panzar -Rosse methods applied to Germany's savings banks. *Ger Econ Rev* 10(1): 50-70. doi: 10.1111/j.1468-0475.2008.00441.x
23. Hempell, H. S. 2002. Testing for competition among German banks. Economic Research Centre of the Deutsche Bundesbank Discussion Paper 04/02.
24. Hondroyannis, G., Lolos, S., and Papapetrou, E. 1999. Assessing competitive conditions in the Greek banking system. *Journal of International Financial Markets, Institutions and Money* 9: 377-391
25. Humphrey, D., Willeson, M., Bergendahl, G. and Lindblom, T. 2006. Benefits from a changing payment technology in European banking. *Journal of Banking and Finance* 30: 1631–1652.
26. Koutsomanoli-Fillipaki, N. and Staikouras, C. 2004. Competition in the new European banking landscape. Paper Presented at the Money, Macro and Finance 36th Annual Conference. Cass Business School, London.

27. Lerner, A. P. 1934. The Concept of Monopoly and the Measurement of Monopoly Power, *The Review of Economic Studies*, 1 (3): 157–175.
28. Mamatzakis, C. Staikouras, Koutsomanoli-Fillipaki, N. (2005) Competition and concentration in the banking sector of the south eastern European region. *Emerg Market Rev* 6 (2): 192–209. doi: 10.1016/j.ememar.2005.03.003
29. Machauer, A., Weber, M. (2000) Number of Bank Relationships: An Indicator of Competition, Borrower Quality, or just Size?. CFS Working Paper 06.
30. Maudos, J. and Perez, F. 2003. Competencia vs. poder de mercado en la banca española. *Moneda y Credito* 217: 139–166.
31. Maudos, J. and Fernandez de Guevara, J. 2007. The cost of market power in banking: social welfare loss vs. inefficiency cost. *Journal of Banking and Finance* 31 (7): 2103–2125.
32. Mereuță, C. (2012), The Classes of Economic Concentration and the 80% Factor, *Economica*.
33. Molyneux, P., Thornton, J. and Lloyd-Williams, D. M. (1996) Competition and market contestability in the Japanese commercial banking market. *J Econ Bus* 48: 33–45. doi: 10.1016/0148-6195(95)00047-X
34. Molyneux, P., Lloyd-Williams, M. and Thornton, J. (1994) Competitive conditions in European banking. *J Bank Financ* 18: 445–59. doi: 10.1016/0378-4266(94)90003-5
35. Nathan, A., Neave, E. H. (1989) Competition and contestability in Canada's financial system: Empirical results. *Can J Econ* 22: 576–594.
36. Padoa-Schioppa, T. 2001. Bank competition: a changing paradigm. *European Finance Review* 5: 13–20.
37. Panzar, J. C., Rosse, J. N. (1987) Testing for monopoly equilibrium. *J Ind Econ* 35. 443-456. Doi:
38. Peltzman, Sam. (1977) The Gains and Losses From Industrial Concentration. NBER Working Papers 0163.
39. Sun Y., (2011) Recent Developments in European Bank Competition, International Monetary Fund WP/11/146
40. Toolsema, L. A. (2003) Monetary policy and market power in banking. CCSO Centre for Economic Research Working Papers, University of Groningen 200303.
41. Vesala, J. (1995) Testing competition in banking: Behavioral evidence from Finland. *Bank of Finland Studies*, E:1.
42. Yildirim, S. H., Philippatos, G. C. (2003) Efficiency of Banks: Recent Evidence from the Transition Economies of Europe: 1993-2000. University of Tennessee Working Paper.
43. Yildirim, S. H., Philippatos, G. C. (2003) Competition and Contestability in Central and Eastern European Banking Markets. EconWPA, Finance Series 0310004.
44. Shaffer, S. 1993. A test of competition in Canadian banking. *Journal of Money, Credit and Banking* 25 (1): 49-61.
45. Toolsema, L. A. 2003. Monetary policy and market power in banking.” CCSO Centre for Economic Research Working Papers, University of Groningen 200303.
46. Weill L. 2004. On the Relationship Between Competition and Efficiency in the EU Banking Sectors, *Kredit und Kapital*, 37: 329–52.
47. \*\*\* NBR Annual Reports 2000-2010