AN ASSESSMENT OF BANKING CONCENTRATION

AN ALBANIAN CASE

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Abstract

The estimation of banking concentration related to the particular features due to the relative market and geographic market of diversified banking products and services. It determined the theoretical and empirical sides in structural study of banking sector. Structural changes of Albanian banking sector over the years have reflected their effect on the banking concentration and behaviour. This paper examines whether the convergence of the concentration indicators occurs between the discrete and cumulative indicators. It demonstrated the discrete and cumulative indicators of banking concentration through the comprehensive estimation of banking concentration and the comparative and dynamic statics. The empirical results to Albanian banking sector according to assets, loans, deposits and treasure bills relied on the theoretical analysis using the dataset of bank of Albania during to 2001 – 2012. The discrete and cumulative indicators highlighted the most concentrated market like the treasure bills market and the least concentrated market like loans

market according to banks and group - banks. However, in the results it should be noted that the declining ratios actually and the banking sector operated to the moderate concentration. The study provides likewise convergence between discrete and cumulative indicators of banking concentration.

Keywords: Bank Concentration Ratios, Concentration Indicators, Structural Changes, Albania

INTRODUCTION

The Slight View on Structural Changes of Albanian Banking Sector

The development of Albanian banking sector was associated with fluctuations consistency to economic, political and historical development during decades. Due to estimate the progress of structural reforms in transition countries, EBRD (European Bank for Reconstruction and Development) has made up a numerical system of evaluation. The estimation of transition indicators varies from 1 to 4^+. This can confirm practically no evident difference between former centralized economies and industrialized market economies standards.

We can refer to the index of banking reform due to reflect the progress of structural reforms in banking sector. The figure 1 shows the dynamic of banking reform index during the period 1989 – 2012, where it indicates a positive almost linear trend of banking reform index demonstrating structural progress in banking sector, but still not on market economies parameters. The figure 2 shows a static comparison of banking reform index, enterprises reform index and competition policies index on years 1992, 2002 and 2012. It confirmed that structural reforms on banking sector have scored the highest progress compared to other reform in our country.

Table 1 present the progress evaluation of transition indicators on South-East European countries in 2012 according to banking reform, price liberalization and competition policy. Referring to table it confirms that only price liberalization has scored 4^+ in almost South-East countries indicating the maximum value of progress. Meanwhile banking reform varies in the segment $[3^-, 3]$ showing the lower progress than the developed countries. Whereas the competition policy in South-East European countries indicates lower level compared to the above reforms. The evaluation varies from 2^+, where Albania has scored, until 3^+ of Romania stressing the enhancement of structural progress related to competition policy in these countries.

Figure 1: Dynamics of Structural Reform in Banking Sector During Period: 1989 - 2012
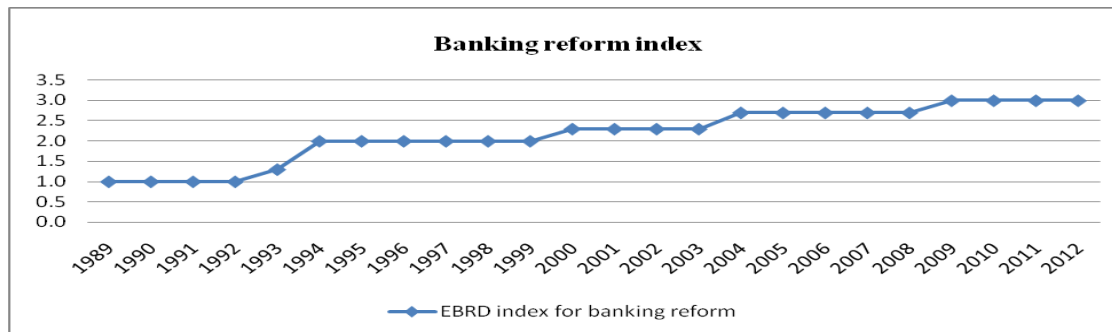
Source: EBRD

Figure 2: Progress of Structural Reforms in Albania during Years 1992, 2002 And 2012
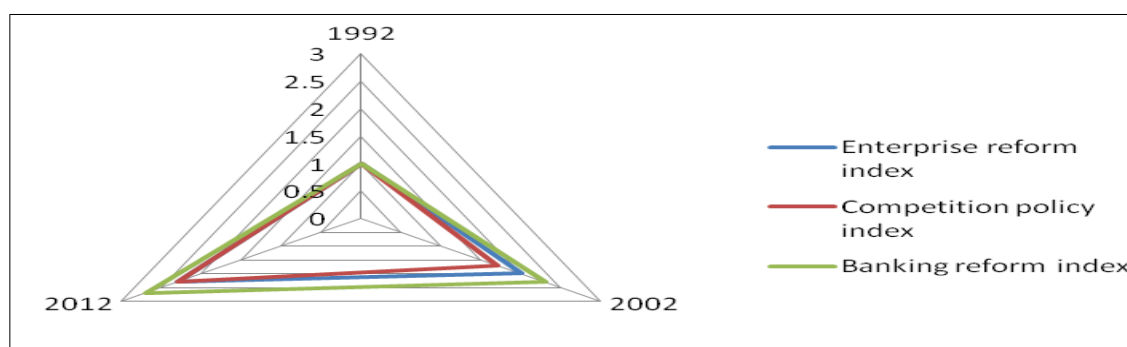
Source: EBRD

After 1997 crisis, the macroeconomic environment led to important changes in Albanian banking sector which was involved in liquidation, restructuring, privatization and acquisition activities of some banks. Albanian banking sector has been recently characterized by important structural developments. The most important of them are: (i) the enlarged number of banks; (ii) restructuring and privatization of state-owned banks; (iii) establishment of domestic capital banks; (iv) entrance of powerful foreign banks through acquisitions of the existing ones; which have changed the Albanian banking sector into a dynamic environment. There are more and more efforts made by banks to be better positioned in the market.

After two decades of transition process, the Albanian financial sector belongs to the type of model that is *"The financial sector dominated by the bank sector"*. The banking sector remains the main segment of financial intermediation in Albania. The banking sector accounts for 90.4% of financial system assets and 91.7% of GDP in December 2014. This sector is dominated by five banks, which altogether account for 68.4% of the system's loan portfolio and 73.4% of deposits (Bank of Albania, 2014).

This paper is organized as follows. Section 2 presents related theoretical literature on the estimation of banking concentration indicators. Section 3 includes an assessment of bank concentration in Albanian banking sector. Finally, Section 4 concludes remarks.

THEORETICAL BACKGROUND

The estimation of concentration realized through the various concentration ratio which they relied on the structural features of market. Concentration ratio reflected the concentration changes due to the entrance or exit of banks from the market or merging of them. Concentration indicators are given by concentration index (CI) through common form:

$$CI = \sum_{i=1}^{n} s_i w_i$$

where s_i is the market share of bank, w_i is the weight of bank related to market share and n is the numbers of banks in the market.

Bikker and Haaf (2000) examined the structural and empirical estimation of some concentration indicators in banking sector following by concentration ratio of k - banks (CR_k); Herfindahl – Hirschman index (HHI); Hall – Tideman index (HTI); Rosenbluth index (RI); Comprehensive Industrial Concentration index (CCI); Hannah and Kay index (HKI); U index (U); multiplikativ Haus index (H_m); additive index Hause (H_a); the entropy measure (E).

They emphasized that the structure of concentration indices would be the discrete or cumulative structure. The discrete indicators like CR_k are simplified to measure due to the restriction of the available data. Meanwhile they depended on the behaviour estimation of limited number of banks in the market without considering of the complete dispersion related to bank size and the structural changes in these market shares. While the cumulative indicators like HHI, CCI, RI, HTI and E, explained the complete dispersion according to bank size and reflected the structural changes in the complete dispersion. Bikker and Haaf (2000) analyzed the main indicators of banking concentration following by:

- Concentration ratio of k - banks is the most useful empirical indicator and calculates by the summation of market shares (s_i) of k – *the largest banks.* It is given by following form:

$$CR_k = \sum_{i=1}^{k} s_i$$

It's taken into consideration of *k* largest banks and neglects the smallest banks in market. The value of k defines in arbitrary means and the value of CR$_k$ converges from zero when a lot of smallest banks consist the market, to one when the market represents by alone bank.

- Herfindahl – Hirschman index (HHI) is the most comprehensive indicator by theoretical analysis and empirical estimation in banking sector. This index is the most important indicator by enforcement of anti – trust law in USA banking sector where the mergers applications approved according as HHI. It presents by form: $HHI = \sum_{i=1}^{n} s_i^2$, where s_i is the market shares of each bank and *n* is the number of bank in market. Values of it fluctuate by *1/n* when all of banks possess the same market shares, until one when the market possessed by monopoly bank.

Davies (1979) analyzed the sensitivity of HHI related to the number of banks in market and the inequality according as market shares possessing by various banks. He found that the index is less sensitive towards changes of a large number of banks in market. Adelman (1969) presented the index according as the mean of distribution and variance. While Kwoka (1985) showed HHI related to mean of banks' market shares like: $\bar{s} = 1/n$, as taking the form:

$$HHI = \bar{s} + \sum_{i=1}^{n} (s_i - \bar{s})^2$$

This structure of HHI may be modified according as an inverse function of banks number in market and a direct function related to the variance of market shares against the average: $HHI = (1/n) + n\sigma^2$, highlighting the HHI behavior versus the number of banks and combinations of different number of banks with their size. Also it can calculate the equivalent number according to HHI as: $n_e = 1/HHI$ for each value of HHI since $HHI = \sum_{i=1}^{n} (1/n)^2 = n(1/n)^2 = 1/n$, showing that at least two banks with different size distribution can generate the same HHI.

- Hall – Tideman index which is developed by Hall and Tideman (1967), who emphasized the inclusion of the banks' number to calculate the concentration index due to the reflection of entrance in a particular industry. Hall - Tideman index *(HTI)* presented by the following form: $HTI = 1/(2\sum_{i=1}^{n} is_i - 1)$, where the market share of each bank is weighted according to a ranking in descending order, where the largest bank has weight: $i = 1$. Index values range from zero when the market consists of a large number of banks with the equal size, to the one when the market is owned by a single bank in the case of monopoly. HTI equal to $1/n$

when the market consisting of n banks with the equal size, meanwhile the equivalent number defined by: $n_e = 1/HTI$.

- The Comprehensive Industrial Concentration Index (CCI) has come out due to the contest on the concentration and dispersion of banks or firms in the diverse industries. Supported on this contest argued wether the concentration indicators should be based on the discrete measurements of concentration which they focused on large banks that determine the behavior of the market, or the distribution measures which they underestimate the significance of large banks in market. Horvarth (1970) introduced the CCI as an indicator that reflects both the relative dispersion and absolute size in the following form:

$$CCI = s_i + \sum_{i=2}^{n} s_i^2 (1 + (1 - s_i))$$

It is calculated as the sum of the proportional share of the largest bank and the summation of the squares of the proportional sizes of each bank which is weighted by multiplier of the residual proportionate size of the rest of the industry. The value of index is unity in the monopoly case and it is higher than the dominant banks' share in absolute percentage for a market with a larger number of banks.

- The indicator of Entropy (E) based on the information of distribution in ex-ante analysis. It formed by:

$$E = -\sum_{i=1}^{n} s_i \log_2 s_i$$

Its values converge by zero to $\log_2 n$ and has the inverse variation related to the concentration level. It takes the smallest value, zero, in banking monopoly and the largest value, $E = \log n$, when the market shares of banks are equal and the market has the lowest concentration. The value of index declines due to the increasing inequality between banks referring to the given number of banks (White, 1982). The equivalent number defined by: $n_e = 2^E$. It transforms into the natural logarithm as $\log_2 s_i = \ln s_i / \ln 2$, so

$$E = -\sum_{i=1}^{n} s_i \log_2 s_i = -(1/\ln 2) \sum_{i=1}^{n} s_i \ln s_i$$
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ASSESSMENT OF CONCENTRATION IN ALBANIAN BANKING SECTOR

The estimation of concentration in banking market has the particular features compare to other markets, due to defining of relative market and geographic market which related to the multiplicity of diversified banking products and services. The concentration banking assets, deposits, loans and treasure bills was estimated by the comprehensive indicators of banking

concentration. The indicators focused on the concentration ratios (CR$_3$, CR$_5$, CR$_{10}$) like discrete indicators and Herfindalh – Hirschman index (HHI) like cumulative indicators during 2000 – 20012.

Figure 3 shows the dynamic of concentration indicators related to the concentration ratios *(CR$_k$)* of banking assets, deposits, loans and treasure bills. Concentration ratios, CR$_3$ and CR$_5$, related to banking assets and deposits demonstrate the high level of concentration, although their trends have been falling recent years, but not stationary. Meanwhile the concentration ratios, CR$_{10}$, demonstrate approximately the dominance of ten larger banks in the assets and deposits market. The market share of them converges in the segment of 94% - 99% during the period of analysing. Also the concentration ratios related to the loans demonstrate the high concentration but associated with diminishing trend until 2010. The loans market dominated approximately by ten larger banks despite of declining trend until 2007 and their market shares fluctuated from 91% to 97% during the reference period. The treasure bills market dominated by ten larger banks until 2008 and their market shares held the deviation in the segment of 96% - 100% referring to this period.

Figure 3: Concentration Ratios CR$_5$ and CR$_{10}$ For Banking Products During Period: 2001 – 2012
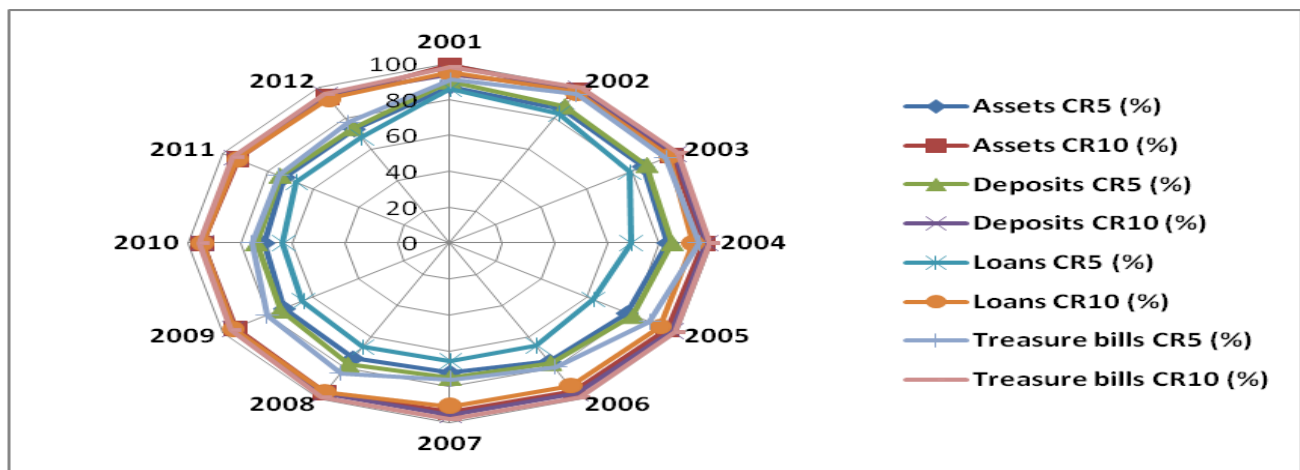
Source: Authors' calculations

Estimations of concentration related to banking assets and deposits by using the HHI (according to its original form) indicated the high levels of concentration, respectively by 2005 and 2006, while the subsequent period associated with the moderate level of concentration. The high concentration was inherited due to the attribute of historical banking monopoly of state banks until 1998, and then as the consequence of new banks entrance in market changed the banking behaviour toward the oligopolistic market related to the high concentration level.

Banking behaviour converged towards the monopolistic competition market due to structural changes occurring during this period and the extensions of banking activity after 2003.

Meanwhile the estimation of banking loans concentration through the HHI reflected the moderated concentration after 2001. The results suggested that lending activity is the less concentrated activity in banking sector and it converged to the monopolistic competition behaviour. However, the upward trend of concentration level after 2007 attributed to the better position of G2 banks (referring to the banks classification by Bank of Albania) and realized the bank mergers during this period, but also it related to the tight lending in economy due to the transmitted effects of global financial crisis in 2008.

The concentration results according to the treasures bills through HHI demonstrated the most concentrated market until 2008 compare to banking assets, loans or deposits, while it confirmed the moderated concentration referring to the subsequent period. The high concentration ratios confirmed that the treasure bills market was the most concentrated in banking sector and was converging to the oligopolistic behaviour even after the structural changes implemented during this period.

These results were the consequence of dominant position of Raiffeisen Bank in treasury bills market, due to the inherited attributes by the historical of Saving Bank. Raiffeisen Bank held the market shares to 29.11% in 2011, otherwise the downward trend; it continued to hold the dominance in treasure bills market until now.

Figure 4: HHI for Banking Products during 2001 – 2012
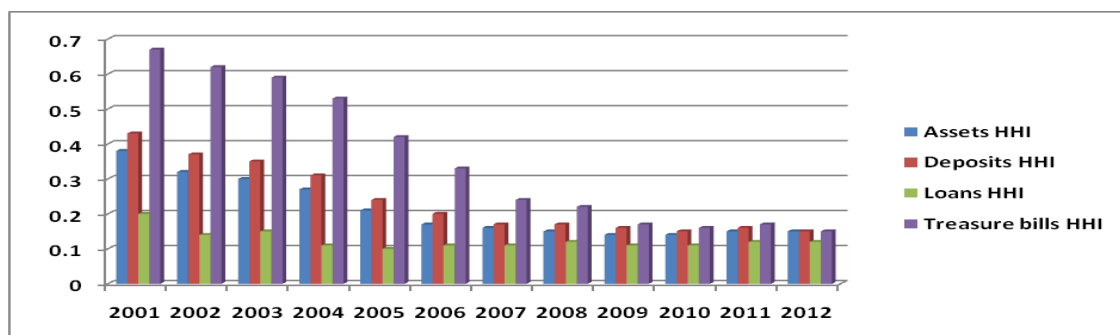
Source: Bank of Albania, authors' calculations

The figure 4 confirmed the highest level of banking assets concentration in Albania compare to several European countries referring to the comparative statics. It analyzes the HHI related to banking assets in 2008 and demonstrates the higher concentration than in several European countries like Germany, Italy and United Kingdom. There is no large divergence when it compared to Balkan countries like Slovakia, Slovenia and Greece. We saw the same situation

when it compared to the 27 European Union countries (EU 27), but the Albanian banking sector related to bank assets remains the highest concentration level.

Figure 5: HHI For Banking Assets in Some Countries of Europe And Albania in 2008
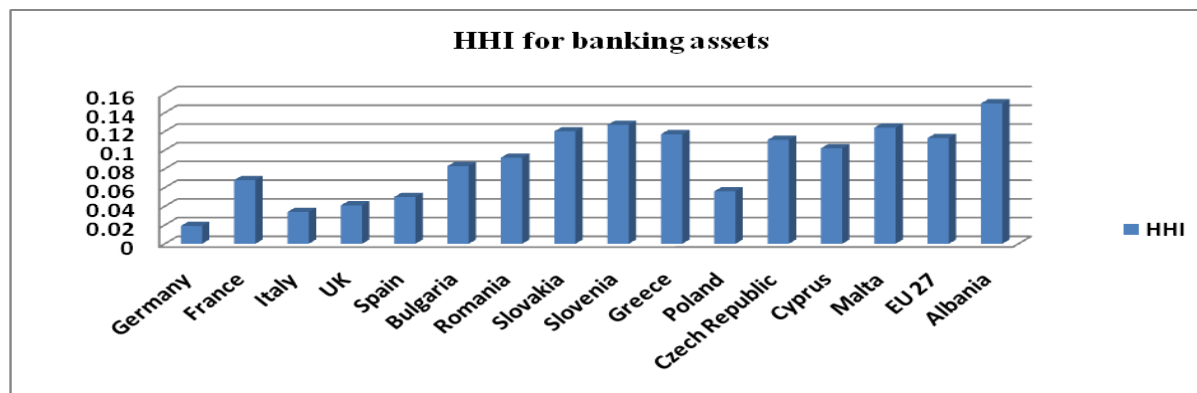
Source: Weill (2011), authors' calculations

The analysis of concentration related to banking assets, loans and treasure bills complemented to several other cumulative indicators, which they described the complete distribution by banks' size and harmonized the structural changes in the whole distribution, also abating the effect of large banks size in the estimation of concentration. The table 1 demonstrates the indicators of HHI (which is estimated by Kwoka (1985)), CCI, HTI, E and the equivalent number, n_e, related to HHI and HTI, according to banking assets, loans and treasury bills during to 2005 - 2012. These estimations specified the high concentration, but it converged to the moderate concentration associated to the downward trend. Estimation of the cumulative indicators converged towards the discrete indicators, but they highlighted the moderate concentration, which it reflected the structural changes in the banking sector.

Table 1: Cumulative indicators related to banking assets, loans & treasure bills during to 2005-2012

Concentration Indicators		2005	2006	2007	2008	2009	2010	2011	2012
	HHI	0.21	0.18	0.15	0.15	0.14	0.14	0.14	0.15
	n_e (HHI)	5	6	6	7	7	7	7	7
	HTI	0.17	0.15	0.14	0.15	0.14	0.14	0.14	0.14
Assets	n_e (HTI)	6	7	7	7	7	7	7	7
	CCI	0.49	0.45	0.42	0.41	0.40	0.40	0.40	0.53
	E	2.92	3.08	3.22	3.17	3.23	3.24	3.22	3.22
	HHI	0.10	0.11	0.11	0.12	0.11	0.11	0.11	0.12
	n_e (HHI)	10	9	9	8	9	9	9	8
	HTI	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13

Table 1…

Loans	n_e (HTI)	9	8	8	8	8	8	8	8
	CCI	0.31	0.33	0.34	0.35	0.34	0.34	0.34	0.36
	E	3.45	3.42	3.42	3.33	3.39	3.40	3.41	3.37
	HHI	0.42	0.33	0.24	0.22	0.17	0.16	0.17	0.15
	n_e (HHI)	2	3	4	5	6	6	6	7
	HTI	0.28	0.23	0.14	0.19	0.16	0.16	0.16	0.15
Treasure bills	n_e (HTI)	4	4	7	5	6	6	6	7
	CCI	0.67	0.61	0.53	0.51	0.45	0.43	0.44	0.41
	E	2.05	2.38	2.68	2.67	2.92	3.04	2.98	3.13

Source: Authors' calculations

Also the estimation of banking deposits' concentration used to the Lorenz curve for the deposits' distribution in banking sector during 2012 , which it demonstrated in figure 6. Lorenz curve confirms as the curve of deposit distribution close to the line of equal distribution according to deposits, as the lower banking concentration. It was composed taking into account the cumulative weights of banks' number and deposits in banking sector, and also was ranking the banks by the lower weight to the greater weight.

Lorenz curve proved the high level of deposit concentration and it demonstrated that 88 % of banks hold only 52 % of the deposits' distribution in banking sector, which it converged to the estimation by other indicators of deposits' banking concentration.

Figure 6: Lorenz Curve to Banking Deposits Distribution in 2012
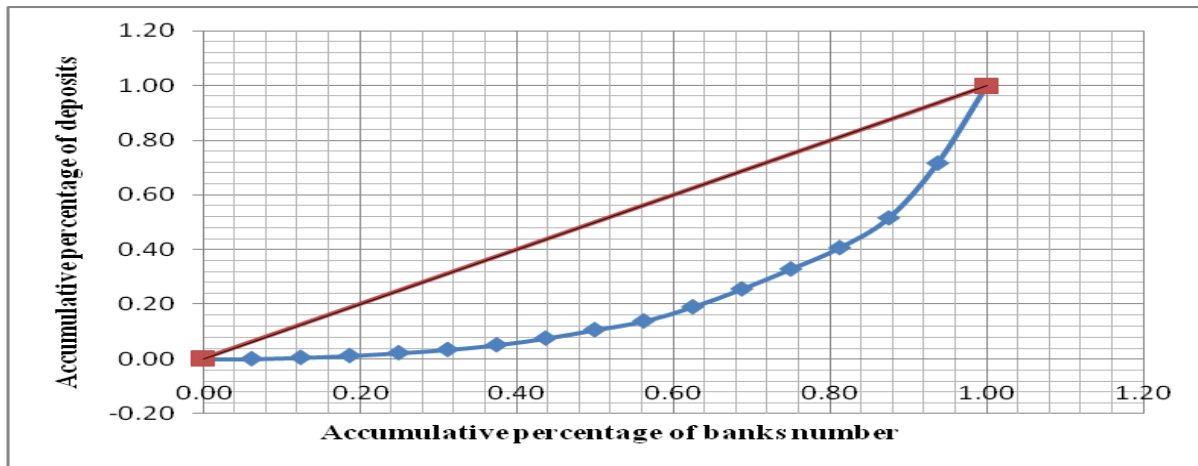
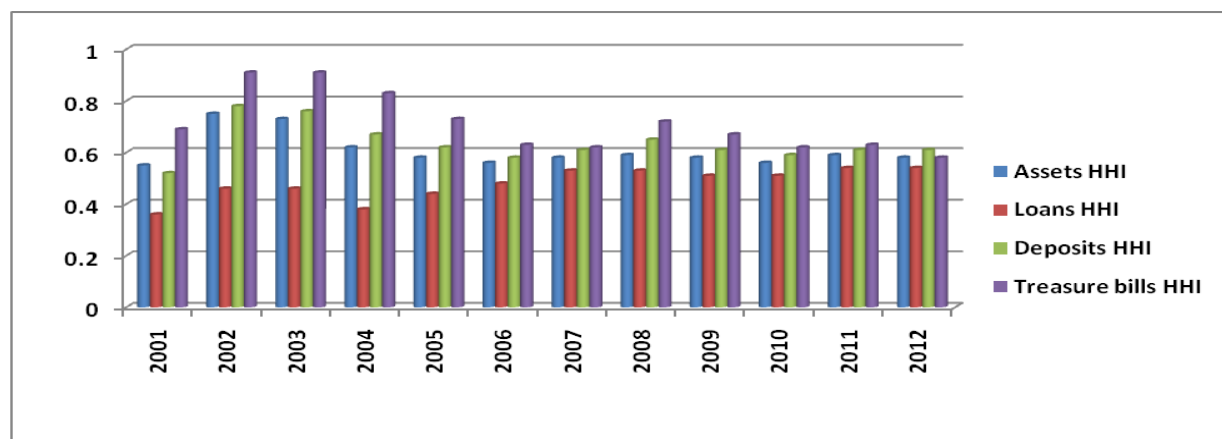Source: Authors' calculations

The examination of concentration's assessment in banking sector should take into consideration the structure of banking sector by group - banks, which it is directly related to the concentration of banking products. The concentration of group – banks estimated by HHI (which is estimated by Kwoka (1985)) to banking assets, loans, deposits and treasury bills during to 2001 - 2012.

Depending on the implemented structural changes in banking sector, the structure of banking sector according to group – banks had its dynamics relying on the ownership of banks' capital and banks' assets size are classified into three main groups, G1, G2 and G3. The structure of banking sector until 2003 referred to the division of banks into three groups according to ownership of banks': State-owned Bank (G1); Joint venture banks (G2); Private-owned banks (G3).

The banking sector owned entirely by private shareholders during 2004 and composed the new classification of banking sector structure according to the criterion of bank assets size. Referring to the total value of assets according to each bank in the market to the total value of assets according to banking sector, banks divided into three main groups: Banks hold less than 2% of the total value of assets related to banking sector (G1 - group of smaller banks); Banks hold more than 2% and less than 7% of the total value of assets related to banking sector (G2 - group of medium-sized banks); Banks hold more than 7% of the total value of assets related to banking sector (G3 – larger banks).

Estimation of HHI related to group - banks confirmed the high concentration like assets, loans, deposits and treasury bills. HHI indicated the treasury bills market like the most concentrated market and the loans market like the least concentrated market compare to other market. However, we concluded that the banking sector linked to high concentration referring to the group – banks.

Figure 7: HHI for Banking Products During 2001 – 2012
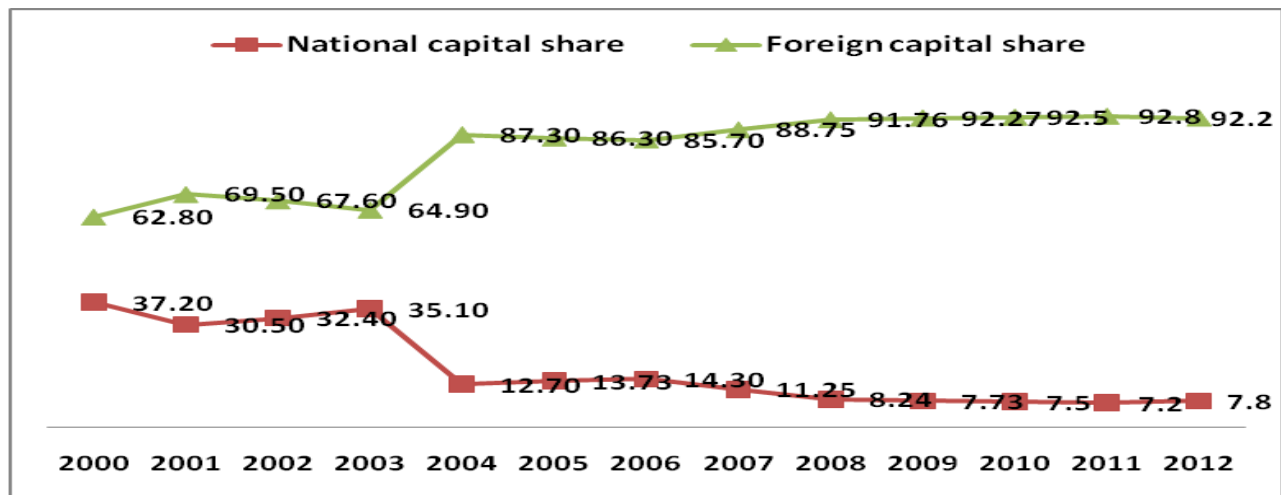

Source: Authors' calculations

Structural changes of banking sector after 1992 linked to the entrance of foreign banks in the market. The foreign banks consolidated the market position and dominated banking sector, meanwhile they have brought the important changes in the capital structure of banking sector.

The dominance of state domestic capital in banking sector was already replaced by the dominance of foreign capital. Paid-in capital in banking sector grew by 11.5% in 2012 compared to 2011, where the foreign capital dominated the growth with 86.3% due to this result; the share of foreign capital in banking sector amounted to 92.2% (Bank of Albania, 2012).

Figure 8 showed the dynamic of the domestic and foreign capital share to the capital of banking sector. The figure indicated the deepening of gap between the domestic capital and foreign capital to banking sector, particularly after 2003, where the important structural changes occurred in banking sector related to the whole privatization of it. After this year the figure demonstrate the dominant convergence of foreign capital in Albanian banking sector. The high concentration of foreign capital to domestic capital is the characteristic of banking sectors in developing countries.

Figure 8: Dynamic of National and Foreign Share in Albanian Banking Sector during 2000-2012, (%)

Source: Bank of Albania, authors' calculations

Also the high concentration of foreign capital to the capital structure of the banking sector converged to several countries in the region. Figure 9 shows the assets shares of foreign – owned banks in national banking sectors in several countries of Western Europe and Eastern Europe. The comparative statics indicated that the Albanian banking sector had the highest concentration of assets that holding by foreign banks in national banking sector, compared to other countries taking into consideration, except Estonia. This comparative statics highlighted the dominance of foreign capital in the capital structure of banking sector in the region.

Figure 9: Asset Share of Foreign – Owned Banks in National Banking Sectors
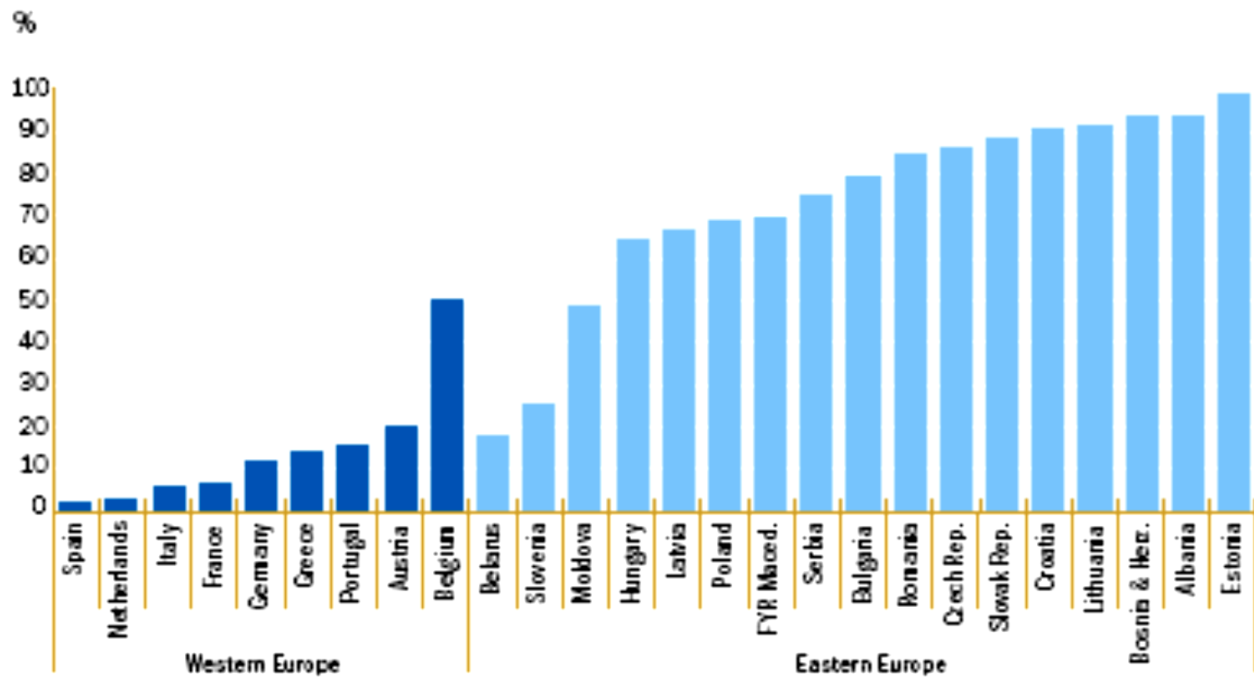
Source: EBRD, 2012

CONCLUDING REMARKS

The estimation of banking concentration is the important determinant according to theoretical and empirical sides in structural analysis of banking sector. The evaluation of concentration in banking sector is related to particular features, due to the relevant market and geographic market of diversified banking products and services. Structural changes of banking sector in our country over the years have reflected their effect on the banking concentration. Banking sector demonstrated the high concentration relying on empirical estimations, particularly the discrete indicators. The assessment of banking concentration by discrete indicators highlighted the most concentrated banking sector, but also the cumulative indicators converged towards the similar trend.

The discrete and cumulative indicators highlighted the most concentrated market like the treasure bills market and the least concentrated market like loans market. However it should be noted the dynamics of high declining rates in treasury bills market, which it has converged to the moderate concentration referring to HHI. Meanwhile the banking assets, loans and deposits market operated in the moderate concentration taking into consideration the HHI. Referring to the group - banks confirmed the high concentration related to the whole banking products, more than ever they highlighted the dominance of G3 banks. Likewise it confirmed that the treasury

bills market was the more concentrated in the banking sector, but its trend has been downward and converged entirely to HHI of banking assets during 2012 due to the better position of G2 banks in treasury bills market. Also it confirmed that the less concentrated market was the loan market compare to assets, deposits and treasury bills. Afterwards it observed the upward trends of concentration in loans market, which they are associated with high concentration in deposit market by group - banks, due to the deposits are the most important determinant that dictates the lending capacity of banks.

Albanian banking sector accompanied by high concentration of foreign capital to domestic capital, which it is the feature of banking sectors in developing countries. The high concentration of foreign capital to the capital structure of banking sector proved through comparative statics and convergence for several countries in the region, but our country was the most concentrated. Actually, the domination of state domestic capital in banking sector was replaced by the dominance of foreign capital.

Finally, in terms of the future research it would be appropriate to assess the entire discrete and cumulative indicators of banking concentration relying on theoretical analysis, which they are not calculated due to lacking of the detailed data. Also it would be so important to calculate both indicators according to banks - group and to the diverse districts in the country. They would promote the relevant signals to banks' behaviour. The latter investigations would be contributed to assess the bank behaviour relying to the Structure - Conduct - Performance paradigm.

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