Competition in Banking Market in Slovakia

Střelecká Zdenka[*], Ekonomická univerzita v Bratislave, Národohospodárska fakulta, Bratislava, Slovakia

ABSTARCT – The process of fundamental changes of Slovak banking sector has had essential influence on the concentration and on the character of banking products. The article is oriented on analysing the competition level using Herfindahl index and CR3 and CR5 indexes. Indeces are used to compare the level of competition using following balance items: total assets, bank loans and deposits to corporate and retail sector. This approach brings us different conclusions.

KEY WORDS: competition, banking sector in Slovakia, Herfindahl index, CR3, CR5, balance sheet

Introduction

Competition is a basic component of a well-functioning market mechanism. It is a rivalry between individuals or economic groups with their differentiated interests and goals. In general, we recognize competition on the supply or demand side, price or non-price and perfect or imperfect competition. Imperfect competition is further characterized as monopolistic competition, oligopoly and monopoly. Information about the level of concentration is important not just for the evaluation of market structure, but they help in the process of creating recommendation for concrete measures of monetary policy.

Because of its special position it is important to determine the level of the competition in the banking market. Firstly, it is because banking market belongs to the markets with high and strict regulation. Supervision on the banking sector is carried out by specialized departments of the Ministries of Finance, separate offices or central banks. In Slovakia, the supervision is operated by National Bank of Slovakia (NBS). Secondly, entry in the market is a subject to several restrictions. For example the management has to be qualified enough; it has to obtain a banking license from the supervisor and has to own a sufficient level of capital. Furthermore, during their activity commercial banks have to meet the requirements of domestic supervisor and the minimum capital requirements known as Basel II. On the other hand it is known that banks undertake high risk and their actions affect the overall development of the economy. That is the main reason why the banking sector is a subject to a higher degree of regulation than other sectors are. In the past the importance of healthy functioning of the banking sector forced the governments in many countries to undergo restructuring process of banking sectors to avoid the negative impact on the entire sector and on the whole economy.

---

[*] E-mail: zdenka.strelecka@gmail.com

The bank is exposed to risks on both sides of its balance sheet. On the asset side it runs the market and credit risk (counterparty default risk). On the liabilities side there is a risk of availability of the bank´s funds and their time restriction.

Measures of competition

Frequently and easily used way how to determine the concentration in a particular sector are concentration ratios, the Herfindahl index and Hirshman index. With these indices it is possible to determine the level of market concentration; the higher the concentration is the weaker market competition will be.

Recent studies dealing with the competition in the banking market use a Boone indicator, which is based on the opposite approach - the more efficient bank is the greater market share of competitive market it gains. In some cases, especially when comparing banking markets with various sizes, the Boone indicator appears as a more appropriate and flexible variable.

Concentration ratio is designed as a sum of variable r_k which represents market share of the ith largest firm.

$$CR = \sum_{k=1}^{n} r_k$$

Herfindahl index (some sources refer to Herfindahl-Hirschman Index, HHI index) is based on the theory of industrial organization of Harvard School. This theory deals with the relationship between the industry structure – conducting the business - and its performance (so-called SCP paradigm "Structure - Conduct – Performance"). Highly concentrated structure is associated with monopolistic behaviour (Tokárová Mária, Rievajová Eva (2007)). It is defined as the sum of the squares of market shares of all firms. Index takes into account the number of firms in the industry and their market share. Analytical transcript of Herfindahl index (Kočišová Kristína (2008, p. 20)) is as follows:

$$H = h(q_1, q_2, \ldots, q_n) = \sum_{k=1}^{n} \left(\frac{q_k}{Q}\right)^2 = \sum_{k=1}^{n} r_k^2$$

h - real function of n variables
n - number of firms in the industry
q_k - the value of the variable for the ith firm, k = 1, ..., n
Q – the value of the variable for the industry
r_k – the market share of the company in the industry converted in the percentage

By definition of the U.S. Department of Justice, the market is considered as highly concentrated if the HHI exceeds 1800[1]. If the value is below 1000 the market is considered as not concentrated. When the value of the index is close to zero it is a symbol of a competitive environment without a dominant player. If all firms in the market have equal market share, then inverse value of the index represents the number of firms performing on the market.

---

[1] [cit. 2009/12/31] http://www.justice.gov/atr/public/testimony/hhi.htm

Modified version of HHI index is a Hirschman Index, the analytical entry is defined as follows:

$$Hirschmanov\ index = \frac{\sqrt{\sum_{k=1}^{n}(q_k/Q)^2} - \sqrt{1/n}}{1 - \sqrt{1/n}}$$

The index can take values [0.1]. Low value of Hirschman index shows highly competitive environment, by contrast, value close or equal to 1 indicates maximal concentration (Kočišová (2008, p. 21)).

These indicators have one disadvantage. They do not distinguish between large and small countries. The fact that the concentration may occur as a result of a natural competition when the effective company eliminates its market rivals is also ignored.

Competition in the Slovak banking market

As a measure of the competition in the Slovak banking market National Bank of Slovakia uses three indices: CR3, CR5 indeces and the HHI index. For comparison, Czech national bank uses different measure and that is a Lerner index.

- CR3 index is defined as the share of the three banks with the highest volume of the variable on total volume of the variable in the banking sector; only institutions with the positive value of the variable are included in calculation
- Analogically CR5 presents the share of five banks with the highest volume of the variable on the total volume of the variable in the banking sector; only institutions with the positive value of the variable are included in calculation
- Herfindahl Index (HHI) is defined as the sum of the squares of individual banks' share on the total volume of the variable, expressed in percentage; only institutions with the positive value of the variable are included in calculation.

The following chart shows the evolution of all three indices since the year 2005 till the second quarter of 2009 using the total assets as a variable. Looking at the development of the HHI index it is best to see that level of competition does not stagnate and during the period 2005 - 2Q 2009 several changes in various indicators occurred. Increase in the value of the HHI index means an increase in market concentration (and vice versa the reduction of competition). In the year 2005 HHI index reached the value 1084 and in the second quarter of 2009 the value of the 1220. Although the values are within the zone of moderate market concentration, it should be noted that since the year 2005 there has been a substantial increase of the concentration ratios in the banking market.

During the years 2006, 2008 and during the second half of 2009 CR3 indicator and the HHI index reached the highest values. The share of five largest banks (CR5) on total assets more or less copied the development. The exception is the year 2006 when there was a decline in the share of the five largest banks and increase in the share of three largest banks. We could say that during this year three largest banks reinforced their leading market position. Looking on the decrease of CR3 and HHI parameters between 2005 and 2007 thus caused an increase in competition. In the same time variable CR5 had an opposite development. The share of five largest banks on total assets increased at the expense of the

share of three largest banks, which can be defined as a positive development. The highest degree of concentration was observed at the end of 2008, which was due to the big amount of cash deposits from population. The reason for cash deposits was a euro adoption and conversion of Slovak crowns to euro currency. Later on commercial banks imposed these funds through the deposit facility in the NBS. In comparison with the study of European central bank the average value of CR5 indicator for 25 European countries is 72% (European central bank (2005)).

Chart 1. Development of the HHI index, CR3 and CR5 indeces on the total assets market[2]
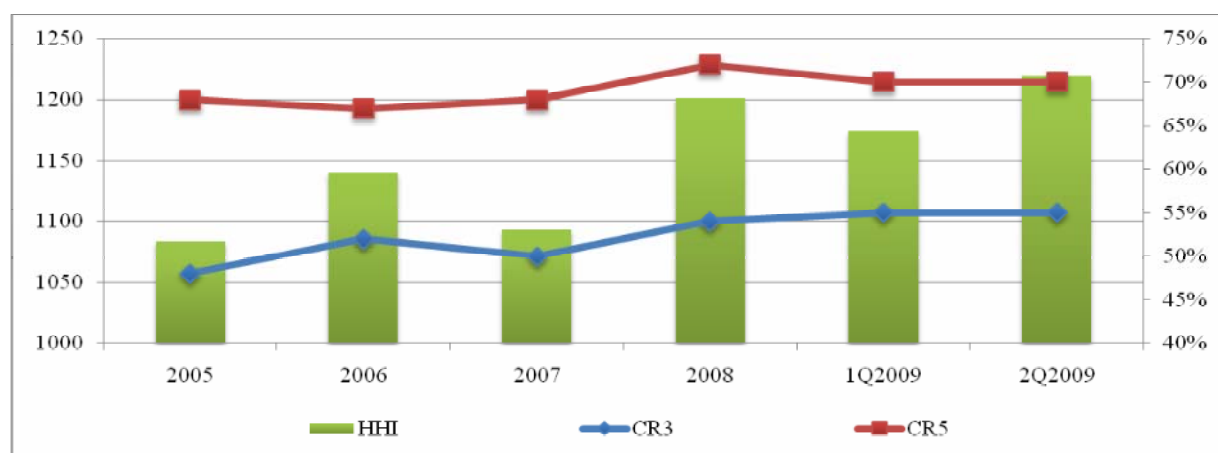
Analyzing the values of indices for different sectors (retail and corporate) and for each balance sheet item (client´s credits and client´s deposits) it allows us to observe in which sector the concentration reaches the highest level. The values of individual variables are shown in the following two tables. The first table is an analysis of market concentration for credits to corporate and retail sector. The second table monitors developments on the deposit market. (CR3 R – CR3 indicator for retail sector, CR3 C – CR3 indicator for corporate sector, CR 5 R – CR5 indicator for retail sector, CR5 C – CR5 indicator for corporate sector, HHI R – HHI index for retail sector, HHI C – HHI index for corporate sector)

Table 1. CR3, CR5 a HHI index values on the loan market[1]

credits	CR3 R	CR3 C	CR5 R	CR5 C	HHI R	HHI C
2005	64%	40%	81%	58%	1610	907
2006	63%	43%	81%	63%	1588	981
2007	61%	48%	82%	68%	1587	1088
2008	63%	47%	82%	67%	1607	1096
2009Q1	64%	47%	82%	67%	1618	1096
2009Q2	64%	47%	83%	67%	1639	1088

---

[2] [cit. 2009/12/1] http://www.nbs.sk

Table 2. CR3, CR5 a HHI index values on the deposit market[3]

deposits	CR3 R	CR3 C	CR5 R	CR5 C	HHI R	HHI C
2005	61%	52%	75%	68%	1612	1314
2006	62%	53%	76%	69%	1636	1344
2007	63%	55%	75%	74%	1625	1480
2008	64%	58%	76%	75%	1614	1485
2009Q1	63%	56%	75%	74%	1580	1459
2009Q2	63%	56%	75%	74%	1567	1503

Using individual balance sheet items instead of total assets demonstrate us higher values of concentration indices. Values for deposit market differ at most. In comparison with the value of the HHI index for total assets they vary approximately from 300 to 500 points.

Competition in the credit market developed in different way. Compared with the analysis of total assets, the values of the HHI index in the retail sector are higher by 400 to 500 points and in the corporate sector are even below around 200 points. The concentration on the credit market for the retail sector is substantially higher than the concentration for the corporate sector. Similar development can also be seen on the deposit market even though there is not so high disparity.

Chart 2. HHI index for loans and deposits to retail and corporate sector[2]
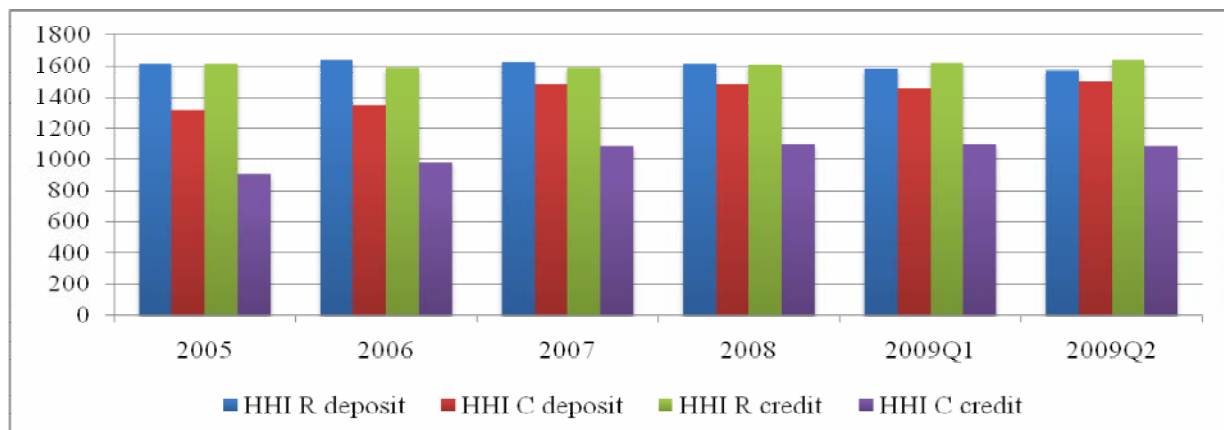
The values of the HHI index for retail sector on both markets reached the value around 1600 (see Chart 2). This level of concentration indicates that a low level of competition dominated in this sector. It should be noted that the market with the HHI index value of 1800 is considered as a highly concentrated.

In the corporate sector, the situation on the market with deposits and loans is different. A high level of competition dominates on the credit market. The values of the HHI index in deposit market for corporate sector are catching up with the index values in deposit market for retail sector. This is a sign of lower competition than on the credit market.

---

[3] [cit. 2009/12/1] http://www.nbs.sk

Economic Analysis (2010, Vol. 43, No. 1-2, 117-125)

Chart 3. CR3 and CR5 indeces on credit market[4]
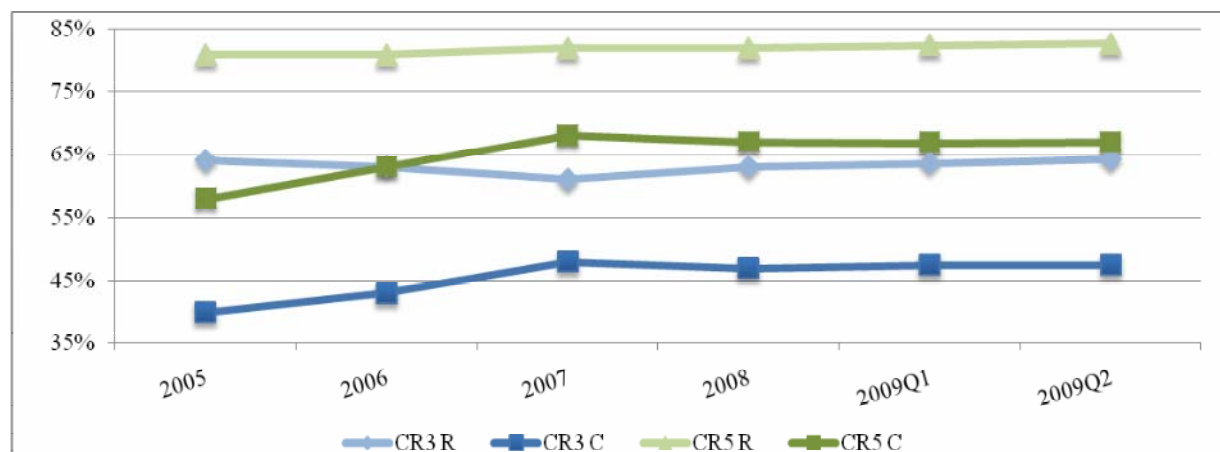
The development of the CR3 and CR5 indeces for credit market gives us interesting conclusions. While the share of five largest banks for the retail sector changed over the period very slightly, in 2007 the proportion of three and five largest banks in the credit market for the corporate sector reached the highest level. An important and surprising fact is that the difference between the share of three largest banks in the retail sector and the share of five largest banks in the corporate sector is minimal. What once again is a demonstration of the low level of competition in the services for retail sector and the dominant position of the three largest banks.

Until 2007 deposit market for retail sector had substantially higher concentration than the corporate sector. But since 2007 the share of five largest banks in both sectors is almost equal (the difference is 1 percentage point.). Although the share of three largest banks in the corporate sector is lower than in the retail sector, around 10%, there is a similar trend with the share of three largest banks in the retail sector. It should be noted that during the watched period in the retail sector minimal changes took place.

Chart 4. CR3 and CR5 indeces for deposit market[3]

---

[4] [cit. 2009/12/1] http://www.nbs.sk
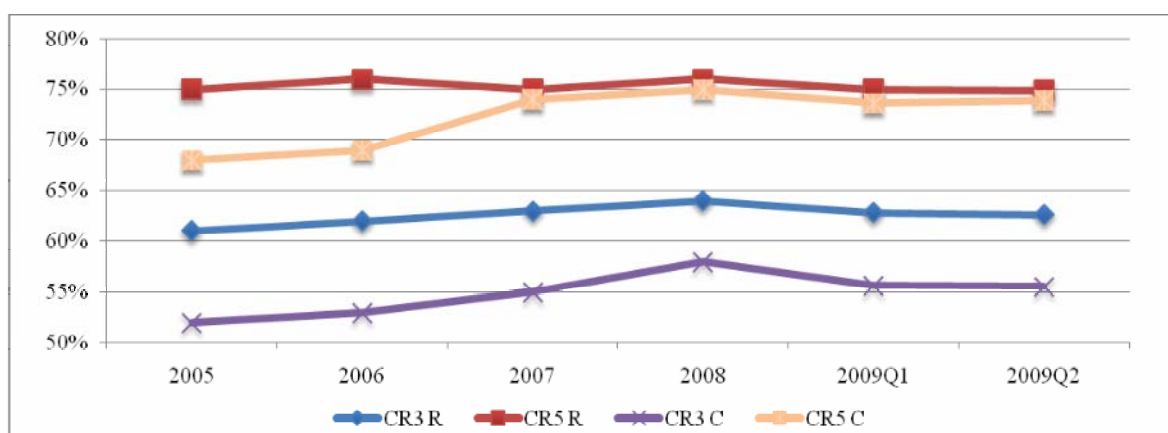
An alternative method of determining the competition

An alternative way how to determine the competitive environment is to compare the difference between the individual market shares of market players. Total assets are considered as an appropriate indicator for determining the market share. In the following section the share of assets of the ith bank on assets of total banking sector (MS i) is compared with the share of assets of jth bank on total assets of banking sector (MS j).

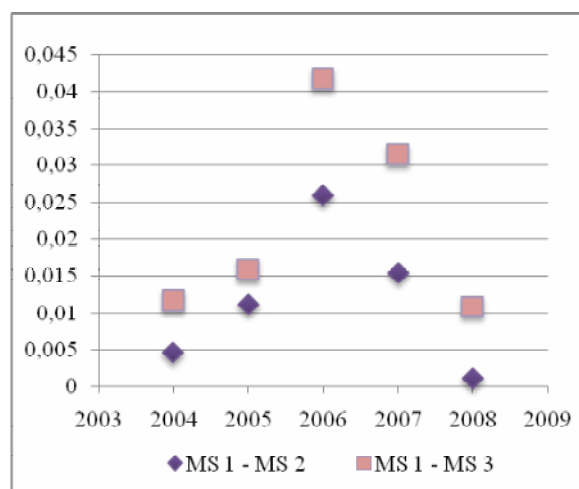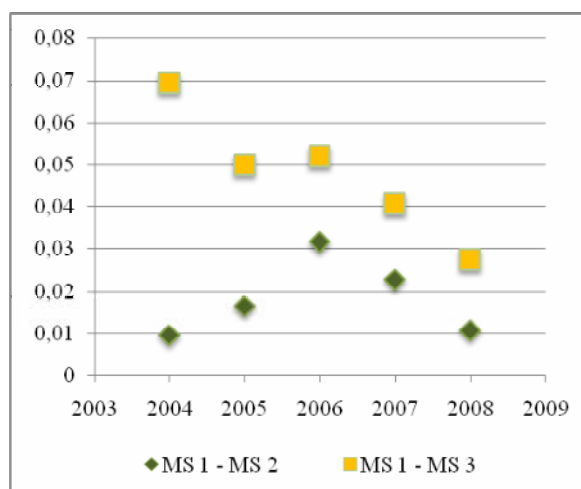*Chart 5. Development of market shares (variable – total assets)[5]*
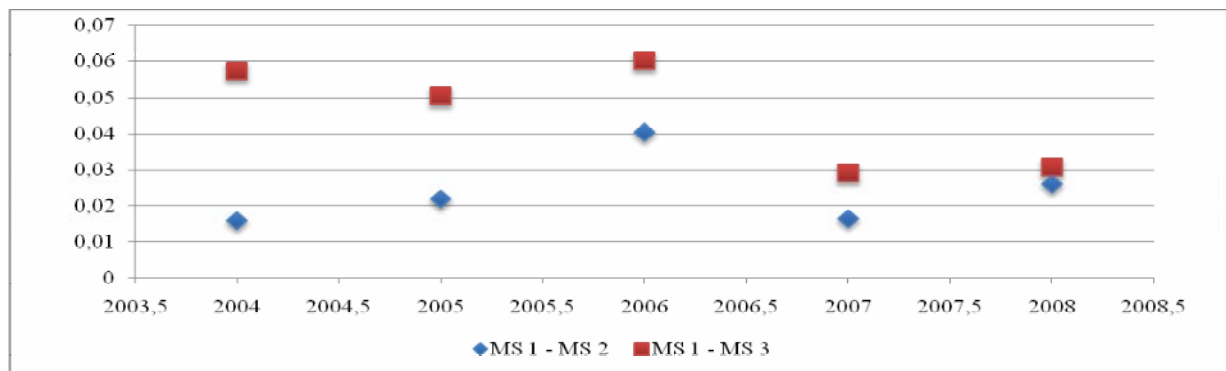
The difference between the market share of bank with the strongest position (leding bank, MS 1) and bank with the second largest share (MS 2) reaches the highest value in 2006. Comparing the difference between the market shares of leading bank and bank with the third largest share (MS 3) a similar trend can be seen. The development of these indicators gives us interesting results. While during years 2004 - 2006 leading bank affirmed its position (see Chart 5), between years 2007 and 2008 lost this favourable position and what is interesting the difference between the leading bank and position of the second and the third bank decreased. In the future we can expect the exchange of the positions between bank with the second and third largest market share.

If in the calculation of market shares is variable "total assets" replaced by balance sheet items: client´s credits or clients' deposits, it would bring us interesting conclusions, too. The development on the deposit market is slightly different. Till 2006 there is a widening gap between the market shares of leading bank and the bank with the second highest market share. During the years 2006 and 2008 there is a reduction of this difference. On the contrary, the difference between leading bank and the bank with the third largest market share (MS 1 - MS 3) during years 2004 and 2008 decreased (Chart 7). Leadership on the market with deposits and with total assets belongs to the same bank.

---

[5] Author´s calculations. [cit. 2009/12/1] http://www.nbs.sk/sk/statisticke-udaje/menova-a-bankovastatistika /menova-statistika-penaznych-financnych-institucii#AM1-12PF

Chart 6. Market shares (credits)[4]   *Chart 7. Market shares (deposits)[4]*

The situation on credit market during the years 2004 and 2008 changed significantly. The bank with leading role in 2004 dropped to second place in 2005 and since 2006 it declined to third rung. The bank which won the leadership in 2005 remained at first place until 2007.

In the following year the difference between MS 1 and MS 2 was minimal and the leading position was overtaken by the bank with the second largest market share of loans. These findings correspond with the development of the recent years. Due to the high economic growth we could observe easening of credit conditions and competitive fights between commercial banks.

Analyzing the level of competition by using the market shares of 3 major banks brought us, especially for the credit market, opposed conclusions as the analysis of market concentration using the HHI index. While the HHI index (and also partly CR3 and CR5 index) informed us about the stagnation or increase of market concentration, market share analysis demonstrated a highly competitive fight between commercial banks.

Conclusion

A general rule about countries with a small market is that they have a high degree of concentration. In Slovakia, more than 50% of banking sector assets is held by the three largest banks and approximately 70% is held by the five largest market players. Such a situation refers to a higher concentration, but compared with other "new" EU countries we belong among the moderate above-average.

Analysis of the market share of three largest banks has shown us competition and a decreasing position of the leading bank. On one hand, the situation in retail sector, where there is a permanently higher level of concentration than in the corporate sector, is caused by unconcerned consumers. On the other hand, the fact is that the three largest players on the banking market are banks with the longest history. Two of them operate on the Slovak market for more than 50 years and they inherited a number of clients from the previous socialist era, when bank did not need to fight for a client.

Recently, the situation has changed dramatically. Except for the entry of few new players (most recently in November 2007), the Slovak banking sector was marked by the adoption of the euro and economic crisis. These two factors caused the decrease of profitability of the banking sector and both sides of the balance sheet were affected. One of the potential benefits of euro adoption should be an increase of competition but so far the development did not show such benefit. It will be questionable whether the future development will bring strengthening or weakening of the position of three biggest players.

References

European central bank. 2005. *EU banking structures.* Frankfurt am Main: European central bank.

Kočišová, Kristína. 2008. "Konkurencia na slovenskom bankovom trhu". *Biatec,* 16/2008 (10): 20-25

Tokárová, Mária, and Rievajová, Eva**.** 2007. "Inovácie vo vývoji prístupov k teóriám konkurencie, súťaživosti, resp. protimonopolnej politiky." http://semafor.euke.sk/zbornik2007/pdf/tokarova _rievajova2.pdf