MEASURING MARKET CONCENTRATION OF CONSTRUCTION INDUSTRY. VLORA REGION EVIDENCE

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Abstract

The concentration ratio indicates the concentration of production management in a particular industry and is and important index to reflect industry and market structures. The research shows that the concentration of construction industry market definitely has developed. The study was conducted in the construction industry during a ten year period in Vlora region. The annual sales data during the years 2003-2013, were collected to compute comparable measures of market concentration. As, the market concentration may used as a measure of competition, theorized to be positively related to the rate of profit in the industry, it is evident that companies try to choose the appropriate strategies which fit more with the industrial organization. This paper applied concentration ratio (CR4) method, HHI and Gini Coefficient to analyze the absolute concentration ratio and relative concentration ratio for construction industry market with 2003 to 2012 statistical data.

The principal aim of this paper is to make an evaluation and to analyze the issues concerning the market concentration of construction industry in Vlora region. The specific objectives of the paper are: (1) to determine the role and challenges of construction industry firms in Albania and (2) to measure the level of firm concentration in the construction industry in Vlora Region. The study therefore attempted to test the hypothesis that the construction industry is not concentrated. The results of this study would assist the managers to design better competitive strategies they have to compete.

According the purpose of this work there are following the description and comparative methods.
Keywords: Market concentration, strategies, construction industry, competitiveness, Albania

Introduction

In recent years, with the development of Albanian construction industry, as a major sector and contributor to the economy, the importance of the construction industry and civil engineering has become increasingly significant. Construction is a very important branch of material production and it plays an important role especially in today's conditions where the rate of industrialization of this sector is growing fast. Construction is one of the industries which have developed considerably after the year 1991, related to the economic changes in Albania towards a market economy. The market forces and entrepreneurial initiatives, the current state of housing, the public and private needs for infrastructure and a variety of other factors brought as a result a rapid development of the construction sector. However, despite the economic growth and development numerous of this industry, during these years there has been not easy to face challenges. There are challenges that all countries in transition have to face and it needs time in order to minimize their negative effects. Some of the problems and challenges for which the industry has experienced are: constraints with construction permits, the fiscal legislation, the fluctuations of consumer demand as a result of the economic crisis, the informal labor market, raw material costs affected by inflation, the level of corruption etc.

The construction industry occupies about 4.3% of the total active enterprises operating in our country (INSTAT 2012). The construction has a significant share of the national GDP and employs hundreds of thousands of people continuously. The majority of firms in this industry belong to small and medium enterprises (SME) approximately 97% and 3% of the total firms are corporate (INSTAT, 2012). In general, small and medium enterprises form the basis of the Albanian economy and tend to bear a greater share of problems and development that our country has.

The construction industry is one of the major industries regardless the country where it is studied. This is, due to the high level of goods and services presence in the form of housing, transport and communication in our life. According to statistical data obtained from the Statistical Institute of Albania and Doing Business Reports, this industry contributes respectively 13.4% in 2008, 12.7% in 2009 (Doing Business in Albania 2012, Ernest & Young) and about 23.8% of new investment in the country. Apart from being a major employer with commensurate purchasing power, construction influences and in certain circumstances controls the competitiveness of other enterprises (Revay, 1992). So, the competitiveness and the strategies of the construction industry are important for competitiveness of other industries.
and affect the national economy. The paper aim to study the concentration level of construction industry in Vlora District.

Vlora is one of the 12 counties of Albania. The city of Vlora remains a major seaport and commercial centre, with a significant fishing and industrial sector. The county produces petroleum, natural gas, bitumen and salt.

Tourism has become a major industry in recent years, with many hotels, recreational centers, and vast beaches. Development of tourism sector has been one of the main voices of buildings for commercial purposes.

**The construction industry**

It has been noticed that the number of construction companies entering this industry has increased in the latest years. This increasing tendency has been justified by the economic growth that our country has had, also the increase demands of buying new buildings. In the earlier 90’s, according to a functional land plan, the government as the political adjuster and the only controller of the sources decided where and how the production will get organized, the services will get offered, etc, with the adoption of the economical market, government lost the monopoly of the only provider of the products and services. In Albania after the 90s till 1997 were created the first elements of the real estate’s market. According to the Law No. 7652, in 1992, it was made possible the private legalization of the buildings. This law had the initial intentions:

a. To create a free market of the private legalization.
b. Improved the use, maintenance and the administration of the buildings, giving the right to the renters of the government buildings to become the owners of them.
c. Created freedom for the owners, giving them the ability to use their properties as collateral on loans.
d. Created the opportunity of the local government to collect taxes for local use, taxes collected by the property taxation.
Albania realized the property legalization process within one year, being the only state who made this possible faster compared with the countries of Central and Eastern Europe (Hegedüs, 2002).

Overall, it needs to be mentioned that the construction industry has faced several challenges. In these conditions, the higher number and quality of the buildings built and legalized, expansion of the cities and their range, lack of the infrastructure investments, and other expansion problems, are the main phenomena noticed during the urban evolution cycles in Albania (Gjika & Shutina, 2009). According to the latest population and buildings registrations, in Albania were 520,936 (INSTAT, 2001) living buildings. One forth of these buildings were built before 1945. Up to this point, the population was dominated by the rural ones and hasn’t had any intervention in the housing, meanwhile the industrialization was really small. Referring again to 2001 data, more than half of the housing inventory were built during the communism period. During this period were built 457,300 building. Most of the buildings in the urban areas were in the form of the public apartments, while in the rural zones continued the self building tradition. Compare to the other places in the eastern Europe, the buildings inventory built in Albania resulted relatively new. 75% of them were built during the years 1970-1990, midtime in the other countries such as: Estonia, Poland, Slovakia and Hungary during these years were built only 40%.

After 1990, were built nearly 300,000 (270,590 informal buildings +36,252 legal buildings (INSTAT, 2008) buildings or additional new buildings only from the private section and almost 6,000 new in the public section (INSTAT, 2008), with an average of 15,000 new buildings per year.

Period after 2000 till 2007 could be considered as the growth period on the construction industry. After the deep crisis generated by the pyramidal firms which cause a revocation in different sections of the economy, Albania has had an high economic growth, 12.8 % in 1998 and continued the economical growth in the upcoming years with an average of 6% per year. The favorable economic situation, per capita income growth and the sustainability of the economic development were the main factors that brought the increased consumption. This tendency transferred in the building market, made that individual and firms increased their demand for buildings, touristic villas, infrastructures, nonhousing public buildings, private industrial buildings, reconstructions and maintenance etc. We, also, could mention other factors which influenced the future growth of this industry:

Living conditions. According to the indicators of the building numbers per family and the living space per person, Albania continues to be far from average rates in the region or in Europe. Compare to other European places, Albania has had on the lowest levels in the housing buildings. Based on indicators, such as number of the buildings per 1000 people, persons per
room and square meters, Albania results with the lowest indicators. Even that the building numbers per 1000 people have grown again, the indicators show that compare to the United European Nations are still the lowest. Awareness increase for better living conditions and business development has affected the construction market positively.

**Migration** within Albania continues to be very high. According to INSTAT (2013) the data showed in the table below, in Vlora’s region has been noticed a growth in the urban population compare to the rural one. This fact justifies the high growth of the new buildings in this area in the latest years.

Table 1. **Urban and rural population in Vlora’s prefecture**

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<tbody>
<tr>
<td>Vlorë</td>
<td>193,074</td>
<td>193,215</td>
<td>193,183</td>
<td>192,631</td>
<td>190,971</td>
<td>189,550</td>
<td>186,367</td>
<td>183,509</td>
<td>180,061</td>
<td>176,618</td>
<td>173,130</td>
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</tbody>
</table>

**Urban population (%)**

- 53.80% 54.81% 55.63% 56.57% 57.52% 58.45% 59.32% 60.40% 61.37% 62.75% 64.34% 65.95% 67.58%

**Rural population (%)**

- 46.20% 45.19% 44.37% 43.43% 42.48% 41.55% 40.68% 39.60% 38.63% 37.25% 35.66% 34.05% 32.42%

Source: INSTAT, 2013

**Demographic evolution.** Demographic informations have an indicating importance of the product price because it affects directly on the demand and offer of the construction industry. Factors such as population density and population structure play an important role indicating the dynamic of the price spread in this industry. According to the latest Census informations, published by INSTA, average living age of the population has increased from 30.6 years old in 2001 to 35.3 years old in 2011 (Revista Monitor, 2012). Average young age of the population is another indicator that shows the demand for housing will increase. So, the future of construction industry will be characterized by an economical growth in future years.

**Remittances.** Most of the Albanian emigrants try to invest all their savings in Albania by purchasing private properties.
Growth on the foreign demand on purchasing properties. The liberalization of markets and creating structures that make easier doing business procedures in Albania, domestic demand is increasing more from the foreign demand. This fact is related to the geographic location and cheap prices compared with those in EU countries. Also, the growth of aggregate demand in the construction industry was caused by one very important fact such as mortgage loans and the lack of other alternative financial investments.

As mentioned above, the construction industry during the latest years has faced different challenges. The limited number of the construction permits, procedures and high bureaucracy levels to get the construction permit, decrease on the buying demands and the limitations on the mortgage loans cause by the economic crisis, are some of the factors that have indicated a decrease on this industry during the latest years. Some of the restrictions and administrative obstacles that construction firms suffer are as below:

The spent time by construction companies for various applications in state institutions (procurement and receipt of construction permits), for which the firms have objections about time preparing the voluminous required documentation.

The impact of irregularity encountered during procurement, because there are objections about tenders’ notification, prequalification procedures, technical required specifications, the evaluation criteria and the general management of all procurement procedure.

Impact of irregularity encountered during dealing the construction permits, for which construction firms have objections regarding the deadlines, the correctness of state administration employees, lack of transparency and barriers by public utilities (water, electricity, telecommunications, etc). During the year 2011, Albania was ranked at 176-th level, meanwhile from the data taken during 2012 it is noticed a deterioration of the position related with the obtaining of construction permits at the 183 place. According to data collected by Doing Business
2013, Albania stands at 189 in the ranking of 189 economies on the ease of dealing with construction permit (Doing business in Albania 2013).

Starting from 2005, numbers of the construction permissions according to the regions have changed. As it shows on the graphic below, in Albania during 2010 were given 1,845 building construction permissions, or 21% more than the previous years. The lowest number of the construction permits was on 2007, were given 995 permissions (57% less than in 2006). One of the factors that have indicated the dynamism of this variables is the local elections (also the delay of commission structure gathered to approve the permits construction also the high level of bureaucracies).

As we see on the chart below, it is noted a decrease of the approved construction permits.

**Figure 2. The number of construction permits during 1995-2012**

![Construction permits distribution during 1995-2012](chart)

Source: INSTAT, Open Data Albania, 2013

According to the informations taken by INSTAT and Open Data Albania, during 1995 till 2012 has been pointed out that the year with the lowest values is 2012. This indicates 28% less construction permits approved than the previous year 2011. The specific weight of the residential building permits over the total permits, shows that the negative effects observed in the housing (residential building) market constitute the majority of problematic accompanies the construction industry.

**Methodology**

The concentrated indicator in this industry was calculated from the information and data taken from Chamber of Commerce and Industry of Vlora Region and Regional Directorate of Taxation database and
publications. In the study has been involved all the construction companies that do business in the city of Vlora and in their construction projects portfolio are involved: infrastructure, residential buildings (living appartaments and villas), industrial constructions and other buildings such as hospitals, universities, government buildings, etc. We have to accept that on these databases that involve all the construction companies are included also the micro and small companies serving as subcontractors to provide various services such as soil excavation, iron links, carpentry services, stone and marble processing etc..

Annual revenues of the total number of construction are transferred into relative market shares to derive the indices of CR4, HHI, and GINI. From the population analysis, the number of construction firms in Vlora region is given in the table below:

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
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<tbody>
<tr>
<td>Total number of active firms in construction industry</td>
<td>86</td>
<td>80</td>
<td>83</td>
<td>111</td>
<td>127</td>
<td>153</td>
<td>181</td>
<td>196</td>
<td>189</td>
<td>159</td>
</tr>
</tbody>
</table>

Source: Regional Directorate of Taxation, Vlore, Albania, 2003-2012, own calculations

**Analytical framework of industry concentration measures**

Market concentration is an important proxy for competition among firms in an industry (Hrazdil and Zhang, 2012). Governments often use concentration estimates to determine whether a merger is allowed or a large firm should be broken up (Hennessy and Lapan, 2007); capital market research relies on these measures to examine the impact of industry structures on firms’ stock return (Houand Robinson, 2006), informed trading (Tookes, 2008), corporate governance (DeFond and Park, 1999), and capital structure (Lang and Stulz, 1992); and economic studies utilize competition measures to determine how market structure affects investment and innovation (Aghion et al., 2005).

Market concentration is useful as an economic tool because it points the degree of competition in the market. It is a function of the number of firms and their respective shares of the total production or sales. Concentration and competition are linked to product markets and geographical areas, both in theory and in empirical analyses (Bikker & Haaf, 2000). Studying market concentration helps to provide useful guidelines for competition policy, taking into account dynamic aspects of competition
Market structure is the manner in which markets or industries are organized and it is largely dependent on the number of participants or firms in the market or industry and the extent of market control of each participant.

Compte et al. (2002) observed that studies on market concentration help provide useful guidelines for competition policy. Likewise, Nellis and Parker (1992) noted that a worthwhile competitive strategy can be developed only after the nature of the competition is defined and the market is clarified.

This section considers 3 concentration ratios such as: the 4-firms Concentration Ratio (CR4); the Herfindahl-Hirschman Index (HHI); and the Gini coefficient which turns market shares into a measure of market concentration. The significance of concentration ratios comes due to their ability to capture structural features of the market. Concentration ratios are also able to reflect changes in concentration as a result of the new firms’ entry into the market or its exit from it, or caused by a merger. Despite the several various approaches related to its measurement, the principal elements of concentration measures are the number of firms and the distribution of firm size in a given market.

The k-firm concentration ratio (CRk).

The 4-firm concentration ratio describes the market share (as a percentage) of the four largest firms in any given industry. It helps determine the relative size of companies in relation to their entire industry, and therefore their competitiveness in that industry.

The Concentration Ratio indicates the relative size of k-large firms in relation to their industry as a whole. It shows whether an industry is dominated by a few large firms or many small firms. Therefore, CRk was used as an indicator of the relative size of firms in relation to the industry as a whole. Normally 4-firm and 8- firm concentration ratios are used conventionally. This assists in determining the market form of the industry (Wesman, 2005). The formula for determining the 4-firm concentration ratio is:

\[
CR_4 = \frac{(S_1 + S_2 + S_3 + S_4)}{S_T}
\]

where \(S_j\) is the output (sales) of the 4 largest firms with the condition \(S_1 \geq S_2 \geq S_3 \geq S_4\) and \(S_T\) is the total output (sales) of the industry we are studying.

The ratio has an upper limit of 100% which would be obtained if the k-largest firms accounted for all of the industrial sales. However, the Concentration Ratio suffers from certain drawbacks because there is no justification for focusing on the market shares of the top 4 -firms rather than three or six. Thus, the choice of 4-firms concentration ratio as the appropriate measure of concentration is somewhat arbitrary.
The Herfindahl-Hirschman index (HHI).

The index was originally proposed and used in the field of industrial economics by Herfindahl (1950) and Hirschman (1964) independently of each other. The Herfindahl-Hirschman Index (HHI) is the most widely treated summary measure of concentration in the theoretical literature and often serves as a benchmark for the evaluation of other concentration indices. HHI is calculated by summing the squared market shares of all the firms unlike CRk which only indicates the relative size of the largest k-firms. The HHI is calculated as follows:

\[ \text{HHI} = \sum_{i=1}^{n} (S_i)^2 \]

where \( S_i \) is the market share of firm \( i = 1, \ldots, n \).

HHI ranges from a number approaching zero to 10,000. Low concentration is indicated by HHI value of less than 1,000 and HHI of 10,000 implies high concentration, a case of pure monopoly. HHI includes all firms in the calculation. This means that more data needs to be collected. Squaring of the individual market shares of the firms gives proportionately greater weight to the market shares of the larger firms. Lack of information about small firms is not critical because such firms do not affect the HHI significantly (U.S. Department of Justice and Federal trade Commission, 1992).

Lorenz curves and Gini coefficients (GC).

The Lorenz Curve and Gini Coefficient are also used to measure inequality in resource distribution. This concept was developed initially to study the distribution of income and wealth in society. The Lorenz Curve is often used to measure income inequality while the Gini coefficient measures inequality of income distribution. In the study, Gini coefficient is applied to indicate how the distribution of shares has changed within an industry over a period of time, thus it is possible to see if inequality is increasing or decreasing.

The Gini coefficient was used in the analysis to measure market concentration because the HHI and the CR4 would not show the annual sales distribution among the firms in the construction industry. GC is a ratio of area between the Lorenz Curve of the distribution and the line of equality (uniform distribution) to the lower triangle as the figure below:
The Gini coefficient \( G \), a measure of inequality, is defined as the ratio of the area enclosed by the Lorenz curve and the diagonal representing equality in distribution \( A \) and the entire area under this diagonal \( A+B \) in Figure 3, hence \( G=A/(A+B) \). The maximum value on both axes is 1, so that the area embraced by the diagram yields unity. Hence, \( A+B=1/2 \), and \( G=2A \).

Results

Using CR4 index formula, as a first step we estimated the market share of each company which operates in construction industry of Vlora region (the units sold from the j- company as a percentage of total market sales, measured in the same units). In a second step, we calculated the relative size of 4-large firms in relation to all the construction industry in the local area of the research. The calculations were repeated for each year of the period 2003-2012. Based on the processed data and analysis, the Cr4 indexes are given in the table below:

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<th>Year</th>
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<tbody>
<tr>
<td>CR 4</td>
<td>22.65</td>
<td>20.71</td>
<td>16.11</td>
<td>15.49</td>
<td>17.69</td>
<td>20.65</td>
<td>11.77</td>
<td>12.8</td>
<td>18.79</td>
<td>17.92</td>
</tr>
</tbody>
</table>

Source: Regional Directorate of taxation, own calculation

The graphic of the CR4 coefficient values, shows that the small value is 11.77 in 2009 and the highest value is 22.65 in 2003. Despite the minimum and the maximum value reached in the period 2003-2012, it is noted that CR4 ratio remains at low levels. The cut-off levels of the ratios for less concentrated markets are HHI values of less than 1,000; CR4 of less than 75% and GC close to zero. All ratios of Cr4 in the table are below the threshold levels which means that the construction industry is no concentrated because there is a large number of firms operating in this industry.
**HHI RATIOS.** Whereas CR4 adds up the market shares of the top four firms to calculate industry concentration, “*HHI is more complete and elaborate in that it uses a weighted average of market shares of all firms*” (Anbarci and Katzman, 2005). We can say, the measure HHI is better than CRn in reflecting competition intensity. As an alternative, the HHI index envisages the presence of all firms by weighting each according to their relative market shares. The low market concentration is verified by the low HHI values that are below the threshold level, HHI = 1, 000 which denotes low concentration.

Estimated values of HHI are processed in Table 4. All observed values of this index are smaller than 1000. This certifies that the construction industry in Vlora is characterized by low concentration.

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<th>Year</th>
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<tbody>
<tr>
<td>HHI</td>
<td>303.07</td>
<td>268.69</td>
<td>240.1</td>
<td>190.02</td>
<td>206.9</td>
<td>232.9</td>
<td>131.85</td>
<td>134.73</td>
<td>202.15</td>
<td>203.22</td>
</tr>
</tbody>
</table>

Source: Regional Directorate of Taxation, own calculation

As the conclusion derived from CR4, we can say that construction industry of Vlora district is not concentrated. Throughout the period under study, HHI is smaller than 1000. The large number of firms that have entered in this industry recently shows a sensitive market fragmentation and an increased of competitive rivalry.
Figure 4. HHI index ratios against time

Herfindahl-Hieschman index values against time

Source: Authors’ own calculation by using the data in <Table 4> above

Gini coefficient. In terms of industry concentration, the Gini coefficient is referred to as a relative measure of industry concentration as distinct from an absolute measure such as the Cr4 and HHI indices (Fedderke & Szalontai, 2005). GINI can be derived by quantifying the deviation of the distribution of market shares held by all firms from a current status to the equal situation where each firm has identical market share (Baldwin and Gorecki, 1994). As a general rule, the decrease in GINI indicates the approach of the market to the equal situation and a higher intensity of competition (Ye, K., Lu, W and Jiang, W, 2009). The calculated results of GC are given in the table below:

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<th>Year</th>
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<tbody>
<tr>
<td>Gini coefficient</td>
<td>0.145</td>
<td>0.192</td>
<td>0.078</td>
<td>0.16</td>
<td>0.22</td>
<td>0.1</td>
<td>0.215</td>
<td>0.267</td>
<td>0.112</td>
<td>0.139</td>
</tr>
</tbody>
</table>

Source: Regional Directorate of Taxation, own calculation

Low inequality in the distribution of market shares has existed for a long time as shown by the GC values that are generally below 0.5. The current situation of GINI values indicates the approach of the market to the equal situation and a higher intensity of competition between construction firms.
Conclusion

In competition analysis concentration is a key elements of market structure. The main findings of the paper are as follows:

The analysis has revealed that the construction industry is a low concentrated industry because the industrial concentration ratios are below the threshold levels. The cut-off levels of the ratios for less concentrated markets are HHI values of less than 1,000; CR4 of less than 75% and GC close to zero. According to the results, the industry has an average CR4 of 17.5%, HHI of 211.36 and a GC of 0.163.

It seems that the Albanian construction industry is far from being a sector dominated by giant businesses. At the same time, the sub-contracting is widespread in construction which may help to explain why it is a low concentrated industry.

The eager market for new construction, the high demand for housing and low entry barriers were the main factors of construction industry attractiveness. In the early stages of the construction industry development in Albania, the high prices and the considerable profit margins were the key factors of attracting more entrepreneurs toward construction industry. Thus, the hypothesis that the construction industry is not concentrated is approved.

References:


INSTAT – Institute of Statistics Albania, (2011)


