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ANALYSIS OF COMPETITION AND CONCENTRATION IN THE CONFECTIONERY PRODUCTS MARKET IN SERBIA*

Analiza konkurencije i koncentracije na tržištu
konditorskih proizvoda u Srbiji

Abstract

Confectionery products make up a significant part of the consumer basket, which makes them a strategically important segment of the consumer standard in Serbia. Hence the authors' interest in the domains of market concentration and antitrust regulation of this industry. The aim of this paper is to present the current status and trends in the confectionery products market, to define the methodological framework and to perform an analysis of competition and market concentration. The methodology of the analysis is consistent with the antitrust practice of the European Commission, i.e. its resolved representative regulatory disputes as well as with its fundamental scientific contributions in this area. It is understood that the authors were also careful that the analysis is consistent with the regulatory framework for protection of competition in Serbia. Proper definition of the relevant market arises as the key issue in implementing the regulatory procedure, which predominantly determines not only the course, but also the final outcome of the regulation. The survey was conducted based on the data from relevant sources for 2010 and shows the conditions and the intensity of competition and concentration in the confectionery products market for the stated year. The calculated concentration ratios indicate that Serbian confectionary market is relatively unconcentrated to moderately concentrated.

Key words: *confectionery products, relevant market, market concentration, Serbia.*

Sažetak

Konditorski proizvodi čine značajan deo potrošačke korpe, što ih čini strateški važnim segmentom potrošačkog standarda u Srbiji. Odatle sledi i interesovanje autora za domen tržišne koncentracije i antimonopol-ske regulacije ove grane. Cilj ovog rada je da prikaže stanje i aktuelne trendove na tržištu konditorskih proizvoda, definiše metodološki okvir i sprovede analizu konkurencije i tržišne koncentracije. Metodologija analize je usklađena sa antimonopolskom praksom Evropske komisije, odnosno njenim rešenim reprezentativnim regulatornim slučajevima kao i fundamentalnim naučnim doprinosima iz ove oblasti. Podrazumeva se da su autori vodili računa da analiza takođe bude usklađena sa regulatornim okvirom zaštite konkurencije u Srbiji. Pravilno definisanje relevantnog tržišta nameće se kao ključno pitanje prilikom sprovođenja regulatorne procedure, što dominantno određuje ne samo tok, već i konačni ishod regulacije. Istraživanje je sprovedeno na bazi podataka iz relevantnih izvora za 2010. godinu i prikazuje uslove i intenzitet konkurencije i koncentracije na tržištu konditorskih proizvoda u toj godini. Izračunata merila koncentracije ukazuju da je tržište konditorskih proizvoda Srbije nisko do umereno koncentrisano.

Ključne reči: *konditorski proizvodi, relevantno tržište, tržišna koncentracija, Srbija.*

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Introduction

The ratio of market concentration and competition became topical in late ninety-nineties when there was a sudden increase in market power of the big players based on their external growth through mergers and acquisitions. The reasons for the increased concentration of market power in this period lie in the rapid liberalization of goods and capital markets, in the opening of what previously had been autarchic economies due to the collapse of communism, human capital migration and government support for the companies with the status of “national champions”.

In mid-nineties, in the context of the EU Stabilization and Association Process, the candidate countries, successively formed their own regulatory frameworks and regulatory bodies, in accordance with the general principles in this segment as defined by the European Commission. Croatia completed this process back in 1995, Bulgaria in 1998, and Serbia only in 2002 when the Commission for Protection of Competition (hereinafter: the Commission) started to operate.

The aim of this paper is to highlight current trends in the confectionery industry in Serbia, and to establish the methodological basis for defining the relevant market for antitrust regulation of the companies in this sector in Serbia. Given the importance this industry has in the standard of living, it is not surprising that the activities of the companies in this industry are occasionally under the scrutiny of public opinion and the regulatory bodies in the domain of protection of competition. Evidently, the regulatory policy in the field of protection of competition in this sector has its own characteristics that require further clarification. In order to apply the methodology for measuring the degree of market concentration, it is necessary to introduce the theoretical concepts such as market structure or relevant market, then it is necessary to know the regulatory framework and practice of the Commission for Protection of Competition and, finally, it is necessary to thoroughly review the important trends in the market whose concentration is being measured.

The level of market concentration in the industry for 2010 was analyzed based on the representative methodological framework and the available statistics. The

research results for market concentration are presented on the sales position for finished goods, with respect to the revenues of the companies involved in the production and sale of confectionery products. Similar type of analyses should be performed by the state regulators in cases of specific companies for which there is a concern that they are threatening the competition in their relevant market.

With respect to the objectives set, the paper consists of four parts. The first part shows the historical and current trends in the confectionery industry in Serbia. In the second part, the authors explain in detail the methodology for defining relevant markets and measuring market concentration inside the sector, using clear arguments from relevant practice of the European Commission for Protection of Competition. The third part presents the results of the analysis of market concentration in the confectionery market in Serbia. The final part summarizes the main conclusions of the paper and suggests possible directions for future related research.

The analysis of trends in Serbian confectionery industry

In order to analyze the trends in Serbian confectionery industry it is necessary to pre-define its domain. Namely, there are several classifications for groups of products that define the confectionery industry, which are not mutually compatible. There are at least three classifications in Serbia, which are currently not harmonized. These are the Rules on the classification of the quality of confectionery products (Novi Sad Fair, 2008), the Statistical nomenclature of activities (Serbian government, 2010) and the Customs regulations on product declarations (Serbian Customs Administration, 2010). The regulations on quality and customs declarations have a somewhat broader approach to the definition of confectionery products, including snack products, breakfast cereals, and even ice cream. For easier analysis, our analysis of the confectionery industry is going to follow the statistical classification of confectionery products, which tentatively places confectionery products in three broad categories: 1. Products made from cocoa (chocolate and similar products), 2. Products made from flour (biscuits, wafers and similar products) and

3. Products made from sugar (candy, chewing gums and similar products). A more precise statistical determination of the activity codes is going to be subject to subsequent analysis in this paper.

Although official statistics on the performance of the confectionery industry in Serbia is rather poor, the available indicators point to the following conclusions¹.

First, after a steady growth in production volume in the period between 2000 and 2008, Serbian confectionery industry has first stagnated, and then gone through a prolonged decline in the volume of activities during the past three years. The decline in the volume of activities in 2011 is expected to be between 3 and 5 percent compared to the previous year. The overall decline in the production volume in the period between 2008 and 2010 was 7 percent, or 9,300 tons of confectionery products. During this period, the largest decline by 20.7 percent was noted for candy products.

Second, the fall in the production volume was paralleled with the growth of imports in the field of confectionery products. In other words, the contraction of domestic supply was being compensated and exceeded by the over proportional growth of import. During the first quarter of 2011 alone, confectionery products imports increased by as much as 23%. An interesting fact is that over the last year Serbia imported chewing gums whose value was USD 27 million, which at first glance, seems surreal.

Third, unlike imports, exports have grown more slowly, only 2-3% year-on-year. 90% of exports were directed to the CEFTA region, mostly to Bosnia, Montenegro and Croatia. In this statement lies the hidden danger of loss of export markets with their approach to the liberalized EU market. Domestic confectionery industry should explore the possibility of greater use of benefits offered by free trade agreements with the Customs Union of Russia, Belarus and Kazakhstan, with Turkey and CEFTA countries. The exchange of products under these agreements is currently modest in volume, and confectionery products are not traded with Belarus and Kazakhstan at all. Serbia practically does not export confectionery products to Turkey,

while imports of confectionery products from Turkey to Serbia have been at the level of about two thousand tons for years now.

Fourth, despite the decline in output and export stagnation, confectionery industry in Serbia is considered to be one of the healthier parts of Serbian food processing sector. The confectionery industry capacity (a hundred active companies with annual output of approximately USD 500 million), which employs about 7,000 workers, significantly exceeds domestic demand, so companies must be export oriented. Approximately USD 150 million is exported annually to various world markets creating a surplus of over USD 50 million in the balance of payments. In recent years, the total investment in the confectionery industry has exceeded one hundred million Euros. Most companies have invested in new production lines, expanding the range of products and factory modernization, the introduction of new standards for safety and quality control of products. All this has resulted in a more diverse range of confectionery products, whose quality does not lag behind the world famous brands.

Fifth, by analyzing the viewpoints of the leading confectionery company directors it can be concluded that the state is not sufficiently considered with the development of the industry, i.e. that some of its measures even discriminate against the domestic producers as compared to the importers. This primarily refers to the tax and customs policies, which substantially burden the cost price of the domestic producers. Namely, the tax burden on confectionery companies is up to 10% higher than with the competitors in the neighboring countries. Furthermore, through customs fees, the state raises the price of imported raw materials (sugar, milk powder, vegetable oil, palm oil, cocoa, hazelnut) thus making the domestic producers' prices uncompetitive in the domestic market as well. It is sufficient to give the example of sugar, whose price in the EU varies between EUR 500 and 550 per ton, while in Serbia the price of sugar is nearly EUR 900 per ton.

On one hand, the customs fees burden the cost of imported raw materials, and on the other hand, the prices of imported confectionery products have been steadily less burdened by customs fees. From 2013, the expected

¹ The data used in the analysis are those of the Group of confectionery products manufacturers, which belongs to the Serbian Chamber of Commerce. (Source: <http://www.pks.rs>)

imports of confectionery products from the EU are going to be fully exempt from customs fees.

One possible solution discussed is the determination of customs quotas for the imports of milk powder and butter without paying the levies, as a duty, given that domestic production of milk cannot provide sufficient amounts (annual domestic production of milk powder is around 2,500 tons, and the needs of confectionery industry is approximately 6,000 tons). The supporting measures can be the introduction of seasonal levies, which would be applied only during the periods when there is enough domestic raw materials. Current levies are RSD 50.4 for skimmed milk powder (duty rate for products from the EU is 18%), RSD 44.8 for whole milk powder (16% duty rate) and RSD 28 per kilogram of butter (24% duty rate). Also, a useful measure can be easier imports of raw materials used for manufacturing export products. In some other sectors, this measure has provided positive incentives for export of finished products.

The inertia of the state regarding these issues is worrying. The joint initiative of all the confectionery producers to liberalize imports of milk powder did not prove to be of great assistance either, although they even the producers of milk agreed with it. In case the state does not react in time, full liberalization of the market in the future is going to lead to further closure of a large number of companies in the industry or to the reorientation of the domestic producers towards manufacturing private labels for other foreign producers. Perhaps the most worrying issue is the announcement of some major manufacturers that they are seriously thinking about relocating their production facilities out of Serbia (Macedonia, Croatia,

Slovenia), where they would open new production facilities and work on equal terms with foreign competitors.

Shown below is a summary of the previous analysis, which shows the strengths and weaknesses of the domestic confectionery industry, as well as the positive and negative trends that affect or may affect its future development.

Methodological framework for measuring market concentration

Further text discusses the antitrust regulatory framework in Serbia, with special focus on determining the dominant position of a business entity in the relevant market. Also, special attention will be devoted to the methodology for identifying the relevant product market and relevant geographic market in the context of the confectionery industry. Finally, it will give a summary overview of the market concentration indicators and the method for their calculation and interpretation.

Concentration regulation in Serbia

The pillar of the legal framework for protection of competition in Serbia is the Law on Protection of Competition (hereinafter the Law), which entered into force 01 November 2009 (the Republic of Serbia, 2009). The supporting elements for the basic pillar are Serbian Government Decrees, which are an attempt to clarify the essential procedural and methodological sections of the Law. The previous Law from 2005 envisaged the establishment of the Commission for Protection of Competition, as the main regulatory body whose business is the prevention threats to competition. The Commission began its activities upon establishing the five-member Commission Council in 2006. The

Figure 1: SWOT analysis of Serbian confectionery industry

Strengths	Weaknesses
<ul style="list-style-type: none"> • Modern technology • Significant production capacity • A diverse and high quality range • Extensive experience and skilled work force • Strong brands • Strong market position in the CEFTA 	<ul style="list-style-type: none"> • Lack of or high cost of specific raw materials • Inadequate marketing efforts and packaging • Lower level of expertise in logistics
Opportunities	Threats
<ul style="list-style-type: none"> • Products with functional dietary properties • Customized products for consumer groups with special requirements and needs • Opening of the EU and the Commonwealth of Independent States markets 	<ul style="list-style-type: none"> • Unequal position compared to importers because of significant tax and customs burden to the price by the state • Sudden liberalization of the domestic and CEFTA markets

Commission, according to the Law, is an independent organization, with the status of a legal personality, which reports to the National Assembly of the Republic of Serbia by submitting annual reports on its activities.

The law envisages three key forms of threat to competition:

1. Agreements which substantially prevent, restrict or distort competition
2. The abuse of dominant position
3. The concentration which significantly distorts competition on the basis of strengthening the dominant position in the market.

The first form of violation of competition envisaged by the Law are treaties intended to prevent, restrict or distort competition. It forbids cartel agreements between market participants whose intention is to agree the purchase or sale price in the market, limit production, supply or the amount of investment and treat sources of supply unequally.

As far as the abuse of dominant position is concerned, the Law prescribes that a dominant position in the relevant market belongs to those participants who make business decision without considering the interests and needs of other market participants (competitors, suppliers and end users). A flexible threshold for identifying a dominant position is prescribed to be the market share of 40%. Namely, a market participant may, but need not have a dominant position if its market share is greater than 40%, depending on the market share of its nearest competitors, the market power of potential competitors, the level of market entry barriers and market position of the buyers. Thus, those market participants whose market share is less than 40% may have a dominant position, but the burden of proving this dominant position lies on the Commission. Those market participants whose market share is greater than 40%, bear the burden of proving that they do not have a dominant market position themselves. The Law allows that market share is determined by different criteria, but also recommends that market share is determined based on the quantity of goods or services or income generated by the subject goods or services. The Law expressly prohibits the abuse of a dominant position, which would violate the equality of other market participants by imposing unfair purchase or selling conditions, limiting production,

markets and technical development to the detriment of customers or by applying unequal conditions to equivalent transactions with various market participants. Therefore, the Law does not prohibit or sanction the possession of a dominant position, but the abuse of a dominant position in the market.

To protect the existing relations of competition and prevent the acquisition of a dominant position in the relevant market on the basis of concentration, the Law provides that the concentration between two or more parties may be conducted only upon the approval by the Commission, issued at the request of the market participants entering into the concentration relationship. The Commission has the option of a provisional approval of concentration, where it must precisely define the conditions that the participants must meet, as well as the validity period for the imposed conditions.

Violations of competitive rules are defined in the relevant market. The Law defines relevant market from two perspectives, as the relevant product market and the relevant geographic market. The relevant product market includes a set of goods and/or services that are interchangeable under satisfactory conditions by their users in terms of their properties, use and price. The relevant geographic market, according to the Law, is a territory with the same conditions for competition, which are significantly different from the conditions of competition in the neighboring territories. The previous Law was followed by the Decree on the criteria for determining the relevant market, but this Decree, for some reason, was terminated when the new Law entered into force of Law in 2009.

Methodological clarification of the relevant market domain

The first step in measuring market concentration is to define the relevant market. Defining the relevant market involves its determination in terms of products (relevant product market), and a spatial-geographic determination (relevant geographic market). If we are determining the relevant product market, this raises the question of which products are to be included in the “competitive struggle”. On the other hand, the relevant geographic market definition implies spatial (geographic) boundaries within which

it makes sense to observe the “competitive” products comprising the relevant product market.

How to define the relevant market? Evidently, this is the most complex issue of any regulatory analysis, in which no single method can be considered completely perfect. The choice of methods for defining the relevant market primarily depends on the characteristics of the industry the companies that are subject to regulation belong to, but also on the availability of the data necessary for its implementation. In the developed regulatory practices of U.S. and EU the relevant market is predominantly determined by applying the hypothetical monopolist test (the SSNIP test²). This means that both dimensions of defining the relevant market (relevant product market and relevant geographic market) are based on the same test, where we should bear in mind that the application of the same test for different dimensions of the market does not also imply their simultaneous determination. First, the relevant product market is defined, and then, based on this definition, the relevant geographic market.

The idea of this test is to determine the immediate market for the product or service in which a hypothetical monopolist could profit from a small but significant (5 to 10%) and lasting (up to one year) price increases. The profitability of a hypothetical monopolist is measured based on a decline in demand due to the price increase, rising production and distribution costs due to a falling demand and the distribution of profitability per unit of product after the price increase. Assessing the drop in demand is based on an analysis of the demand substitutability and the supply substitutability. The substitution of demand is estimated based on the analysis of the product attributes, price elasticity, demand from customers, customer loyalty, dealer changes costs and other research conducted among the customers, market participants and experts. The substitution of supply is estimated based on an analysis of

the possibility for other market players to offer a specific product or service in a short term without incurring higher costs.

The application of this test leads us to the relevant market comprising of a product, or a set of products that are sold in a particular geographic area, such that a hypothetical monopolist who maximizes its own profits and does not apply price discrimination, and who is the only present and future seller of those products, can profitably increase the price by a defined amount for a period of not less than one year (Federal Trade Commission, 2007: 6). In addition, it is assumed that the sales conditions for all other products that are not subject to the assumed increase in prices, and that belong to the relevant market are invariable.

Accordingly, the basic principle for defining the relevant market means that the relevant market is the narrowest possible group of products sold in the narrowest possible geographic area, so that the criterion of profitability according to the SSNIP test is satisfied, both in defining the relevant product markets and in defining the relevant geographic market as well. The market thus determined is considered as “worthy of monopolization” according to the hypothetical monopolist. The hypothetical monopolist is an assumed (fictitious) company, considered to be the only seller of a product in a particular territory, which is the key element for the formation of a theoretical construction necessary for a definition of the relevant market.

The hypothetical monopolist test is fundamentally of a quantitative-econometric nature, and in a group with other, mainly qualitative, methods it can be deemed the least biased³. The main limitations of the test originate from: possible arbitrariness in the choice of the price rise for the product being tested, the choice of econometric model for market demand for the product being tested and the inability to obtain valid data for the application of the test⁴.

2 The test for an assumed monopoly price increase (SSNIP - *Small but Significant and Nontransitory Increase in Price*) was first defined in 1982 in the U.S. Department of Justice Merger Guidelines for this horizontal merger and has been used in regulatory processes since. In the European Union, the SSNIP test has informally been applied since the Nestlé / Perrier case in 1992. From 1997 the test was officially launched by the European Commission in the document which is the subject of defining the relevant market (*Commission's Notice for the Definition of Relevant Market for the Purposes of Community Competition Law*).

3 In practice, the Critical Loss Analysis is the most frequently used technique to implement the hypothetical monopolist test (see O'Brien & Wickelgren 2004, Daljord et al. 2008). It should be noted that when defining the relevant geographic market, it is possible to apply other methods which do not start from the hypothetical monopolist test, such as the Elzinga-Hogarty test, an isochronous lines analysis with the assistance of the GIS software package (Geographic Information System) and the temporal elasticity analysis.

4 See more on the shortcomings in: European Commission (1997).

Because of the specificity of partial markets, prior to the election of explanatory variables that should be included in the model, it would be useful, if possible, to conduct a survey on a representative sample of consumers that would aim to identify the variables that predominantly determine customer choice. It is assumed that the consumers of confectionery products in Serbia have different preferences compared to the consumers in the developed countries of the European Union. For example, it should be checked whether chocolate as a final product is seen as a homogeneous or a differentiated product by the consumers, and whether the consumers believe that products from certain companies are better than others. The aim of these surveys would be to determine whether the choice of customers, in addition to price, depends on the quality of the product as well.

The measures of market concentration

Market concentration is measured using various indicators; those most commonly used in practice are the following: market share, concentration ratio of the four leading companies, the Herfindahl-Hirschman index and concentration curve with the Gini coefficient (Duricin and Loncar, 2010: 201-207).

When we talk about market share our first idea is the absolute market share, which is obtained when a specific company's income is put in relation to the total income of the relevant market. This indicator indicates which part of the overall market the observed company takes. In addition to the absolute market share, it is possible to calculate relative market share and market saturation coefficient. The relative market share is the ratio between actual revenues and the observed company and the revenues of the biggest competitor. The relative market share reflects the relative market position of a particular company in relation to the market leader. The market saturation coefficient is an important indicator of the utilization of the market potential by the producers from one sector, i.e. the utilization of the sales potential by the observed company. Given the two levels of observation (sector and company), this ratio can be calculated in two ways: (1) actual sales of the sector / total market potential (sector level), and (2) actual sales of the company / potential

sales (company level)⁵. In new sectors where demand is growing faster, the market saturation coefficient is less than 1, while in older sectors it is close to 1.

It is not enough just to observe the market share as an indicator of market concentration. In order to gain deeper understanding of the nature of market concentration, it is necessary to apply a whole set of other criteria and indicators. The concentration ratio of the four leading companies (Concentration Ratio 4 – abbreviation CR4) is obtained as the sum of market shares of four largest companies in the market expressed as a percentage. An unwritten rule says that if the four largest companies control more than 40% of the market, it is an oligopoly. If the value of this ratio is greater than 90%, it is a pure monopoly. This concentration indicator has two disadvantages. First, there is no adequate justification for focusing on four, rather than say three or six leading competitors. Second, the CR4 does not provide an insight into the market share ratios of the four leading companies.

The Herfindahl-Hirschman index is considered as the most reliable indicator of market concentration. The value of this index is determined as the sum of squares of the individual market shares of all the competitors in the market. Unlike the CR4, the HHI index depends on the number of competitors in the market and the differences in their relative market power. The HHI index decreases with an increase in the number of competitors in the market. Also, this index increases with greater differentiation in the market power, because larger companies have greater weights in the calculations due to the effect produced by squaring the market share. The maximum value of this index is 10,000 points, and minimum is close to zero. It is easy to notice that the maximum index value is obtained only in the case of pure monopoly, and the minimum in the case of atomistic market structure characteristic of perfect competition. The biggest problem in determining the HHI index is the necessity of having the information about the size of market share for each company belonging to the observed market. Although this is formally correct, we should go back to the formula for calculating the HHI

⁵ It should be noted that the two coefficients calculated in this way are not necessarily equal and usually are not, as they are related to two completely different levels of observation.

index and note that companies with small market share size have very little impact on the result, of course, due to the aforementioned effect of squaring. In other words, to calculate the HHI index it is enough to have the data on market shares of all companies whose market share exceeds 1%. It is important to state that the HHI is used by the Antitrust Division of the U.S. Department of Justice to assess changes in the structure of market power after the conclusion of the mergers and acquisitions agreements (U.S. Department of Justice, 1992). In short, the Commission has a guide which establishes limit values for assessing the impact of mergers and acquisitions on the structure of market power. Markets are usually classified into one of three categories: unconcentrated (when $1,000 < \text{HHI} < 2,000$) and concentrated (when $\text{HHI} > 2,000$). The European Commission has similar standards and deems critical the concentration where the HHI exceeds 2,000 points.

The concentration curve is a popular tool for visualizing the degree of concentration in the market and identifying the disparities in market power. The point is to rank the competitors on the basis of their market share (from the smallest to the largest), to cumulate market shares of competitors and to graphically combine the points obtained. The resulting concentration curve is then placed in a relationship with the equal market shares curve (45° line), obtained in a hypothetical case of perfect competition. The concentration curve is the basis for calculating the Gini coefficient as a measure of market power inequality.

The aforementioned technique of measuring market concentration is applied in the following section on the data from Serbian confectionery products market.

Analysis of market concentration for Serbian confectionery market

Previously described trends in this industry are the basis for the analysis of market concentration in Serbian confectionery industry. This is a very topical subject, especially because of the increasing number of cases of analyses of abuse of a dominant position and excessive concentration performed by the Commission for Protection of Competition of the Republic of Serbia. Below, we will attempt to see the big picture regarding the trends in

competition in this industry and possible methodologies for measuring market concentration according to the available data. Furthermore, we will attempt to show the cross-section of the concentration measures for 2010 based on the available data and give our interpretation of the competitive profile of the industry.

Relevant market

When defining the relevant confectionery market in Serbia, we are going to observe the market of final products or retail market. In analysis, this market can be seen as an integral relevant product market or as a set of several specific relevant product markets. Namely, in the case of Kraft/Cadbury case from 2010, the European Commission has left a dual possibility of defining the relevant product market in terms of a separate analysis of chocolate market, sweet biscuits, sweets and sugar-based chewing gums, or their integrated analysis (European Commission, 2010). Given the lack of data in the case of Serbian confectionery industry analysis, we are forced to take into account all the businesses that produce and trade in confectionery products as the relevant market.

In order to analyze individual product groups as separate relevant product markets we should have a detailed Market Analysis of individual product groups at our disposal, with specific data on the revenues of each company based on the product group. For example, if we considered the relevant chocolate and chocolate products market, we should have at our disposal the revenues of all the confectionery companies earned from selling this category of products. These data are not publicly available and thus could not be the subject of our analysis. Therefore, we have decided to look at all confectionery products as a single relevant market, which is not in conflict with the logics of the relevant product market, the hypothetical monopolist test and good practices of the European Commission. For the same reason we have determined Serbian market as the relevant geographic market.

The data

The modesty of the available industry data has already been pointed. This view is further reinforced when it comes to the availability of corporate data, more specifically, the data

on financial and market performances of the confectionary companies in Serbia. Because of the necessity to use the official data we were forced to rely on the official data from financial statements of all companies that are subject to the following activity codes:

1. Code 1072 - Manufacture of rusk, biscuits, preserved pastry goods and cakes (67 entities)
2. Code 1082 - Production of cocoa, chocolate and confectionery products (107 entities)
3. Code 4636 - Wholesale of sugar, chocolate and sugar confectionery (140 entities).

These data were collected through the Business Registers Agency website, (Business Registers Agency, 2011). The list of registered confectionary companies was downloaded from the website of the National Market of Goods and Services of Serbia (National Market, 2011).

Based on available data, a base was made with important financial and nonfinancial parameters for the registered confectionery companies for the period between 2006 and 2010, such as total operating income, net score, and number of employees, classification of companies by size and location of the head office.

The striking fact is a large number of registered and non-active companies, viewed from the perspective of the analyzed year 2010. Namely, out of the total number of registered companies within the three activity codes more than 30% are inactive companies, companies in liquidation proceedings or companies deleted from the register of companies. These data are in line with the previously argued that, in the last two years, the business conditions have been progressively more complicated, especially for small and medium size enterprises.

This paper uses the data on incomes of legal entities and entrepreneurs, which were obtained from the database of Serbian Business Registers Agency. With processing these data, a number of issues occurred. First, the obtained data are summary data on the total business results of a company and not on individual products or geographic areas. In other words, the authors did not have access to the analytical accounting of the analyzed companies, but to the summary aspects of the balance sheets and income statements. Second, it is possible that some companies are registered under the code of activity which does not reflect

their prevailing activity, since it is possible that they are generating income from other activities. Third, it is possible that the analysis does not include the revenues of foreign confectionery companies generated in Serbia, if they do not have registered import companies in Serbia but are trading in confectionary products from their head offices abroad. Because of the potential weaknesses of these data, in their data analysis, the authors have applied several logical approximations and simulations.

The analysis

The analysis is made in the relevant market of all confectionery products based on the revenues of the relevant companies (activity codes 1072, 1082 and 4636) in Serbia. A preliminary analysis was performed on the basis of fixed projections of input variables, but was then refined by using the case scenario analysis. The entire analysis was performed with the purpose of calculating the key measures of market concentration and their interpretation.

The analysis of concentration in the confectionery sales marked was based on the data on operating revenues from the income statement of active confectionery manufacturers and wholesalers in Serbia. Since we were not able to obtain the data on the structure of the revenues of each company, we have made a realistic approximation. Namely, the companies within the industry codes 1072 and 1082 are the companies engaged in the production of confectionery products, and generate their income by selling confectionery products in domestic and international markets. Company under the 4636 code of activity are engaged in the wholesale of confectionery products and their income can be generated from imports and sales of confectionery in Serbia, based on exports of domestic production and its sales abroad or in combination of the two, on import and export sales. Some of the larger companies within the activity codes generate significant revenues from the sale of products, which are not confectionery. For example, Nelt is a company engaged in the wholesale of other consumer goods.

The authors have observed only Serbian confectionery market and are interested only in the revenues from confectionery products sales that were realized on the territory of Serbia, regardless of the fact whether these are

incomes of domestic producers or importers of foreign confectionery. Given that the authors do not have access to analytical accounting of individual companies and are not able to look at the sources of revenues by products and geographic basis, they have to resort to making logical and realistic approximations, or to observing several typical case scenarios.

The first case scenario is a passive case scenario which assumes that the total of incomes of local confectionery manufacturers (codes 1072 and 1082) is placed in Serbia. Within these industry codes, a total of 174 companies were registered in 2010, out of which only 101 companies were active. Under the aforementioned assumption that all income is derived from domestic sales, we come to the following indicators of concentration (Table 1, Figure 2).

**Table 1: Measure of market concentration
(Case scenario 1)**

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,99%
2	CR4	55,75%
3	CR8	77,00%
5	Gini coefficient	0,3
6	HHI	993

Figure 2: Concentration curve for 10 leading companies (Case scenario 1)

The second case scenario is that the total income of the domestic producers and domestic wholesalers (codes 1072, 1082 and 4636) is generated in Serbia. Practically, we add to the analysis confectionary wholesalers in the total

amount of their income. The concentration indicators in expanded market are shown in the illustrations below.

**Table 2: Measures of market concentration
(Case scenario 2)**

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,81%
2	CR4	56,32%
3	CR8	76,90%
5	Gini coefficient	0,35
6	HHI	1.149

Figure 3: Concentration curve for 10 leading companies (Case scenario 2)

The third case scenario is a simulation of the second case scenario with the following assumptions. According to the Group of confectionery products manufacturers, a third of domestic production is being exported. Therefore, in this case scenario the authors have assumed that 70 % of the revenues of the companies with activity codes 1072 and 1082 are generated in the domestic market, and that 30% of their revenue is generated from imports. As far as the companies with the activity code 4636 are concerned, we will assume that 80% of their revenues is realized on the domestic market, and 20% is intended for export. With the diversified wholesalers, such as Nelt, the percentages of revenues generated by selling confectionery have been individually approximated based on experience, thus the revenues generated from the sales of other products have been excluded. The concentration indicators for the third case scenario are shown in the illustrations below.

Table 3: Measures of market concentration
(Case scenario 3)

		FORMALLY ACTIVE COMPANIES
1	Reciprocity index	0,81%
2	CR4	57,52%
3	CR8	77,64%
5	Gini coefficient	0,35
6	HHI	1.231

Figure 4: Concentration curve for 10 leading companies (Case scenario 3)

In summary, the analysis of all three case scenarios indicates that this market is poorly to moderately concentrated. The HHI as the dominant measure of market concentration is not even close to the critical threshold of 2,000 points, which implies a high concentration of market power.

Conclusion

The paper explains in detail the historical and current trends in the confectionery market in Serbia. After a steady growth in production volumes in the period between 2000 and 2008, Serbian confectionery industry first experienced stagnation in the first year, and then a prolonged decline in the volume of activities during the last three years. In parallel with the fall in output and stagnation in exports, there was a sudden increase in the imports of confectionery products. Notwithstanding the decline in output and export stagnation, the confectionery industry

in Serbia is considered to be one of the healthier parts of Serbian food processing sector with annual production of about 500 million dollars, out of which approximately 150 million dollars is exported annually to various world markets creating a surplus of over 50 million dollars in the balance of payments. The analysis showed that the state is not sufficiently considered with the development of the industry, i.e. that some of its measures even discriminate against the domestic producers as compared to the importers. This primarily refers to the tax and customs policies, which substantially burden the cost price of the domestic producers making them uncompetitive in price-comparison with imported products.

The second part of the paper explains in detail the theoretical postulates needed for defining the relevant market of confectionery products, as well as possible measures of concentration that can be used.

The third part presents an empirical analysis of the concentration in the confectionery market in Serbia. The analysis used the data from the Business Registers Agency from the financial statements of all the companies involved in manufacturing and trading in confectionery products.

A preliminary analysis was performed on the basis of fixed projections of input variables, but was then refined by applying the analysis of three typical case scenarios. The analysis of all three case scenarios indicates that this market is poorly to moderately concentrated. The limitations of the available data have been partially alleviated by approximating the missing data in a defined range. The approximations in the ranges specified have given stable results in the third case scenario compared to the first and second case scenario, which indicates that the data limitation has not significantly affected the calculated value of the measure of concentration or the final conclusion regarding the level of concentration of the analyzed markets.

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