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Measuring of The Goods and Labor Markets Efficiency: Comparative Study of Western Balkan Countries

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ABSTRACT

Numerous theoretical and empirical evidences confirm the assumption that more competitive markets are followed by raising the level of efficiency. The aim of this paper is to consider to what extent are efficient goods and labor markets in the efficiency-driven countries, such as Western Balkans. Intense competitive pressure both by domestic and foreign companies, and demand conditions determined by customer orientation and consumer sophistication, have great importance in acceleration labor market efficiency. The delicacy of the measuring of the competition and demand conditions on goods market completes an empirical review of the achieved results in labor markets in 2018 in Western Balkan countries. The multi-criteria analysis was carried out in order to rank countries and highlight those which have achieved remarkable goods and labor markets efficiency in the overall order of the countries. The obtained results suggest significant gaps and cyclical deviations from the regional average, related to goods market efficiency gaps, observed by selected indicators and countries. Problems in the fields of domestic competition, foreign competition, and insufficient quality of demand conditions in the individual markets, imposed the need to compare the comparative disadvantages and advantages in the Western Balkan countries. The comparative study can serve as a guide for defining future labor market policies due to it has been proven that countries with more efficient goods market have more favorable labor market indicators.

INTRODUCTION

The role of competition and demand conditions in determining market efficiency is becoming a central issue for policy-making and academic research alike. In general market efficiency relates to extent to which actual market prices reflect the true production costs and benefits received from output. This would depend upon the speed with which quantity demanded and quantity supplied move towards equilibrium. In the age of information technology markets all over the world are gaining greater efficiency. However, information technology can inadvertently results in less efficiency if the quality of the information does not allow to making profit-generating decisions.

The results of numerous theoretical and empirical evidences confirm the assumption that more competitive markets are followed by raising the level of efficiency. In this regard, more intense domestic and foreign competition encourages enterprises to accelerate the adoption of new technologies in order to increase efficiency. Problems in the fields of domestic competition (existence of market dominance, insufficient effect of taxation on incentives to invest and ineffective antimonopoly policy), foreign competition (high burden of customs procedures and trade tariffs duty) and insufficient quality of demand conditions (measured by degree of customer orientation and buyer sophistication which refers to what basis buyers make purchasing decisions (the lowest price or sophisticated performance) in the individual markets imposed the need to compare the comparative disadvantages and advantages in the Western Balkan countries. This is primarily because the interdependence of the markets is very pronounced, especially between the goods and labor markets.

Recognizing the purpose of the research, we will focus on testing the following hypothesis: *A country with the most efficient goods market has the most efficient labor market measured by selected indicators.*

The paper is organized as follows. Section 1 presents theoretical background in favor of market efficiency, while Section 2 explains the methodological framework of this paper and presents data and model specification. The Section 3 deals with the research results and discussion. Last Section concludes the paper with a number of implications derived from the findings.

1.THEORETICAL BACKGROUND

According to economic theory, market efficiency is conducive to the optimum allocation of resources. In such circumstances, the price mechanism can ensure that the products and services will end up in the hands of those that value those most. In addition, market efficiency is also thought to be welfare-optimizing due to it suggests market's ability to reallocate resources.

Respecting economic theory, some empirical evidence confirms that market efficiency has a major impact on a country's economic performance. Such efficiency is particularly important for small countries which tend to be highly exposed to external shocks. One of the methods for measuring market efficiency refers to constructing a composite index with particular reference to the goods market, the labor market and the financial market. The results suggest that market efficiency has positive relationships with GDP per capita and with economic resilience (Formosa, 2008; Mate et al., 2017; Olah et al., 2017).

The latest researches in the field of market efficiency introduce a mathematical theory called market connectivity in order to give concrete ways to both measure the efficiency of markets and find inefficiencies in large markets. The theory leads to new methods for testing the famous efficient markets hypothesis (EMH). In addition, theory suggests metrics that can be used to compare the efficiency of one market with another, to find inefficiencies that may be profitable to exploit, and to evaluate the impact of regulations on market efficiency. A market's efficiency is related to its ability to communicate information relevant to market participants. Market connectivity calculates the speed and reliability with which this communication is carried out via trade in the market.

Modeling market can be computed by recording transactions in the market over a fixed interval of time, so the nodes of the network correspond to participants in the market. Every pair of nodes that trades in the market is connected by an edge that is weighted by the rate of trade, and associated with a vector that represents the type of item that is bought or sold. A theory of market efficiency evaluate the ability of the market to communicate by considering how it deals with shocks, while a shock is a change in the beliefs of market participants about the value of the products that they trade. Giving the explicit mathematical definitions (quantitative measurement of market inefficiency) it is possible to compute the effect of every potential significant shock on trade in the market (Rao, 2017).

Some studies analyze the determinants of efficiency and give a general methodology capable of addressing a number of fundamental questions in consumer policy. Are consumers paying more than the minimum price for a given bundle of attributes? If so, what brands cost more than the consumer needs to pay? What would be the degree of improvement in the consumer's well being if some intervention sets the price of such inefficient brands at the efficient level? (Kamakura, Ratchford and Agrawal, 1988). Kalita proposes a new methodology to measure product market efficiency, which is based on the economic theory of product market equilibrium where consumers have incomplete information, and it allows quality to be multidimensional. The empirical results show that their model is robust and efficiency estimates are always equal to or lower than the DEA estimates of efficiency (Kalita, 1994).

Some researchers introduce a new measure for capital market efficiency. The measure takes into consideration the correlation structure of the returns (long-term and short-term memory) and local herding behavior (fractal dimension). The efficiency measure is taken as a distance from an ideal efficient market situation (Kristoufek and Vosvrda, 2013). Efficiency has been appraised primarily in terms of the relationship between trading costs and volume, although this simplification has been criticized for neglecting qualitative factors. Four more specific indicators of market efficiency are: viability-stability, ratio of units traded to marketing effort, revenues of market participants and realization of potential transactions. Results of simulation analysis show that these indicators are, at least in principle, measurable, and that they are not closely correlated with each other (Preston and Collins, 1966).

Market efficiency, which is championed in the efficient market hypothesis (EMH) formulated by Eugene Fama in 1970, suggests that prices reflect all available information about a particular market. Several versions of the Efficient Market Hypothesis have been widely discussed and tested in the literature. Essentially, the Efficient Market Hypothesis is in essence an extension of the zero profit competitive equilibrium condition from the classical price theory to the dynamic behavior of prices in speculative markets under conditions of uncertainty (Jensen, 1978).

According to the EMH, no investor has an advantage in predicting a return on a stock price due to no one has access to information not already available to everyone else. In addition, as prices respond only to information available in the market, no one will have the ability to out-profit anyone else. In efficient markets, prices become not predictable but random which results the failure of any investment strategy that aims to beat the market consistently. There are obvious arguments against the EMH due to anomalies because EMH does not dismiss the possibility of market anomalies that result in generating superior profits. In fact, market efficiency does not require prices to be equal to fair value all the time. Prices may be over - or undervalued only in random occurrences, so they eventually revert back to their mean values.

Considering the fact that the deviations from a fair price are random, investment strategies that result in beating the market cannot be consistent phenomena. Furthermore, the hypothesis argues that an investor who outperforms the market does so not out of skill but out of luck. In a market with a large number of investors, some will outperform while others will underperform. One of the crucial questions is: How does a market become efficient? In order to answer the question,

investors must perceive the market is inefficient. Ironically, investment strategies intended to take advantage of inefficiencies, keep a market efficient.

Markets cannot be absolutely efficient or wholly inefficient. Accepting the EMH in its purest form may be difficult in real markets (a market has to be large and liquid, accessibility and cost information must be widely available and released to investors at more or less the same time, transaction costs have to be cheaper than an investment strategy's expected profits, investors must also have enough funds to take advantage of inefficiency). Markets have generally been regarded as either efficient or inefficient with respect to each of three different degrees. There are different degrees of efficiency:

- *Strong efficiency form*: This is the strongest version, suggests that all information in the market (historical prices), whether public or private, is accounted for in a stock price, and not even insider information could give an investor an advantage;
- *Semi-strong efficiency form*: This form implies that all publicly available information is calculated into a current price, so that neither technical analysis can be used to achieve superior gains;
- *Weak efficiency form*: This type claims that all past prices are reflected in today's price, so technical analysis cannot be used to predict and beat a market.

Mentioned hierarchy has been used as a crude scale for the measurement of the market efficiency. The weak efficiency form does not contain procedures and rules for price prediction from historical data, therefore, weak form is a non-testable concept from a practical standpoint. There is no way to define the strong efficiency form without reference to the concept of efficiency itself. As a consequence of these logical deficiencies, these subsets cannot be used effectively to measure the market efficiency. It is more fruitful to regard markets as being neither perfectly efficient nor perfectly inefficient, but as having varying degrees of the efficiency-related properties of speed of price adjustment and volume required to effect a price adjustment. Market efficiency is best measured by measuring these properties directly (McGoun, 1990).

2. METHODOLOGICAL FRAMEWORK

In order to carry out multicriteria analysis of the goods markets and labor markets, the Promethee method is preferred. Visual Promethee software is used as a multicriteria decision aid in order to evaluate several possible decisions or items according to multiple often conflicting criteria, to identify the best possible decision, and to rank possible decisions from the best to the worst one. There are two Promethee rankings:

- The Promethee I Partial Ranking is based on the computation of two preference flows (Phi+ and Phi -). It allows for incomparability between actions when both Phi+ and Phi- preference flows give conflicting rankings.
- The Promethee II Complete Ranking is based on the net preference flow (Phi).

The Promethee method is designed to analyze data within a multicriteria table including: a number of actions (countries), and several criteria (selected indicators). In mathematical terms the problem is the following

$$\max\{f_1(a), f_2(a), f_3(a), \dots, f_n(a)\} | a \in A$$

where A is a finite set of n actions and f_1 to f_k are k criteria. Some criteria can be maximized or minimized. The evaluations of the actions on the criteria form a two-way multicriteria table is set as:

	f_1	f_2	f_3	...	f_n
a_1	$f_1(a_1)$	$f_2(a_1)$	$f_3(a_1)$...	$f_n(a_1)$
a_2	$f_1(a_2)$	$f_2(a_2)$	$f_3(a_2)$...	$f_n(a_2)$
a_3	$f_1(a_3)$	$f_1(a_3)$	$f_1(a_3)$...	$f_n(a_3)$
.
.
.
a_m	$f_1(a_m)$	$f_2(a_m)$	$f_3(a_m)$...	$f_n(a_m)$

The expectation of the decision-maker is to identify an action that is the best (optimal) on all the criteria at the same time. This is usually impossible as the criteria are more or less conflicting with each other. The objective is thus to identify the best compromise decisions. In order to achieve this objective, it is essential to have some information about the preferences and the priorities of the decision-maker. This information is not contained in the multicriteria table. It should not ignore the fact that different decision-makers will have different preferences and priorities. In order to solve multicriteria decision problem we can aggregate all the criteria into a single summary score and to compute a weighted sum or weighted average of the evaluations:

$$V(a) = \sum w_n * f_n(a)$$

where $w_j > 0$ is the weight allocated to criterion f_j (the more important f_j the larger w_j), $V(a)$ is the resulting score of action a . The actions can then be ranked according to their V score, from the largest to the smallest value. During the analysis, the same importance is given to all criteria (indicators).

2.1 DATA AND MODEL SPECIFICATION

The methodological base of the paper refers to the data from the World Economic Forum, the World Bank Group and the Vienna Institute for International Economic Studies.

On the one hand, the efficiency of the goods market (GME) depends on: domestic competition indicators ($DomC$), foreign competition indicators (FC), and demand conditions ($DemC$). The equation can be estimated as following:

$$GME_{i,t} = \beta_1(DomC_{i,t}) + \beta_2(FC_{i,t}) + \beta_3(DemC_{i,t}) + \varepsilon_{i,t}$$

The subscript i,t represents economy i in a specific year t , while $\varepsilon(i,t)$ is the error term, or the part of the goods market efficiency not explained by the three dependent variables.

Selected indicators devoted to the domestic competition are related to: intense of competition in the local markets; nature of corporate activity which indicate domination of firms; effectiveness of anti-monopoly policies at ensuring fair competition; extent to which taxes reduce the incentive to invest; the total tax rate which measures the amount of taxes and mandatory contributions payable by a business in the second year of operation, expressed as a share of commercial profits (the total amount of taxes is the sum of five different types of taxes and contributions payable after accounting for deductions and exemptions: profit or corporate income tax, social contributions and labor taxes paid by the employer, property taxes, turnover taxes, and other small taxes); number of procedures required to start a business; number of days required to start a business; the role of the agricultural policy in balance the interests of taxpayers, consumers, and producers.

Selected indicators devoted to the foreign competition are related to: the extent to which non-tariff barriers (e.g., health and product standards, technical and labeling requirements, etc.) limit the ability of imported goods to compete in the domestic market; trade-weighted average tariff rate/most recent year available (this indicator is calculated as a weighted average of all the applied tariff rates, including preferential rates that a country applies to the rest of the world); the presence of foreign ownership of companies; the restriction of rules and regulations on foreign direct investment; the effectiveness of customs procedures related to the entry and exit of merchandise; and what is the share of imported goods and services in gross domestic product for the most recent year available (total imports is the sum of total imports of merchandise and commercial services).

Two indicators aim to point out the quality of demand conditions and focus on the treatment which is devoted to customers by companies (it suggests whether the companies are indifferent to customer satisfaction or they are highly responsive to customers and seek customer retention), and on what basis buyers make purchasing decisions (based solely on the lowest price or on sophisticated performance attributes).

On the other hand, in order to measure the labor market efficiency (*LME*) we can give a model which describes labor market efficiency as a function of the average monthly gross wages (*W*), employment rate (*E*), activity rate (*A*), labor productivity (*P*) and unit labor cost (*C*). The equation can be estimated as following:

$$LME_{i,t} = \alpha_1(W_{i,t}) + \alpha_2(E_{i,t}) + \alpha_3(A_{i,t}) + \alpha_4(P_{i,t}) + \alpha_5(C_{i,t}) + \varepsilon_{i,t}$$

The subscript *i,t* represents economy *i* in a specific year *t*, while $\varepsilon_{i,t}$ is the error term, or the part of the labor market efficiency not explained by the five dependent variables.

Taking into account the five selected indicators, the labor market efficiency was observed. Special attention is devoted to the: Unit labor costs (average annual gross wages per employee relative to labor productivity; Average monthly gross wages (wages per employee per month on a gross basis, before deduction of income tax and social security contributions); Employment rate (employed persons in % of working-age population of the respective gender, age and education group); Activity rate (labor force in % of working-age population of the respective gender and age group); Labor productivity (GDP at 2010 reference prices per person employed, growth in %).

In this respect, selected labor market and goods market indicators will be quantitative and qualitatively assessed and compared among the selected countries. In addition, goods market efficiency gaps between the Western Balkans will be calculated in order to highlight individual results relative to the average of the region. Furthermore, the paper also emphasizes how more efficient goods market could potentially lead to the more efficient labor market.

3. RESEARCH RESULTS AND DISCUSSION

The focus of the research is the goods and labor markets efficiency in the Western Balkan countries in 2018. Western Balkans (Albania, Montenegro, Serbia, Bosnia and Hercegovina) belong to the efficiency-driven countries according to the 2018 World Economic Forum Report. Countries with efficient goods markets can produce the right mix of products and services regarding their particular supply-and-demand conditions. In addition, intense competitive pressure, both by domestic and foreign companies, is important in driving market efficiency, and thus business productivity, by ensuring that the most efficient firms, producing goods demanded by the market, are those that thrive. Also, market efficiency significantly depends on demand conditions such as customer orientation and buyer sophistication. In order to create an important competitive advantage, it forces companies to be more innovative and customer oriented and thus imposes the discipline necessary for efficiency to be achieved in the market.

Western Balkan countries that have achieved remarkable goods market efficiency are better ranked in the overall order of the countries. In particular, Montenegro and Albania, the best rank Western Balkan countries, achieve better results in goods market efficiency in relation to overall global competitiveness.

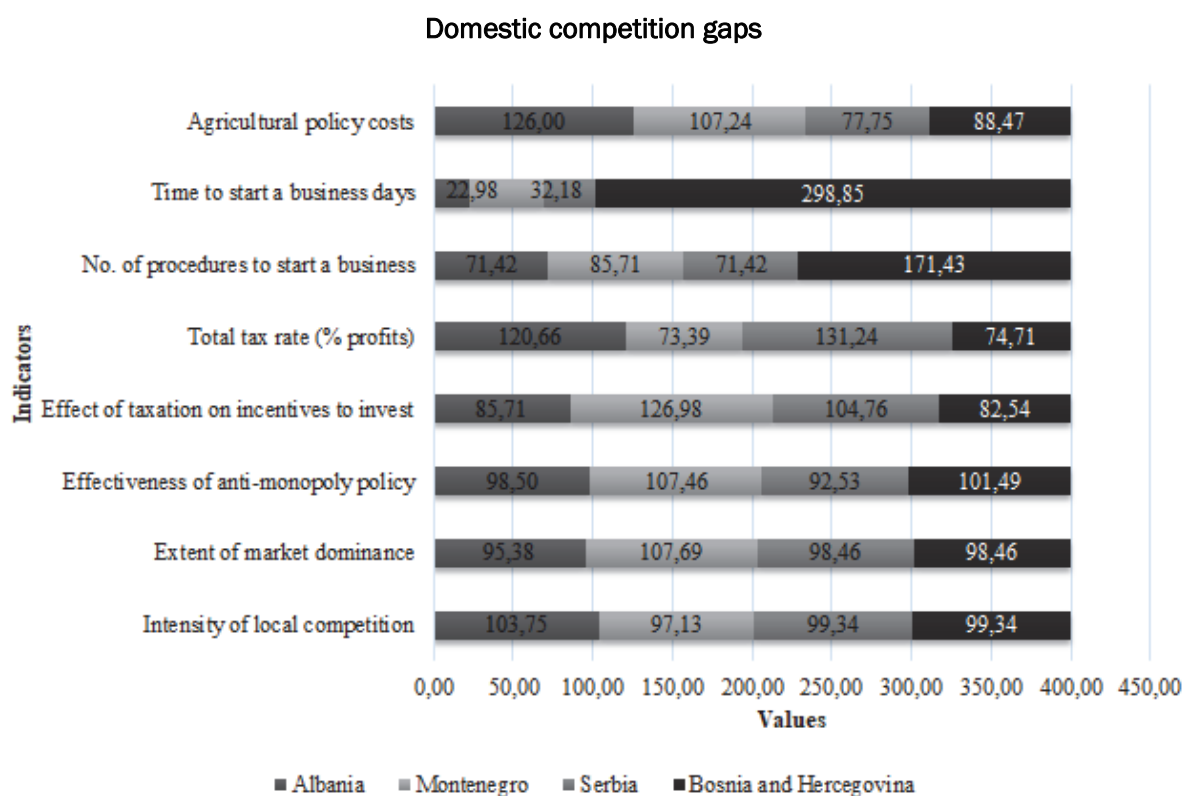
Some authors have summarized the concept of customer satisfaction and "after academic analysis regarding customer satisfaction it has been revealed that this particular concept has been examined extensively. Majorly, the authors describe customer satisfaction as an emotional reaction which highly depends on the fact whether the customer's needs and expectations are realized or not. The advantages of this notion are distinguished these ones: profit enhancement, market share and firm's value augmentation, possibility to predict client's behavior" (Streimikienė, Navikaitė and Varanavicius, 2016, p. 27).

One of the main causes of the insufficiently efficient functioning of the goods market is reflected in the relatively weak competition conditions between market participants. The goods market efficiency is the most desirable for setting the competition conditions among the determinants of national competitiveness (Petrovic-Randjelovic, 2016). Goods market efficiency gap between the Western Balkans can be calculated relative to the average of the region in a way:

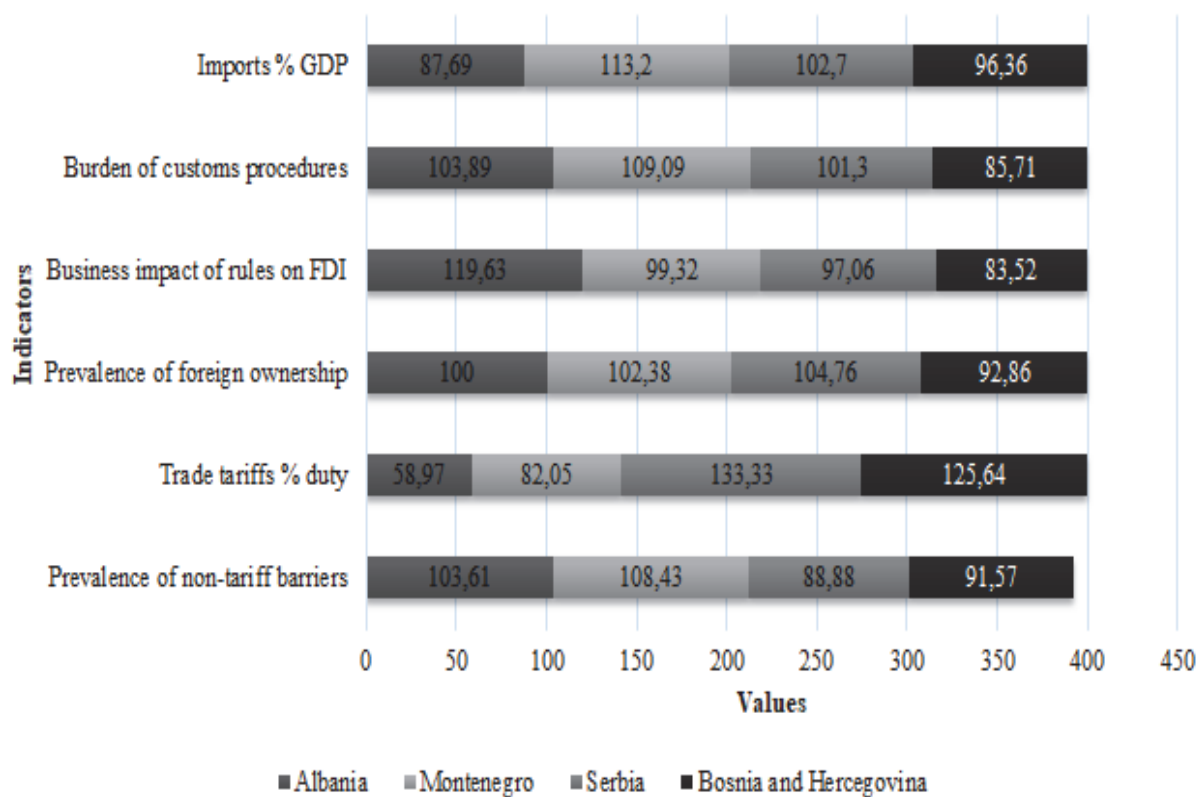
$$\text{Goods market efficiency gap}_i = \text{Indicator}_{i,t} / \text{Average (Indicator)}_{WB,t} * 100 \quad (1)$$

The Figure 1 shows goods market efficiency gaps by countries in 2018 by three groups of indicators (domestic competition, foreign competition and demand conditions) for Western Balkan countries in 2018. Also, it can be seen that there are a cyclical deviations from the regional average observed by selected indicators and countries.

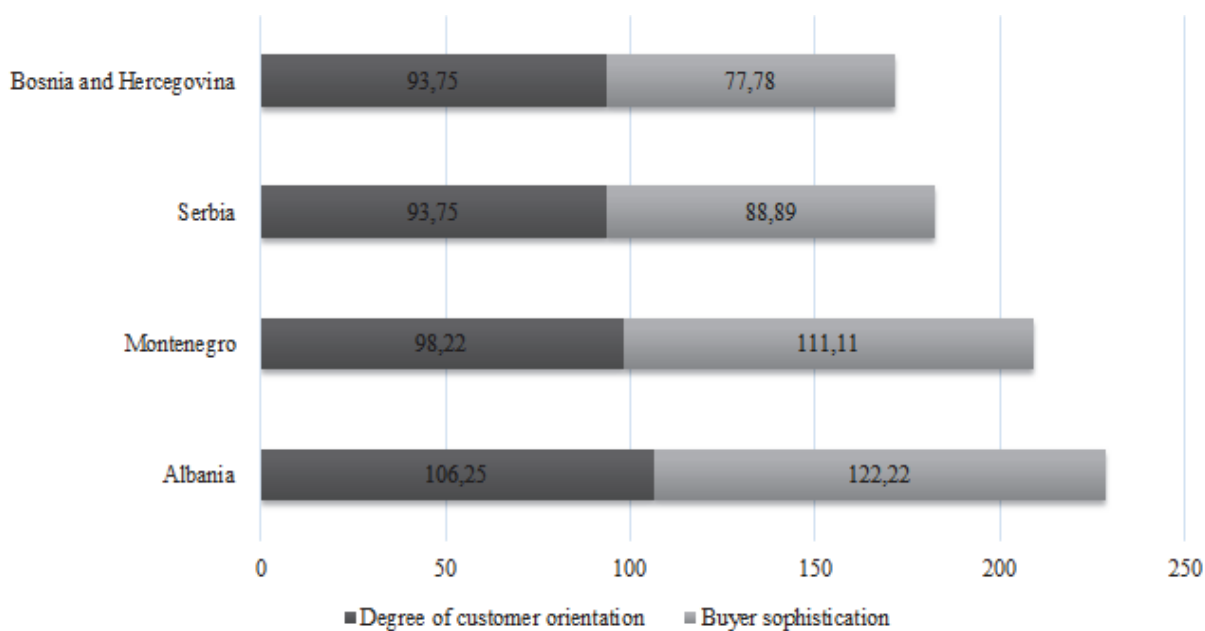
Figure 1. Goods market efficiency gaps by countries in 2018



Foreign competition gaps

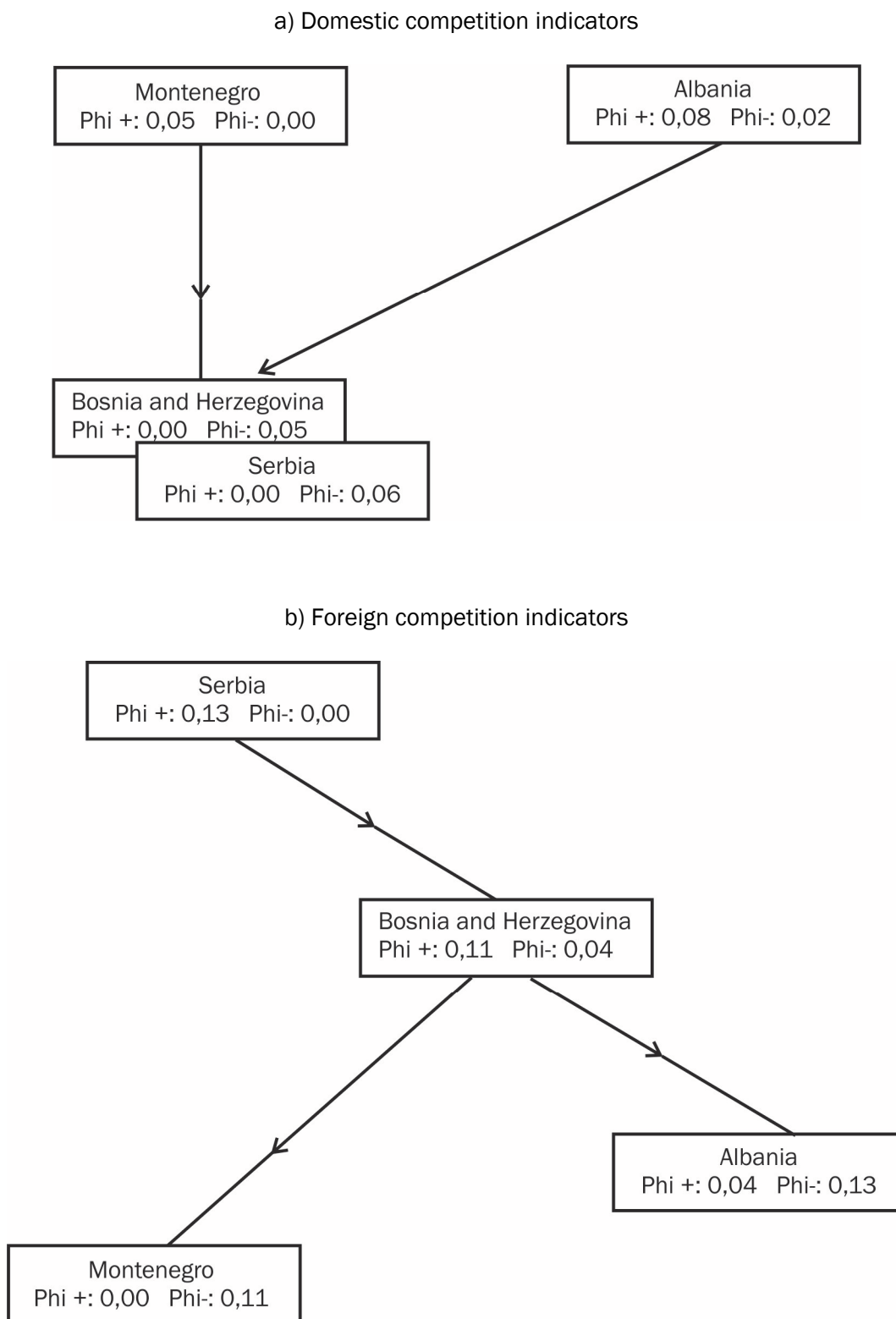


Quality of demand gaps

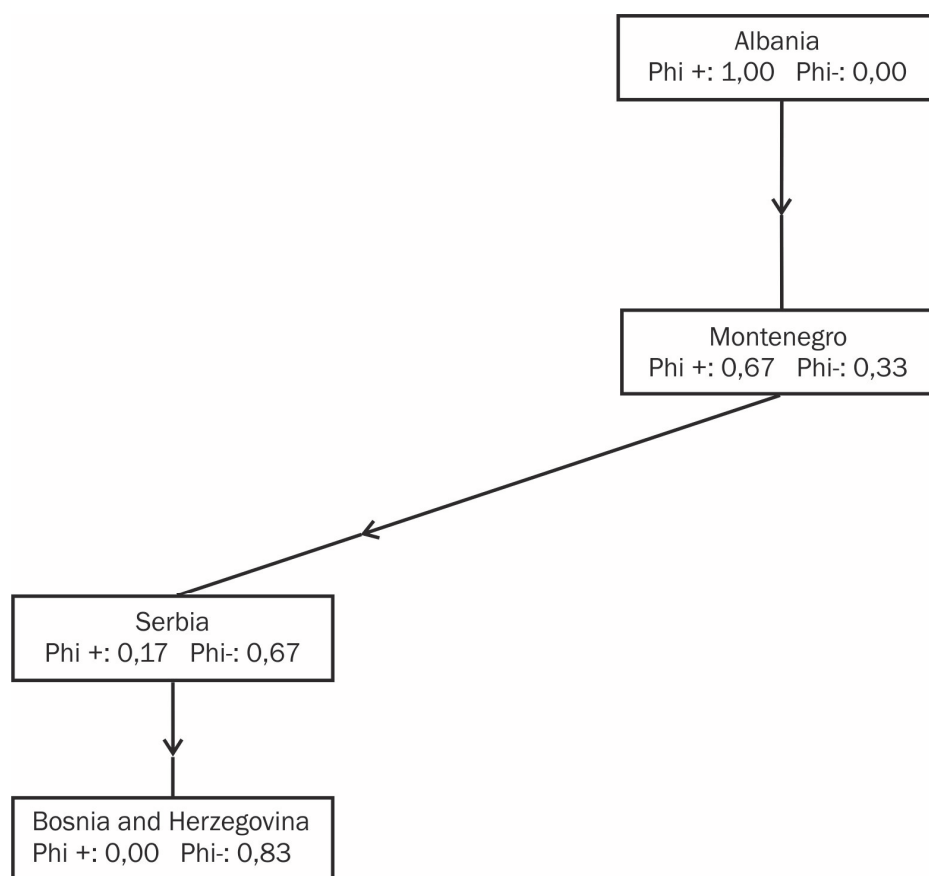


Source: Authors' calculations

Figure 2. Ranking countries by using multicriterial decision-making software Visual Promethee



c) Quality of demand conditions



Note: The PROMETHEE Network is representation of the PROMETHEE I Partial Ranking
Source: Authors' presentation

Specifically, Albania is the best ranked country in Western Balkan region according to domestic competition indicators (Figure 2). However, Albania has the positive deviations from the regional average only in three domestic competition indicators (agricultural policy costs, total tax rate and intensity of local competition), while in all other indicators it is lagging behind regional averages, so that it has the worst results in the Western Balkan region according to extent of market dominance (Figure 1).

Nevertheless, Albania has the best results in the region according to number of procedures and time to start a business. Unlike Albania and Montenegro, Serbia and Bosnia are in the second half of countries compared by domestic competition indicators. According to Petrovic-Randjelovic and Radukic (2013) „Also, there has been too much government interference in the economy, indivisible role of the state as a regulator and as an owner, which leads to unbalanced competition between the companies“ (p. 238).

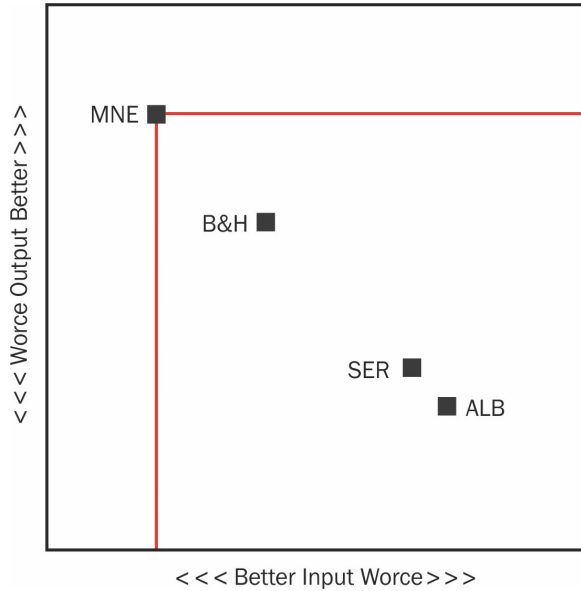
On the other hand, Serbia achieved the best results in the Western Balkan region according to foreign competition indicators (Figure 2). Specifically, Serbia has the best results in the region according to trade tariff duty and prevalence of foreign ownership (Figure 1). On the other hand, Mon-

tenegro, as the fourth ranked country in the region by foreign competition indicators, has the positive gaps from the regional average in four foreign competition indicators (prevalence of non-tariff barriers, prevalence of foreign ownership, burden of customs procedures and imports % GDP), while in all other foreign competition indicators it is lagging behind regional averages. Nevertheless, Montenegro is the most successful Western Balkan country in eliminating non-tariff barriers and according to the efficiency of customs procedures.

„Demand conditions refer to the needs of consumers and the key weaknesses are reflected in the low consumer protection, then poor regulation of quality standards, low environmental standards and so on“ (Petrovic-Randjelovic and Radukic, 2013, p. 238). Deeper analysis of the quality of demand conditions shows that buyers in Serbia and Bosnia and Hercegovina dominantly make purchasing decisions based solely on the lowest price, while on the other hand, buyers in Albania and Montenegro more pay attention on sophisticated performance attributes (Figure 2). When we compare the degree of customer orientation, it can be concluded that companies in Albania and Montenegro are highly responsive to customers and seek customer retention, while average company in Serbia and Bosnia and Hercegovina is more indifferent to customer satisfaction.

If all analyzed countries are grouped into the Western Balkan region, it can be concluded that the region as a whole, in the area of domestic competition indicators, has the best results in the intensity of competition on local markets. Conversely, the main disadvantages which reduce goods market efficiency refers to market dominance which suggests that corporate activity is not spread among many firms and it is dominated by a few business groups. Some researches show that institutional capacity can provide strong support for the development of competitive market structures. Acknowledging the broader political-institutional framework, some studies provide an assessment of the current state of competition policy and highlight possible ways of improving it. In this regard, the key problems in achieving the competition policy have been identified: insufficient level of institutional changes, improvement of the implementation of the established legislative framework for the protection of competition, improvement of the model of integrated processing and sanctioning of competition violations, strengthening of the organizational and professional capacities of the competent institutions, recognition of the protection of competition as a special public policy with clear identification of the creators of this policy. The issue of development and protection of competition in the Western Balkan countries is especially expressed in the light of changes during the integration process. The high degree of market dominance and insufficiently efficient antimonopoly legislation are just some of the acute problems that characterize the economic environment of the Western Balkan countries (Stojanovic, Radukic and Kostic, 2016).

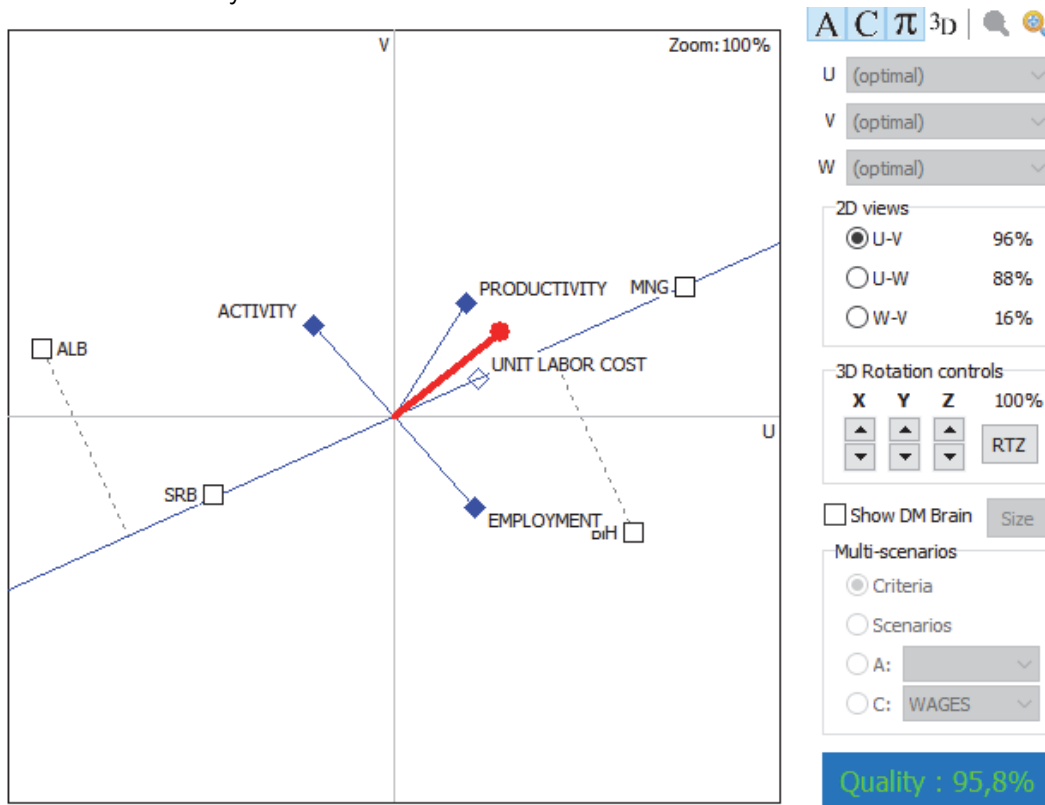
Figure 3. Input-Output Efficiency of the Labor markets



Source: Authors' presentation

Figure 3 shows a two-dimensional representation of the Input and Output flows of the labor markets. Montenegro is the efficient frontier with quite different labor market performance profile compared to other countries. Montenegro is followed by Bosnia and Herzegovina, Serbia, and Albania, respectively.

Figure 4. GAIA Visual Analysis of the Labor markets



Source: Authors' presentation

GAIA is the descriptive companion method to Promethee. GAIA starts from a multidimensional representation of the decision problem with as many dimensions as the number of criteria (five in this labor markets). GAIA uses a dimension-reduction technique that is borrowed from statistical data analysis. A mathematical method called the Principal Components Analysis is used to reduce the number of dimensions while minimizing the loss of information.

In Visual Promethee two dimensions are computed: U is the first principal component, it contains the maximum possible quantity of information; V is the second principal component, providing the maximum additional information orthogonal to U. The 2D views controls allow to switch between three 2D views: U-V: This is the best possible 2D view.

In this model it gathers 95,8% of information. In practice the 2D GAIA analysis is reliable when the quality level is above or close to 70%, so it can be concluded that the results obtained are very significant and reliable. Each country is projected orthogonally on the criterion direction (labor market indicator). The projections show the relative performance of the actions on the selected criterion. The distance to the criterion is meaningful.

What matters is the place where the action projects on the criterion. The Decision Axis is similar to a weighted average of the criteria axes, so it indicates the direction of the Promethee II ranking and thus show which criteria are in agreement with the Promethee II ranking and which are not. The results show that Montenegro has the best scores regarding to Labor Productivity, Unit labor costs and Average monthly gross wages.

CONCLUSION

Respecting economic theory, the paper presents some relevant empirical researches which indicate that the competition and demand conditions have a major impact on Western Balkan country's goods market efficiency. The latest researches in the field of market efficiency introduce a mathematical theory in order to give concrete ways to both measure the efficiency of markets and find inefficiencies in large markets. The theory leads to new methods for testing the efficient markets hypothesis. Hence, theory suggests metrics that can be used to compare the efficiency of one market with another, to find inefficiencies that may be profitable to exploit, and to evaluate the impact of policy and regulations on market efficiency. In modern conditions with pronounced uncertainty, a market's efficiency is related to its ability to communicate information relevant to market participants.

Respecting the defined aim of the research, the obtained results indicate to what extent are efficient goods and labor markets in the efficiency-driven countries such as Western Balkans. Countries that have achieved remarkable goods market efficiency are better ranked in the overall order of the countries. The results show that Montenegro is the best ranked Western Balkan country according to goods market efficiency and labor market efficiency measured by selected set of the indicators. Therefore, the obtain results confirm the starting hypothesis: *A country with the most efficient goods market has the most efficient labor market measured by selected indicators.*

The application of multi-criteria decision-making software has showed that Albania is as the best ranked country in the Western Balkan region according to indicators which refers to domestic competition and quality of demand conditions. On the other hand, Serbia is the best ranked country according to foreign competition indicators. It should be also noted that the main comparative disadvantage of the Western Balkan region, which reduce goods market efficiency, refers to the very pronounced market dominance.

Considering the context of the research, the presented results give a solid information base for future research in this field. Hence, bearing in mind the presented methodological framework for

assessing the goods and labor markets efficiency, it should be pointed out that future researches should be based on different issues in order to give clearer assessment of markets efficiency. In this regard, greater attention in the field of domestic competition should be paid to: estimation how competitive is the provision of the following services: Professional services (legal services, accounting, engineering, etc.), Retail services, Network sector (telecommunications, utilities, postal, transport, etc.); Number and quality of local suppliers; Prevalence and development of clusters (geographic concentrations of firms, suppliers, producers of related products and services); and the presence of the undeclared or unregistered economic activities. Also, special attention should be paid to the interdependence of the labor market and goods market, as well as the implications of changing the markets efficiency.

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