



**Methodological Approach to Development of Export Commodity  
Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

**Methodological Approach to Development of Export Commodity Groups of the  
Region**

**Azat Rashitovich Safiullin<sup>1</sup>, Diana Shamilevna Usanova<sup>2</sup>, Aliya Ajupovna  
Shugaepova<sup>3</sup>, Dilyara Irekovna Ravzieva<sup>4</sup>**

**1 Kazan Federal University, Institute of management, economics and finance**

**2 Kazan Federal University, Institute of management, economics and finance,  
diana-diana@rambler.ru**

**3 Kazan Federal University, Institute of management, economics and finance**

**4 Kazan Federal University, Institute of management, economics and finance**

**ANNOTATION**

The present article covers questions of analyses of world commodity markets as well as development and diversification of regional export portfolio. The methodological approach presupposes multi-level analysis, which consists of several stages: the structural analysis of international markets, as well as the assessment of the export portfolio of the region and variants of the development of export directions. The first stage involves analysis of international dynamics and trends in the international commodity markets. The next stage consists on analysis of attractiveness of commodity groups. Also, the methodology involves assessing the region's export portfolio on its average profitability (ER), the weighted average relatedness of commodity groups in the portfolio of the region in the presence of commodity groups, which have a comparative advantage (EP). The presented methodology may be the base in the identification of priority directions of region's export. It helps to outline probable scenarios of the strategic diversification of the export portfolio. One of the stages of it is analysis of the competition in the major export and import world markets, which helps to outline main consumers and producers of the priority directions of regional economy. Priority in the strategic perspective commodity groups are estimated by indicators of contribution to the region economic growth, their possibility of joint export in the current export portfolio.

**Key words:** competitiveness, regional development, export, import, commodity groups



# **Methodological Approach to Development of Export Commodity Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

## **1. INTRODUCTION**

Modern conditions of world markets functioning are characterized with intense processes of globalization and glocalization increasing economic openness of countries and regions. Today regions as quasicorporations strive to increase their budget profitability in foreign economic areas. They are also interested in the expansion of their presence in global markets. All this factors make the issues of selection and formation of the main directions of region export development fundamental to their sustainable economic growth and development. Outlining priority directions of export development has also an influence to the diversification of export portfolio of region. This may have effect on depending of regional economy on the priority sectors, which is one of the key factors of the region sustainable economic growth model.

The methodology of world commodity markets and regional export portfolio structural analyses which aims to identify attractive and perspective directions of export development of region is put forward in the present paper.

Various aspects of the internal and international economic activity of regions widely reflected in the research of scientists of different scientific schools (Gafurov et al, 2012 , Hausmann,2007 ; Safiullin,2014; Shugaepova,2014 , Hausmann,2014; Hausmann,2014). Questions of identifying directions of export development in order to make it most profitable investigated in the works of such authors as R. Hausmann, B. Klinger, D. Rodrik, N. Volchkova and others (Artemyeva et al, 2010; Gnidchenko,2014; Hausmann,2007, Ravzieva ,2013 ; Hausmann,2008; Hausmann,2014; Volchkova,2014). However, the theory that is being researched, in our view, requires detailed study and lighting in modern literature.

## **2. THEORY**

Presented in this article methodology is based on the classical theories, modern concepts and methods of assessment of export potential and perspective export commodity groups, as well as the approaches of modern authors to the analysis of economic activity of economic entities (Artemyeva et al, 2010, Gnidchenko,2014 , Ravzieva ,2013, Safiullin,



## **Methodological Approach to Development of Export Commodity Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

2011, Shugaepova, 2014, Gnidchenko, 2014, Lederman, 2010; Volchkova, 2014). So, first of all we will define the basic approaches inherent in methodology.

Issues connected with structural transformation of exports (analysis of transformation directions) in order to make export more profitable and increase the GDP per capita in the country or region are reflected in the works of various authors. In the economic literature allocate a separate group of studies dealing with this issue. The main works on this are the papers of Hausmann R., Klinger B., Rodrik D. (10, 12). The basic concept inherent in their study is the concept of a discrete space. This concept presupposes approach of related diversification, which implies that the export commodity groups in some way connected with each other in the structure of export portfolio. And this is determined by similar resource requirements and technological cycle in production of commodity groups. On the basis of this approaches we will make forecast of potential export directions.

Also in scientific works of R. Hausmann, J. Hwang and D. Rodrik potential commodity groups for exports are estimated for their quality, which means their assessment on profitability (Gnidchenko, 2014). According to this approach the export of products with high contribution to gross domestic product of the country or region will have a well influence to the future economic growth of the country. Studies show that this method of estimation of export potential is effective (Artemyeva, 2010; Gnidchenko, 2014). Certain key moments (approaches and indicators) are found in the analyses and reports of the World Bank in relation to analysis of foreign trade.

Another alternative approach to the study of the export potential is the approach of D. Lederman and U. Malone (Lederman, 2014). In contrast to the approach R. Hausman and other researchers, the authors note the importance of diversification of the export structure, i.e. the number of exported goods, not only their “quality”.

Thus, these approaches to the analysis of the export potential of the country (region) imply an assessment of the contribution of individual commodity groups to GDP (GRP) and the identification of priority export commodity groups from the perspective of export from the country (region) resource capabilities.

### **3. METHOD**

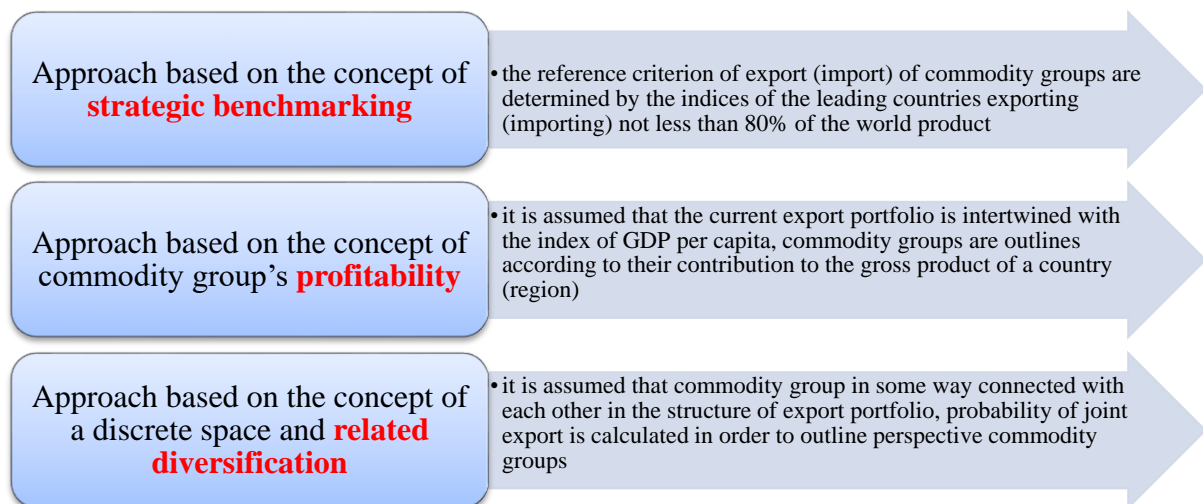


## Methodological Approach to Development of Export Commodity Groups of the Region

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

The research also based on the concept of strategic benchmarking, representing the combination of the process of adaptation of existing examples of effective management and methodology of strategic planning in order to identify unique opportunities for gaining competitive advantage. Based on this concept as the reference criterion of export (import) of specific commodity group indicators are determined on leading countries exporting (importing) not less than 80% of the world product (Strategic Planning Institute, 2014).

Approaches that form the basis of the research methodology of estimating of competitiveness of the commodity groups in the world market is presented in figure 1.

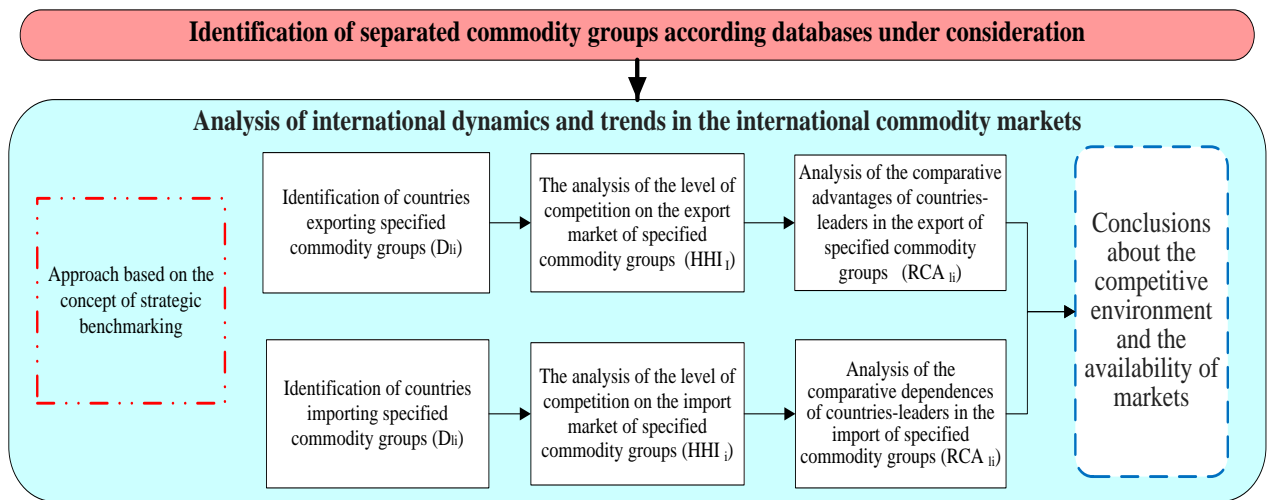


**Figure 1. Basic approaches inherent in methodology of priority directions identification of region export development**

The methodological approach presupposes multi-level analysis, which consists of several stages: the structural analysis of international markets, as well as the assessment of the export portfolio of the region and variants of the development of export directions.

#### 4. RESULTS

The first stage of the methodology is presented in the figure 2. It involves analysis of international dynamics and trends in the international commodity markets.



**Figure 2. Analysis of international dynamics and trends in the international commodity markets**

This stage consist of several steps, they are following: Identification of separated commodity groups according databases under consideration, analysis of export-oriented and import-dependent commodity markets. Also this stage involves conclusions about the competitive environment in the export markets (producers) and the availability of markets (consumers). They may allow evaluating the possibility of the development of the region in these markets, taking into account existing competitors and markets.

For the analysis of trade flows it is assumed identification of countries exporting commodity groups based on the concept of benchmarking, which involves the orientation of the leading manufacturers for each of the studied commodity groups and identification of key market players. The formation of groups of leading countries based on the analysis of the export structure of the world, the share of each countries in world exports of any commodity groups is analyzed ( $D_{it}$ ). Similarly on the import-dependent markets – main consumers of commodity group are outlined in the result.

Identification of leaders in the export or import of commodity group is carried out according to the shares of the countries participating in the international market in the total world export or import of commodity group:



## Methodological Approach to Development of Export Commodity Groups of the Region

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

$$D_{li} = d_{li}/I_i,$$

(1)

$D_{li}$  – share of country  $l$  in the world export (import) of commodity group  $i$ ;

$d_{li}$  – export (import) of commodity group  $i$  by country  $l$ ;

$I_i$  – world export (import) of commodity group  $i$ ;

$l$  – leaders in export (import) of commodity group  $i$ ,  $l = (1; L)$ ;

$i$  – specified commodity groups,  $i = (1;n)$ .

Shares of some key players in the market help to estimate their position as dictating market conditions and the possibility of penetrating the export market. The high share of imports allows you to identify markets as major consumers of commodity groups.

The next step is analyzing the level of competition in some product markets. The criterion for assessing the degree of concentration of market players is the Herfindahl-Hirschman Index (HHI <sub>$i$</sub> ) (5). The high concentration ratio indicates that the number of competitors-producers (consumers) is low, the supply (demand) are not concentrated in particular regions. Level of concentration affects the activity of players on the market: the higher the concentration, the more they depend on each other, from the policy implemented by the competitors. The method of calculating the index represented by the following formula:

$$HHI_i = \sum_{l=1}^L U_{li}^2,$$

(2)

HHI <sub>$i$</sub>  – concentration on export (import) market of commodity group  $i$ ;

$U_{li}$  – the share of exports (imports) of commodity group  $i$  by country  $l$  in the total volume of the world exports (imports) of commodity group  $i$ .

The analysis of the export structure of countries is one of the steps of methodology. It helps to make a comprehensive analysis. Presence of some competitive advantages in the production of certain commodity groups (low cost, availability of raw material bases, cheap labor, etc.) are indicated by this analysis. However, the high rate suggests that the production of the commodity group is, on the one hand, priority and profitable, on the



## **Methodological Approach to Development of Export Commodity Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

other hand shows the degree of dependence on exports of it. Similarly, the analysis of the structure of import allows estimating the degree of dependence on the consumption of a commodity group. A comparative analysis of the advantages of the leading countries in export (import dependency) of the specified commodity groups is made for such kind of estimation. Comparative advantage (comparative dependence) is calculated by indicator  $RCA_{li}$ :

$$RCA_{li} = S_{il}/S_i,$$

(3)

$RCA_{li}$  – comparative advantages of country l in the export of commodity group i (comparative dependence of country l in the import of commodity group i );

$S_{il}$  – the share of export (import) of commodity group i by country l in the total volume of export (import) of country l;

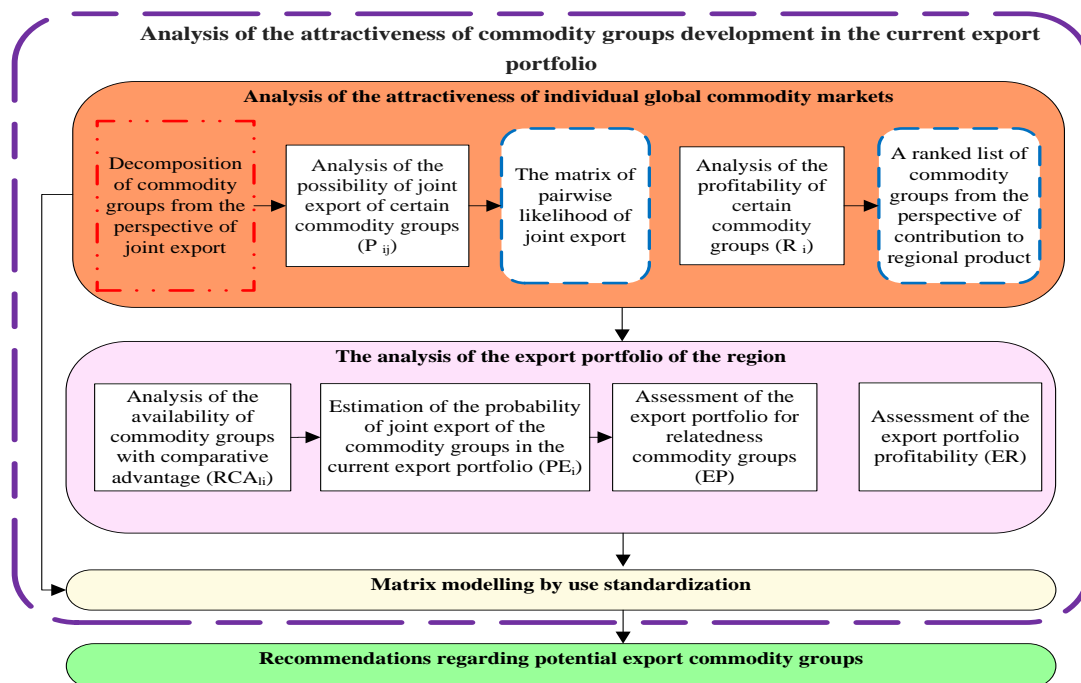
$S_i$  – the share of world export (import) of commodity group i by all countries in the total volume of world export (import) of all commodity groups.

Comparative advantage allows estimating the level of export (import) of commodity group of the country (on average more or less) in comparison with the rest of the world. By comparing the commodity structure of the country with an average commodity structure of the world it is possible to allocate the country specializing in the export of specified commodity groups as competitive advantages, as well as countries - dependent on the consumption of specified commodity groups.

The country has a comparative advantage (dependence) if the indicator greater than one ( $> 1$ ). Higher value indicates a more profound specialization (dependence) of the country in international trade ( $>> 1$ ) (Ravzieva,2013). Leading countries in the export of commodity groups according the index are considered as world leaders, key competitors, analyzing the market and production characteristics of which you can build your own vision of the future growth (the concept of benchmarking). And those countries that have large values of the relative dependence - the main markets, providing a stable demand for commodity groups.



Thus, the analysis of export-oriented and import-dependent world commodity markets leads to conclusions about the competitive environment and the availability of markets. The next stage consists on analysis of attractiveness of commodity groups and has several steps. Stage involves the selection of commodity groups by their attractiveness in terms of their profitability (contribution to the gross domestic product of region) and the possibility of increasing the production of certain commodity groups in terms of the likelihood of the production of commodity groups with another one, which has a strong position in the region. The second stage of the methodology is presented in the figure 3.



**Figure 3. Analysis of the attractiveness of commodity groups development in the current export portfolio**

Foreign economic activity of any country (region) is an essential part of the income of its budget, so it is important to assess the impact of the export of the commodity groups on resulting GDP (GRP). Accumulated in the income index indicators  $R_i$  (Hausmann, 2014) shows the degree of attractiveness of certain commodity groups from their point of contribution to the growth of the country (region):





## Methodological Approach to Development of Export Commodity Groups of the Region

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

$$R_i = \sum_l \frac{Y_l \times S_{il}}{\sum_l S_{il}},$$

(4)

$R_i$  - income term of commodity group  $i$ ;

$Y_l$  - GDP per capita of country  $l$ .

Income term of commodity group reflects weighted average income level of countries exporting commodity group. The index allows identifying those commodity groups that contribute to the future economic growth of countries. The higher the score, the greater the profit generated by commodity group for region, and it is more attractive.

Potential commodity group, in turn, may be characterized with higher level of profitability than current export portfolio in general and lower. It is clear that the greatest potential of growth lies in the diversification of the export portfolio towards more profitable commodity group. In contrast, export diversification towards products with lower levels of the index will reduce the potential for economic growth in the territory.

One of the steps of the second stage consist in research of opportunities of joint export of individual commodity groups from the position of retrospective analysis of world practices and tendencies in export of commodity groups ( $P_{ij}$ ) (Artemyeva,2010). The indicator of the possibility of joint export is based on the existence of combinations of export commodity groups in the world. It indicates a possible similarity of production processes of commodity groups. For each commodity group, we can select the set of commodity groups associated with it with high probability of exporting. Thus, diversification of export can go in the direction of the commodity groups with similar requirements of resources with ones, in which the country has comparative advantage. High value of this probability with the absence of the first commodity group in the exporting region and the presence of the second one suggests that the first item (and the industry it appropriate) is potential export direction in the future. The index is calculated by the following formula:

$$P_{ih} = N_{ih}/N_h, \quad (5)$$

$P_{hi}$  - likelihood of the joint export of commodity group  $i$  in the presence of commodity group  $h$ ;

$N_{hi}$  – the number of countries exporting commodity groups  $i$  and  $h$  simultaneously;



## Methodological Approach to Development of Export Commodity Groups of the Region

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

$N_h$  – the number of countries exporting commodity groups  $h$ .

Also, the methodology involves assessing the region's export portfolio on its average profitability (ER), the weighted average relatedness of commodity groups in the portfolio of the region in the presence of commodity groups, which have a comparative advantage (EP). The calculation of average rates of profitability and the value of the probability of joint export of commodity groups in the presence of positions with the comparative advantage is made in order to assess the commodity groups in terms of their priorities for further development and inclusion in the region's exports.

Based on the study of modern methodological approaches the average weighted yield of export portfolio ER was expressed by the following formula:

$$ER = \sum_i^n (Sil \times R_i), \quad (6)$$

ER - the average weighted yield of region export portfolio.

Thus, the commodity groups' yields are estimated with weights equal to the share of this commodity group in the export of region. The higher the score, the better to increase export of commodity groups included in the existing portfolio. Therefore, it is important to focus on those groups which have a higher profitability while choosing a potential commodity groups.

The weighted average relatedness of commodity groups with the existing portfolio in the presence of certain commodity groups with a comparative advantage (EP) is based on the index of joint export. For its calculation first of all it is necessary to analyze the probability of joint export of commodity groups of region export portfolio with studied individual commodity groups  $P_{ij}$ .

Probability of export of commodity group in the existing portfolio will be evaluated according to the formula 7. The modified method of calculating the index can also be found in the works of different researchers (Gnidchenko,2014; Hausmann,2014; Volchkova,2014). The index makes allows identifying those commodity groups that have the resource and technology base for the development in the region.

$$EP_i = \sum_j^k (\min \{P_{ij}; P_{ji}\} \times w_j) / \sum_j^k \min \{P_{ij}; P_{ji}\}, \quad (7)$$



$EP_i$  - likelihood of export of commodity group  $i$  in the existing portfolio;

$P_{ij}$  и  $P_{ji}$  - likelihood of joint export of commodity group  $i$  in the presence of commodity group  $j$  and vice versa;

$$w_{lj} = \begin{cases} 1, & \text{if the region has a comparative advantage} \\ & \text{in the export of commodity group} \\ 0, & \text{if the region doesn't have a comparative advantage;} \\ & \text{in the export of commodity group} \end{cases}$$

$j$  – commodity groups of regional export portfolio,  $j = (1; \kappa)$ .

The weighted average probability of export of commodity groups with the existing portfolio in the presence of certain commodity groups with a comparative advantage (EP) will be calculated as the average of indicators. The method of its calculation is represented by formula:

$$EP = \sum_i^n PE_i / n, \quad (8)$$

EP - average relatedness of the analyzed commodity groups with the existing regional export portfolio.

Indicator shows the average probability of the introduction of commodity groups, the development of existing ones and acts as boundary value in determining the priority directions of export development. A most preferred are those commodity groups the value of which exceeds the average value of the portfolio.

Thus, analyzing the individual commodity groups in terms of their profitability, the joint export probability in the current portfolio, as well as the weighted average values of the current export portfolio, we can identify the most attractive export commodity groups. Commodity groups characterized by indicators above the weighted average of the export portfolio will be considered the most perspective because of their high indicator of probability of including to the export portfolio in comparison with the existing ones in portfolio, as well as their attractiveness from the perspective of profitability.

## 5. CONCLUSIONS

The presented methodology, firstly, allows evaluating the level of competition in some export commodity markets, and to determine the presence of concentrated import markets, and secondly, it allows estimating the current export portfolio of the region and



## **Methodological Approach to Development of Export Commodity Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

highlighting the possible directions of diversification of export by the assessment of attractiveness of commodity groups from their perspective of a contribution to the regional product and the availability of resources for development.

### **6. DISCUSSION**

At the rate of change of current market conditions the choice of priority economic directions should be treated more carefully. Thus, the proposed in present paper methodology allows analyzing the export portfolio of the region on the effectiveness and identify priority directions for economic development. The proposed methodology involves the modeling of commodity groups flows of exporting countries based on the concept of benchmarking and the evaluation from the perspective of a joint export and profitability. It allows outlining an effective export directions taking into account international best practice. The proposed methodology gives an opportunity to analyze foreign trade activities (import and export), world leaders in their priority commodity groups.

### **7. ACKNOWLEDGEMENTS**

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

### **8. REFERENCES**

- Artemyeva E.A., Balandina M.S., Vorobyev P.V., Kadochnikov S.M., Konovalova M.A., Nikitina O.V., Ostanin I.V. 2010. Basket of Growth: New Export Industries in Sverdlovsk Region // The Journal of the New Economic Association. № 6.
- Gafurov, I. R., Safiullin, M. R., Safiullin, A. R.. 2012. The Analysis of Structural Gaps between the Competitiveness of Manufactures of the Petrochemical Cluster of the Republic of Tatarstan. - Kazan: the Kazan University.
- Gnidchenko A.A. 2014. Improving the Methods for Estimating the Structure and the Basis of Export Potential through Export Diversification // The Journal of the New Economic Association. - №1 (21).
- Hausmann R., Klinger B. 2007. The Structure of the Product Space and the Evolution of Comparative Advantage // Center for International Development at Harvard University Working Papers. № 146.



**Methodological Approach to Development of Export Commodity  
Groups of the Region**

*Revista Publicando, 4 No 13. No. 2. 2017, 235-247. ISSN 1390-9304*

- Ravzieva D., Shugaepova A. 2013. Design the priority directions of export development founded on structural analysis of world commodity market's appeal // Electronic Economic Bulletin.
- Safiullin, A.R., Ravzieva D.I. 2014. Prioritization of strategic perspectives on the example of the petrochemical industry of the Russian Federation subjects- Kazan: "Artifact".
- Safiullin, A.R. 2011. Competitive advantages (the territory and sector-related level). Germany: LAPLAMBERT Academic Publishing GmbH&Co. KG.
- Shugaepova A.A., Safiullin A.R. 2014. Evaluation of the international competitiveness of key export commodity groups of the Republic of Tatarstan. - Kazan: "Artifact".
- Gnidchenko A.A. 2014. The new method for estimating the structure and the basis of export potential, 2014. – URL: <http://mpira.ub.uni-muenchen.de/43691/>.
- Hausmann R., Hwang J., Rodrik D. 2014. What You Export Matters, – URL: [http://www.hks.harvard.edu/var/ezp\\_site/storage/fckeditor/file/pdfs/centers-programs/centers/cid/publications/faculty/wp/123.pdf](http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/centers/cid/publications/faculty/wp/123.pdf).
- Hausmann R., Klinger B. 2008. South Africa's export predicament // Economics of Transition, volume 16, Issue 4. - URL: <http://www.scopus.com>.
- Hausmann R., Klinger B. 2014. Structural Transformation and Patterns of Comparative Advantage in the Product Space, – URL: [http://www.hks.harvard.edu/var/ezp\\_site/storage/fckeditor/file/pdfs/centers-programs/centers/cid/publications/faculty/wp/128.pdf](http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/centers/cid/publications/faculty/wp/128.pdf).
- Lederman, D., Maloney W.F. 2014. Does What You Export Matter? In Search of Empirical Guidance for Industrial Policies, URL: <http://siteresources.worldbank.org/EXTLACOFFICEOFCE/Resources/DoesWhatYouExportMatterSept2010.pdf>.
- Strategic Planning Institute, 2014. URL: <http://pimsonline.com/index.htm>.
- Volchkova N., Kozlov K. 2014. Analysis of the structure of the export basket and potential areas of export development, URL: <http://www.hse.ru>.