

The analysis of Macedonian export performance: the role of metal industry

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The export-lead-growth literature suggests that the long-run growth, is driven by the export volume. Especially this is a case for small open economies.

The new growth and trade theory indicates that export complexity (structure), instead of export volume is a fundamental growth determinant.

According to these theories countries with more complex and diversified export structure have more ability to grow faster, and vice-versa, Hausmann et al. (2005); Jesus Felipe et al. (2010).

The main aim of the paper is to investigate the Macedonian export structure (composition). Moreover, the paper analyzes the productivity and complexity of metal industry as one of the leading exporting industry in Macedonia and its capacity for product diversification.

To fulfill these goals we use several indexes:

- 1) export complexity- weighted average of the sophistication level of products exported by the country,
- 2) export diversity – number of products that country produces and exports with comparative advantages, and
- 3) export ubiquity – number of countries produce same set of products.

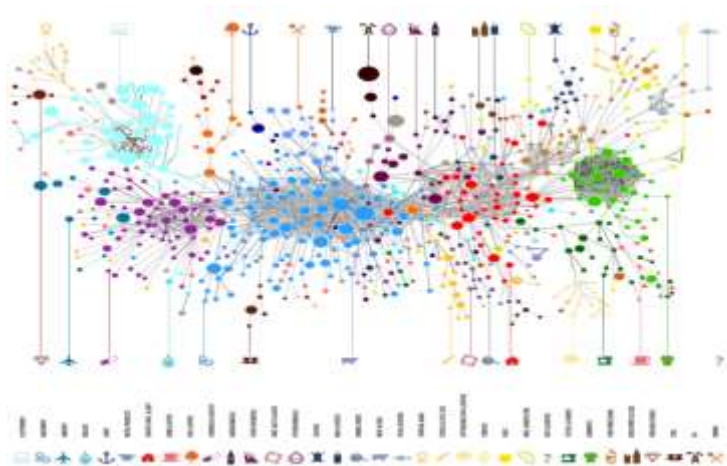
The **product sophistication level** ($PRODY_K$) is calculated as a weighted average of GDP per capita of countries exporting that product. The index can be presented by the following equation:

$$PRODY_K = \sum_j \frac{(x_{jk}/X_j)}{\sum_j (x_{jk}/X_j)} Y_j$$

Export sophistication measured by **EXPY index** is calculated as the weighted of the sophistication level of products exported by the country :

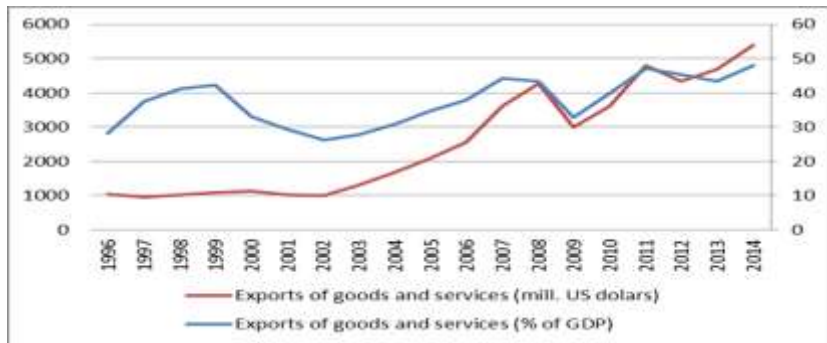
$$EXPY_i = \sum_l \left(\frac{x_{il}}{X_i} \right) PRODY_l$$

The product space concept



Empirical analysis of Macedonian export performance

Macedonian export volume has increasing trend form 956 million dollars in 1996 to 5.376 million dollars in 2014. The positive increasing trend has also been recorded in export relative to GDP (from 28% in 1996 to 48% in 2014).



Export structure

The most dominant products in Macedonian export basket in 2014 are: Reaction and Catalytic products (\$1,09B), Centrifuges (\$425M), Ferroalloys (\$383M), Insulated wire (\$255M) and Non-knit women's suits (\$282M).



Even though the total number of products that Macedonia exports with comparative advantage (calculated according to 6-digit Harmonized classification of products) has increasing trend in the last decade, the export is still not much diversified. For illustration, the country exports only 460 products with comparative advantage ($RCA > 1$) from 5.107 products that are produced and exported in the world based on 6-digit HS classification system.

Additionally to above argument about low export diversification of Macedonian economy is the evidence that the top ten products have nearly half of the total country's export and more than 70 percent of the export goes to several countries and is composed of low complexed products.

Export diversification and composition

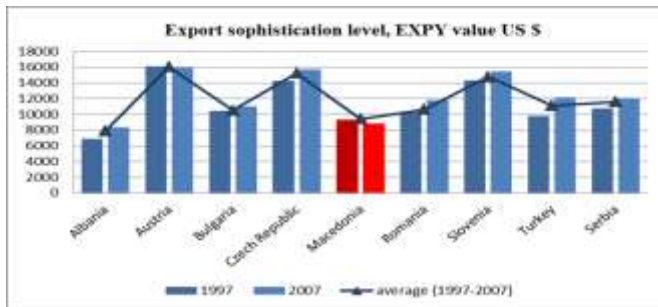


The less diversified export basket makes the economy very vulnerable to external shocks. Actually, it has happened during the current global crisis where the main transmission channel of the crisis was through foreign demand. The existing empirical literature about export structure and export performance shows that export diversification has significant positive impact on export performance. In the case of Macedonia, the export diversification also has positive and significant effect on the country's export volume.

Export sophistication

Macedonia export is not only less diversified, but it is characterizes as one of the less sophisticated in the region (the average EXPY value is less than 10.000 US dollars, while almost all countries (except Albania) in the region have average EXPY more than 11.000 US \$). Moreover, Macedonia is the only country in the region which has decreasing trend of EXPY index in the analyzed period.

This index is calculated as the weighted average of the sophistication level of products exported by a country ($PRODY_K$), where the weights are simply the value shares of the products in the country's total export:



Metal industry performance and its role in Macedonian export

The metal industry was the biggest exporting industry in Republic of Macedonia in 1995 (391 million US dollars export values) with the relative share in total country's export of 25%. The total number of metal products produced and exported with comparative advantages ($RCA > 0.5$) in 1995 is approximately 75 (according to 6-digit HS classification system) indicating that this industry is highly diversified.

Even though total export volume of metal industry has increased from 391 in 1995 to 612 million US dollars in 2014, its relative share in country's export has decreasing trend. Also, the total number of metal products exported with comparative advantages has decreased from 75 to 55 products in 2014. However, this industry is still one of the largest exporting industries in Republic of Macedonia (the relative share in total country's export in 2014 is 11%) and still has capacity to extended its export basket.

Metal industry performance and its role in Macedonian export

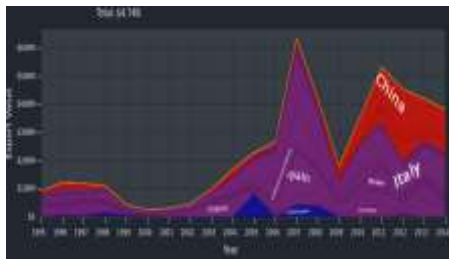
The export structure of metal industry changed a bit in the last decade. The most dominant exporting products are still ferroalloys, but in the top ten exporting products are no longer tools and articles from base metal. Instead, hot-rolled steel, coated flat-rolled steel, steel pipe and tubes, and steel bars are now part of top ten exporting products.

#	Product Code	Product name	Export Value, US \$	RCA	PRODY
1	720260	Ferronickel	290137592	243.10	13164
2	720221	Ferrosilicon Containing by weight more than 55 percent of silicon; silicon content	89967444	93.95	31628
3	720851	Other Flat-rolled Products of Iron or Non-alloy Steel, Hot-rolled	72654761	22.66	20886
4	721070	Flat-rolled Products of Iron, Painted, varnished or coated with plastics	66358171	17.88	15238
5	730661	Other Tubes, Pipes, Hollow Profiles	51026876	38.43	18046
6	720852	Other Flat-rolled Products of Iron or Non-alloy Steel, Hot-rolled	48793612	45.67	19041
7	721049	Other Flat-rolled Products, Electrolytically Plated or Coated With Zinc	35551588	5.07	17818
8	730630	Other Tubes, Pipes, Hollow Profiles, , welded, of circular cross section, of iron or non-alloy steel	24099956	13.67	12036
9	720449	Other Ferrous Waste and Scrap	15127681	2.54	21480
10	732189	Parts of Cooking Appliances, Plate Warmers and Other Appliances	14733341	30.66	26137

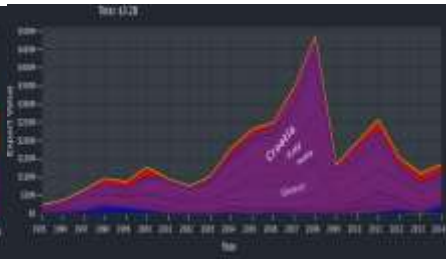
Metal industry performance and its role in Macedonian export

Regarding export destination, metal industry is diversified to several countries (China, Germany, Italy, Spain, Croatia, Greece, Serbia, United Kingdom, and France). For illustration, in the Figurec below we present export destination of ferroalloys and hot-rolled products of iron and steel as main exporting products in Republic of Macedonia.

Export destination of ferroalloys



Export destination of hot-rolled iron and steel



Thank you for your attention!