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INVESTIGATION OF GROSS ADDED VALUE OF LOCAL MANUFACTURING INDUSTRY ON GDP: RAILWAY VEHICLES SECTOR

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This is the opposite case in the academic study method, the manufacturing sector in Turkey caused by rail cars being imported excludes all vehicles manufactured in the country under the constraints of direct and indirect gross value added data loss is calculated. These and other methods can shed light on Turkey and other developing countries will be implemented in industry and trade policy.

Key words: Rail Vehicle Industry, Economic Impact Analysis, Direct (Primary) impacts, indirect (Secondary) impacts, Induced (Tertiary) impacts.

1. Introduction

Machinery manufacturing industry is a pioneer sector in the development of developed and developing countries as it has a high value added, creates a wide range of sub-industry market, reduces investment inputs, makes contributions towards skilled labor-force market and it has a positive impact on the balance of payments.

As all around the world, machinery manufacturing industry may not only be the driving force of industrialization in Turkey but also may have a positive contribution on the future growth models. In other words, machinery manufacturing industry and related industry players have a crucial position to increase the level of national income per capita in developed and developing countries and to overcome the middle-income trap which is one of the most significant fragility factor in front of this.

As indicated above, the foreign trade deficit arising from importing of goods instead of do-mestic manufacturing results in gross value added loss in national economy and GDP reces-sion and makes the income trap becomes more insurmountable.

Gross value added, employment and externalities that may occur as a result of domestic manufacturing the products of machinery manufacturing industry and the related manufacturing industry sector is a much less studied topic.

2. Materails and Method

2.1. Machinery Manufacturing Industry (Overseas)

Machinery manufacturing industry is concentrated in the OECD countries and Japan, Germany, America, Italy and Switzerland are the pioneers of these countries. Besides, it is known that Sweden, France and the UK are among the competent manufacturers in this area. The share of these countries in machinery manufacturing industry's salary, gross value added and GDP is high.

2.2. Machinery Manufacturing Industry (Domestic)

As well as the Turkish machinery manufacturing industry is not at the desired level the sub-industry operating in the sector is not much developed and the sector tries to utilize automotive and other industries more [1].

3. Results

With the counterfactual analysis, under the data restrictions of the rail vehicles which is one of the sub-branches of Turkish machinery manufacturing industry, indirect and induced gross value added loss incurred as a result of vehicle import instead of domestic manufacturing is estimated Besides, this

method and the similar ones may provide an insight on planned indus-try and commercial policies planned at the countries in Turkey and emerging countries.

In manufacturing industry, the gross value added loss revealed by the import of rail vehicles instead of domestic production is a rarely studied topic in economics. However, as mentioned earlier, increasing industry goods and services product import in developing countries causes this countries to fall into mid-income trap or unable to recover from this trap.

Opposite situation (the counterfactual) can be defined as "if it was so". If the products of Turk-ish rail vehicles manufacturing sector were produced domestically instead of being imported, it would have a value added contribution to the market as 1905.5 billion dollars.

In other words, if the total output imported in rail vehicles manufacturing industry have been produced domestically, the value added in question would have stayed in the country and it would have a contribution on GDP and growth.

The demand for the goods and services of rail vehicles manufacturing industry stems from the demand of transportation equipment in the country. In countries such as Turkey, rapid population and income growth triggers both the demand for urban and suburban passenger travel and the demand for freight transport. However, the development pace of Turkey is lower than the European countries in both of these topics. This situation may be accepted as a sign of an increase in demand for urban and non-urban rail transport compared to other countries with the effect of coming from behind. Besides, the significance of rail transport industry at the stage of contributing to a green future is known to pave the way for sustainable develop-ment.

As a result of manufacturing rail vehicles manufacturing industry products domestically instead of importing, the value added created by the final operating companies in the industry and sub-industry supplying sources to this sector is generated indirectly and in an induced manner. Employment surplus of these added values on economic variables is reflected as the profit surplus for entrepreneurs. Besides as well as the gross value added created by this variables on the national economy, they also provide tax income for the public sector.

Table 1. ISO (2016)

Company	sales from production (TL million)	Gross value added (million TL)	Gross Value Added / Sales From Production (%)
TÜLOMSAŞ	264,2	113,7	43
TÜDEMSAŞ	193,2	90,5	47

The data required to estimate the amount of primary (direct) value added produced due to domestic production in rail vehicles industry is not available. However, the data on Turkey's First and Second Top 500 Industrial Enterprises published by İstanbul Chamber of Industry was utilized for the estimation of gross value added shares in rail vehicles industry outputs. In this context, it was estimated that the average and median of the companies operating in rail vehicles industry is at the level of 45. That is, it was analyzed that each import of rail vehicles manufacturing industry equaling 100 dollars led to a leakage of 45 dollars abroad. In other words, as a result of domestic manufacturing of rail vehicles imported to Turkey in 2014 (total 607.8 million dollars) primary (direct) gross value added loss was estimated as 273.5 million dollars.

Secondary (indirect) impacts arising from import, that is in the analysis of gross value added revealed by the sub-industry providing input to rail vehicles manufacturing industry, 2011 World Input-Output Table WIOD data was utilized due to data constraints.

Table 2. WIOD (2016)

	Added Value (Billion $)	The Primary Added Value (Billion $)	Added Value/ Value Added Of Primary (%)
Secondary Value Added (supplied by the domestic industry of the other entries)	9,353	6,545	142,8
Inputs supplied from abroad (Imports)	7,462	6,545	113,8

Through the coefficients obtained as a result of the analysis it was determined that with the leakage of each primary value added equaling 100 dollars abroad led to leakage of secondary value added equaling 143 dollars abroad. In this case, gross domestic value added loss incurred as a result of import calculated by multiplying the primary gross value added loss of 273.5 million dollars with the coefficient of 1.43 has been determined as 391.1 million dollars [1].

Rail vehicles industry is analyzed under the scope of surplus value induced (tertiary) impacts that may occur in national or regional economy as a result of the consumption on goods and services industry, disposable wages arising from direct and indirect labor market as a result of realization of domestic production. In the prediction of tertiary impacts WIOD Socio Economic Accounts (July 2014, Basic Data on Output and Employment) data base was used. According to this database, for the value added, labor and capital distribution produced in transportation equipment sub-sector the data of the year 2009 has been utilized which includes the most recent data.

Table 3. WIOD (2016)

	Domestic demand$1 in the link to stimulate the increase of domestic production ($)	Domestic demand$1, to stimulate the increase of domestic value added in the link ($)
Agriculture	0,846	0,532
Mining	0,566	0,330
Food, Beverages	0,901	0,203
Textiles and Textile Products	0,357	0,094
Leather, Leather and Footwear	0,569	0,144
Wood and Products of Wood and	0,422	0,105
Pulp, Paper, Paper , Printing	0,628	0,200
Coke, Refined Petroleum	0,606	0,076
Chemicals and Chemical Products	0,593	0,165
Rubber and Plastics	0,534	0,139
Other Non-Metallic Mineral	0,319	0,114
Basic Metals and Fabricated Metal	0,227	0,057
Machinery, Nec	0,148	0,055
Electrical and Optical Equipment	0,256	0,065
Transport Equipment	0,061	0,016
Manufacturing, Nec; Recycling	0,366	0,238
Electricity, Gas and Water Supply	0,647	0,088
Construction	0,032	0,014
Sale, Maintenance and Repair	0,604	0,338
Wholesale Trade	0,538	0,326
Retail Trade, Except of Motor Vehicles	0,511	0,407
Hotels and Restaurants	0,934	0,418
Inland Transport	0,703	0,266
Water Transport	5,534	0,378
Air Transport	0,468	0,201
Other Supporting	0,691	0,315
Post and Telecommunications	0,807	0,440
Financial Intermediation	0,673	0,419
Real Estate Activities	0,934	0,784
Renting of M&E	0,527	0,342
Public Admin	0,020	0,012
Education	0,165	0,130
Health and Social Work	0,247	0,127
Social and Personal Services	0,717	0,386
Total	17,392	7,922

In light of these data, it has been concluded that the share of labor in gross value added is 57.3 percent. It has been estimated using WIOD table that an additional domestic demand equaling 1 TL will yield an 8 TL increase in value added. In this regard, it is predicted that the value added to be revealed by a purchasing power of 156.7 million dollars will reach to 1.241.4 million dollars. This figure shows the tertiary (induced) impacts which will be revealed by rail vehicles [2].

Table 4. rolling stock in the sector the value of imports (2016)

Rolling Stock Manufacturing Industry Import	607,790*
The Manufacturing Sector's Imports Of Rolling Stock In Total Gross Value Added Lost As A Result Of	
Primary (Direct) And Gross Value Added Loss Of	273,5
Secondary (Indirect) Gross Value Added Loss Of	390,6
Tertiary (Induced) Loss Of Gross Value Added	1.241,4
Total Gross Value Added Loss Of	1.905,5

In this paper, researches on the topic of gross value added loss arising from import of rail vehicles manufacturing industry products. Under the method aiming to overcome data scarcity, it has been analyzed that import in Turkey revealed a significant amount of primary, secondary and tertiary gross value added loss for 2014. It indicates that rail vehicles industry import leads to a significant amount of expansion and value added loss in the sample of Turkey [3].

Kaynakça

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