Верна ли для Армении гипотеза роста на основе экспорта?

Is the Export-Oriented Growth Hypothesis Valid for Armenia?

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Дохолян Сергей Владимирович
главный научный сотрудник Института социально-экономических исследований Дагестанского научного центра РАН (г. Махачкала), доктор экономических наук, профессор
367030, Республика Дагестан, г. Махачкала, ул. М. Ярагского, д. 75

Sergey V. Dokholyan
Institute of Social and Economic Research Dagestan Scientific Center of RAS
Yaragskogo St. 75, Makhachkala, Russian Federation, 367030

Саргсян Лилит Норайровна
научный сотрудник Института экономики им. М. Котаняна Национальной академии наук Республики Армения (г. Ереван), кандидат экономических наук
0015, Республика Армения, г. Ереван, ул. Григора Лусаворича, д. 15

Lilit N. Sargsyan
Institute of Economics named after M. Kotanyan of the National Academy of Sciences of the Republic of Armenia (Yerevan)
Grigora Lusavorich St. 15, Yerevan, Republic of Armenia, 0015

В исследовании рассматриваются актуальные вопросы.
Цель. Целью данной статьи является проверка гипотезы экспорто-ориентированного роста для Армении в период 1998–2017 гг.
Задачи. Для достижения этой цели авторы рассматривают механизм причинно-следственный взаимосвязи экспорта и ВВП.
Методология. Для исследования авторы проводили корелляционный анализ и показали результаты теста причинно-следственной связи Грейнджера. Анализ построен на квартальных данных 1998:Q1-2017:Q4. Анализ проведен с помощью пакета Eviews 4.
Результаты. Результаты показывают, что существует высокая корреляция между экспортом и ВВП (0,81). Можно также сказать, что рост экспорта в любом квартале вызывает рост ВВП в том же квартале, после II квартала и в последнем квартале через 2 года. А рост ВВП вызывает рост экспорта в течение 2–7 лагов времени. Результаты теста Грейнджера показывают, что в течение некоторого периода времени рост экспорта вызывает приток иностранной валюты, что также вызывает рост импорта. И, наконец, мы обнаружили, что существует сильная положительная связь между импортом и ВВП, а также мы не смогли отвергнуть гипотезу «импорт не вызывает роста ВВП».
Выводы. Анализ показал, что гипотеза экспорто-ориентированного роста действует для Армении. Выявлен следующий механизм влияния экспорта на экономический рост: рост экспорта вызывает приток дополнительной иностранной валюты в течение 3 месяцев, что вызывает укрепление местной валюты, а в течение следующих 9 месяцев вызывая рост импорта (особенно для импорта средств производства и сырья), и, наконец, результатом является рост ВВП в течение следующих 3,5 лет. Следует отметить, что этот процесс является непрерывным, поскольку рост ВВП вызывает рост экспорта в следующих 7 кварталах.
Ключевые слова: экспорто-ориентированный рост; импорт; ВВП; валютный курс; тест Грейнджер причинности; укрепление валюты.

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The presented study examines the relevant problems of Export-led growth hypothesis for Armenia.
Aim. The study aims to check if the export-led growth hypothesis is valid for Armenia in term of 1998–2017 or not.
Tasks. To achieve this aim, the authors examine the mechanism of the relationship between export and GDP.
Methods. For this purpose the correlation analysis is performed, as well as the results of Granger-causality test are shown.For this analysis, quarterly data are chosen covering 1998:Q1-2017:Q4. The analysis is provided by Eviews 4.
Results. The results show that there is a high correlation between export and GDP (0.81).

We can state also that the export growth in any quarter causes GDP growth in the same quarter, after 2 quarters, and in the last quarter after 2 years. The GDP growth causes export growth lagged 2–7 periods. The results of the Granger-causality test show that for some period of time the rise in export causes the inflow of foreign currency, which also causes a rise in import. And finally, we revealed that there is a strong positive relationship between the import and GDP, and also we cannot reject the hypothesis "import does not cause GDP growth".

Conclusions. The analysis shows that the Export-led growth hypothesis is valid for Armenia. The identified mechanism of impact of export on economic growth is the following: export growth causes an inflow of additional foreign currency during 3 months, which causes local currency appreciation and in the next 9 months the growth of import (especially for import of capital goods and raw materials) could be caused. And finally, the outcome is the GDP growth during the next 3.5 years. It must be noted that this process is continuous, as GDP growth causes export growth in the next 7 quarters.

Keywords: export-led growth; import; GDP; exchange rate; Granger-causality test; currency appreciation.

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Introduction

In the current economic environment, both internal and external factors, such as exports, imports, foreign direct investment, and transfers, are very important for ensuring economic growth.

Since Armenia is a small country, the domestic market cannot ensure long-term sustainable economic growth. Therefore, external demand is of vital importance to sustaining future economic growth rates. Exports can be the main driver of economic development, enabling producers to benefit from economies of scale.

There are many studies on the impact of export on economic growth.

How can export impact on economic growth? This is the main question we attempt to address.

In general, the export growth causes the scale effect, as well as the inflow of foreign currency. First of them can bring more effective resource allocation, while the second can allow importing raw materials, intermediate goods, technologies, and etc. As a result, this process will raise the efficiency of production and finally this will lead to economic growth [1, p. 131–136]. This is the main mechanism for export to impact economic growth. So in this analysis, this mechanism of impact will be tested.

Literature review

The export-led growth hypothesis means that increase in the export causes economic growth in the country. It's already clear that the economic growth of any country can be caused by increasing the resources of production within the economy, but it can be caused also by export and import growth.

The relationship between export and economic growth has been studied by various economists for many years.

First, this problem was scientifically explained by mercantilists (Thomas Mills, Thomas Mann etc.).

The Mercantilists state that powerful state should be based on a wealthy trading class, and vice versa, commercial merchants need a strong state power to secure trade routes and monopoly rights [2, p. 181].

One of the pivotal ideas of mercantilism was the positive correlation between economic growth and wealth accumulation. They found that as a result of the rise in prices the business has higher incomes and business activity was expanding.

And as the rise in prices also leads to lower interest rates and consequently the decline in credit resources, early mercantilism has claimed that the state should promote gold and silver (i.e. money) inflow and prevent their outflow [3, p. 58].

It is clear that mercantilists offered a politics of protectionism to ensure economic growth through export. However, mercantilists did not pay attention to the fact that it is not possible to provide effectively import substitution policy in all sectors of the economy. That is why the policy proposed by them may cause an inefficient distribution of resources.

The ideas of mercantilists were criticized by representatives of the classical school of economics.

For the first time, the theory of mercantilism was criticized by the English philosopher Hume, with the following argument: excess exports of goods lead to inflow of gold, which is the basis of the supply of money, and this causes a price increase. However, the rise in domestic prices raises the prices of exporting goods and decreases exports [4, p. 55 –82]. The next critics are A. Smith and D. Ricardo. In their theories of absolute and comparative advantages, they argued that free trade is beneficial for all parties involved, as it brings expansion in global production and consumption [5, p. 10–38].

As a result, the classical theory radically rejected the mercantilist's ideas, describing Mercantilism as a huge theoretical bubble.

But G. Schmoller and other economists argued that mercantilism is absolutely accept-

able as a means of strengthening State power. Moreover, Keynes concluded that the ideas of mercantilists, first of all, were explained by the problem of capital accumulation. When exports are more than imports, this causes an inflow of gold, increases the supply of money, which decreases the interest rates and thus stimulating investments and employment [6, p. 208–235].

In fact, the ideas of the mercantilists are quite justified for the period in which they were formed, as only trade protection could ensure the establishment of the State, and also the strengthening of the economy. Therefore, the ideas of mercantilists are valid till nowadays.

But the free trade theory is also valid for the economies, related to their development level.

Free trade theory is developed in nowadays too. American economist G. Haberler states that when the country has comparative advantages in many products, this means that the increase of production and export for one of them will cause decrease for the other products [7, p. 78].

Therefore, the theories of absolute and comparative advantages are notfree from omissions. First of all the subject matter of these theories is compound economies (they only consider the existence of labor).In the context of these theories, the country should be specialized in the production of only one product, which is not realistic. And also these theories argued that labor can move between production within the country, but is not considered the possibility of moving labor from one country to another. And finally, these models ignore transport costs.

In the future, the theory of comparative advantage is developed by the economists of neoclassical school. They reasoned Ricardo's theory by considering the case of double recourses (labor, capital).Besides this, the countries were not forced to specialize in the production of only one product.

However, it should be noted that the comparative advantage of countries is conditioned not only by the relative productivity of resources but also by the relative abundance of these resources. This idea has not considered by neoclassic school and further, it was noted by E. Heckscher and B. Ohlin [8, p. 25–28]. Heckscher and Ohlin argued that the country exports the product, which is produced by intensive use of its relatively abundant resource. This means that international trade is the process of replacement the relatively abundant factors with relatively rare factors [9, ch. 11–12].

According to a number of economists (P. Samuel, A. Lerner, J. Timbergen), it is possible to align different levels of development between the countries through export and import in the case of sufficient international mobility of production factors. Initially, the price of factors is relatively low in those countries where these factors are abundant and higher in those countries where they are rare, further the prices will be equal everywhere, because of export and import [10, p. 40–48].

In 1941 V. Stolper and P. Samuelson showed that the change in the price of goods in the model of Heckschers-Ohlin conditioned the change in real income of resources. They have shown that trade liberalization leads to an increase in the real income of abundant resources and a reduction in the real income of a rare resource: when the country is specialized in the production and export of goods, which are produced by intensive use of capital, on a large scale capital, the demand of capital rises, and as a result, causing an increase in the price of capital, which was low before the specialization [5, p. 67–93].

Ribczynski states that if the relative prices of products are stable, the increase in the supply of one of resources will raise the production of the product in which it is intensively used and the production of other products will decline [11, p. 336–341].

J. Viner states that international trade and international division of labor are beneficial for all participants, including weak developed countries [12, pp. 120–123].

He said that the foreign trade structure is determined by comparable costs of production and offered developing countries to shift from a policy of protectionism to a free trade policy to achieve greater economic development.

J. Hagelstam considers that countries should liberalize foreign trade of goods and services in which they have a comparative competitive advantage and other sectors should not be provided with trade liberalization. The tools for this policy can be customs and other import duties, which allow protecting the interests of the local producer [13, pp. 95–105]. Therefore he ignores the possibility of slowing economic growth because of inefficient resource allocation, highlighting the problem of employment.

The professor of Harvard University Michael Porter developed the theory of competitive advantages. Studying the data of the 10 leading countries of the world, he said that in order to ensure a higher level of economic growth, countries should be specialized not according to comparative, but competitive advantage [14, p. 112–143].

According to Posner's theory of the technological gap, firms have a competitive advantage not only by providing the cheapest products in the market, but also when they produce the good which is not produced by other firms, but which is necessary for everyone. So he developed the export-led growth model, and stated

that the country will get big profits as long as other countries do not copy this product or technological innovation for production of this product [15, p. 323–341].

In his theory of Product life cycle, R. Vernon states thatafter the product becomes adopted and used in the world markets, production gradually moves away from the country of origin andcomparative advantage of this product transfers from one country to another: for exemple first of all the colored TV was produced in the USA, but now its producers are Japan, Tayvan, Korea [16, p. 190–207].

S. Linder argues that the economic growth rates can reach the countries, whose exports and imports are mainly targeted to the countries with similar economic development [17, p. 3–26].

Hausman and all argued that the commodity produced by the country has impact on economic growth. These authors point out that economic growth is reflected not only by the size of GDP per capita but also by the complexity and diversity of the products produced and exported. That is why the developing counties must target the shift from producing easy goods to the production of relatively complex goods [18, p. 25–27]. This process is called structural transformation.

As we see esport-led growth idea is valid for many. But we want to perform the impact of trade liberalization on the economic growth. Many economists argued that there are positive relation between trade liberalization and economic growth [19, p. 305–321; 20, p. 383–398; 21, p. 942–963]. Ben-David said that trade liberalization reduces the gap among income the EU countries [22, p. 653–679]. Pebro states that trade liberalization policy is most effective for developed countries. And poor developed countries can not provide the policy of trade liberalization in all sectors. Even if these kind of countries will blindly follow trade liberalization policy, they will become economic collonies for more developed countries [23, chapter 1].

In the early 2000s Rodriguez and Rodrick sowed that these studies have some disputable points in calsulation methods [24, p. 261–325]. In 2003, Lindert and Williamson,analyzing statistical data of many countries, argued that even if trade liberalization does not causes economic growth, there are no one fact that it reducesthe economic growth [25, p. 23–35]. Many studies argued that trade liberalization is more effective policy that protectionism. They showed that protectionism causes the inefficient resource allocation and promotes the collapse of the existing system. For example they pinpointed the experience of USSR [26, p. 114].

There is no doubt that the economic policy provided by the country can have an impact on economic growth both positively and negatively. That is why it is necessary to make that impact as effective as possible [27, p. 8, 9].

Balassa [28, p. 181–189], Tyler [29, p. 121–130], Feder [30, p. 59–73], Kavoussi [31, p. 241–250], Ram [32, p. 415–425; 33, p. 51–63] studied the relationship between export and output performance within a neoclassical framework. In most of these studies exports were included in an ad hoc manner in the production function, together with labor and capital. They claimed that by including exports they were taking into consideration a broad measure of externalities and productivity gains generated by this sector which stimulated the domestic economy. The majority of these investigations aimed at analyzing DCs by using ordinary least squares (OLS) on cross-section data and used their results to demonstrate the advantages of the export promotion strategy in comparison with the import substitution policy [34, p. 5].

With regard to Armenia, it is argued that Armenia has a chance to emerge as a platform for those companies that would like to consider an option of shifting to or setting up manufacturing operations in Armenia to penetrate both the Eurasian Economic Union (the EAEU) and Middle Eastern and/or Northern African markets, and/or to be focused on active pharmaceutical ingredient (API) manufacturing in the medium-term [35, p. 21–32].

Methods

For this issue the correlation analysis will be performed, as well as the results of Granger-causality test will be shown. For this analysis the data are choosen quarterly 1998:Q1-2017:Q4. The data used are as followongs: GDP by current prices in US dollars, export by current prices in US dollars, FDI in US dollars.The main base for these data is the electronic database of the Statistical Committee of RA [36]. The number of observation is 79. The method for regression analysis is the least squares method. The econometric analysis is provided by Eviews 4.

Main results

We want to identify the coefficient of impact of export on economic growth in the RA. First of all we must check the existence of correlation between the variablesused. Table 1 shows that the correlation coefficient between *export* and *FDI* is 0.24, so we can use them in the same regression model, and the coefficient between *export* and *GDP* is 0.81. It is high, but it doesn't mean, that the export causes the economic growth.

We must also check if the export causes the economic growth in the RA. By Granger causality test [37, p. 696–700] we check the causality

Table 1

Correlation matrix

	DEXPORT	***DFDI***	***DGDP***
DEXPORT	1	0.24	0.81
DFDI	0.24	1	0.33
DGDP	0.81	0.33	1

Table 2

The results of Granger causality test for export and *GDP*

Pairwise Granger Causality Tests			
Sample: 1998:3 2017:4			
Lags: 8			
Null Hypothesis:	Obs	*F*-Statistic	Probability
D*GDP* does not Granger Cause D*EXPORT*	69	1.88484	0.08238
D*EXPORT* does not Granger Cause D*GDP*		2.83546	0.01087

Table 3

Granger-causality test for export and exchange rate

Pairwise Granger Causality Tests			
Sample: 1998:1 2017:4			
Lags: 1			
Null Hypothesis:	Obs	*F*-Statistic	Probability
D*EXPORT* does not Granger Cause *RATE*	78	4.41	0.04
RATE does not Granger Cause D*EXPORT*		1.31	0.26

Table 4

Correlation matrix for export and exchange rate

	DEXPORT	***DRATE***
DEXPORT	1	–0.25
DRATE	–0.25	1

Table 5

Granger-causality test for exchange rate and import

Pairwise Granger Causality Tests			
Sample: 1998:1 2017:4			
Lags: 3			
Null Hypothesis:	Obs	*F*-Statistic	Probability
RATE does not Granger Cause D*IMPORT*	76	4.26	0.01
D*IMPORT* does not Granger Cause *RATE*		2.61	0.06

Table 6

Correlation matrix of import and exchange rate

	DRATE	***DIMPORT***
DRATE	1	–0.31
DIMPORT	–0.31	1

between these two variables. The results are shown in table 2.

So we can reject the hypothesis "Export growth does not cause *GDP* growth" for 8 lags. It must be noted also that for 0 and 2 lags too we can reject this hypothesis, but for 1, 3, 4, 5, 6, 7 lags we cannot reject it.

So we can state that the export growth in any quarter causes *GDP* growth in the same quarter, after 2 quarters, and in the last quarter after 2 years. And the *GDP* growth causes export growth for 2–7 lags.

As we stated early, the analysis of the best practices shows that the rise of export causes inflow of foreign currency, which can provide the import of raw materials, intermediate goods, technologies etc. As a result all this process will cause economic growth for a while. Based on best practices we have shown the mechanism of impact of export on economic growth. Now we want to check if this mechanism is valid for Armenia, using Granger-causality test.

First of all we must check the impact of export on inflow of foreign currency. As an indicator of inflow of foreign currency we will use the exchange rate of Armenian dram (other things being equal, the inflow of foreign currency causes local currency appreciation, this means that exchange rate will go down). In the table 3,the results of Granger-causality test are shown. We can reject the hypothesis "the changes in export volume does not cause changes in rate" for 1 lag, but for 3 lags we cannot reject it. This means that the changes in export volume in any quarter causes the changes in exchange rate in the next quarter.

Therefore we don't know yet if the changes in export volume cause the increase or decrease in exchange rate. We can check it by correlation matrix. The results are shown in the table 4.

We can see, that the correlation coefficient between changes in export and changes in exchange rate is negative. This means that the raise of export causes the decrease of exchange rate. In other words the rise of export causes the inflow of additional foreign currency, and the result is the local currency appreciation. This means that the exchange rate of local currency decreases.

In the second step we must check the causality between changes in exchange rate and import. Table 5 shows these results.

By results of table 5, we can reject the hypothesis "Changes in exchange rate does not Granger cause changes in import" for 3 lags. The same situation is for 0 and 2 lags.

But we don't know yet if the import rise or decrease after changes in exchange rate. The correlation matrix of import and exchange rate is presented in the table 6.

The correlation coefficient between import and exchange rate is negative, that in why we can state, that the decrease of exchange rate or appreciation of local currency causes raise of import. So the analysis shows that for some time period the raise of export causes the inflow of foreign currency, which also causes the rise in imports.

The next step is checking the causality relation between export and import, and finally between import and *GDP*.

The results of Granger-causality test for import and export are shown in table 7.

As we see, the hypothesis "changes in export does not Granger cause changes in import" can be rejected for 3 lags. It must be noted that the same results we have also for 0–2 lags. We must check also if the rise of export causes increase or decrease of import. If we have the situation, when the raise of export causes the decrease of import, so it's probably that some changes in economy, for example import substitution policy can cause replacements of some imported goods with local production and export. But in case when the export augmentation causes rise of import, we can state, that:

1) there are many imported goods, which are used for production of the exported goods;
2) or the production of any product has decreased, because of inefficiency, bringing the rise of import of this good, and the recourses from this sector was replaced with the exported sector, bringing rise of export;
3) or there is some combination of cases above.

The results of correlation analysis are shown in the table 8.

The correlation coefficient means that the export rise causes growth of import. Additionally we want to note, that during this period in the RA, more than 45% of import is capital goods and raw materials. So we can state that our case is the 2-nd point noted above (the production of any product has decreased, because of inefficiency, bringing the rise of import of this good, and the recourses from this sector was replaced with the exported sector, bringing raise of export).

And the last step is checking if the import growth is Granger-cause for *GDP* growth. The results of Granger-causality test for *GDP* and import are shown in table 9.

The changes in import cause changes of GDP for 14 lags. The same situation is for 1–13 lags. So finally we must check if the import rise causes growth or decrease of the GDP. Table 10 shows the results of correlation analysis for import and *GDP*.

The correlation coefficient is not only positive, but also it is higher, than 0.5. This means that there is strong positive relation between import and *GDP*.

Table 7

Granger-causality test for import and export

Pairwise Granger Causality Tests			
Sample: 1998:1 2017:4			
Lags: 3			
Null Hypothesis:	Obs	*F*-Statistic	Probability
D*EXPORT* does not Granger Cause D*IMPORT*	76	4.38	0.01
D*IMPORT* does not Granger Cause D*EXPORT*		2.18	0.10

Table 8

Correlation matrix of import and export

	D*IMPORT*	D*EXPORT*
D*IMPORT*	1	0.80
D*EXPORT*	0.80	1

Table 9

Granger-causality test for import and *GDP*

Pairwise Granger Causality Tests			
Sample: 1998:1 2017:4			
Lags: 14			
Null Hypothesis:	Obs	*F*-Statistic	Probability
D*GDP* does not Granger Cause D*IMPORT*	65	1.42476	0.19192
D*IMPORT* does not Granger Cause D*GDP*		2.10470	0.03635

Table 10

The correlation matrix for import and *GDP*

	D*IMPORT*	D*GDP*
D*IMPORT*	1	0.81
D*GDP*	0.81	1

Conclusion

The analysis shows that Export-led growth hypothesis is valid for Armenia. The revealed mechanism of impact of export on economic growth is the following: export growth causes inflow of additional foreign currency during 3 months, which causes local currency appreciation and in the next 9 month causes growth of imports (especially for import of capital goods and raw materials), and finally the result is GDP growth during next 3.5 years. It must be noted that this process is continuous, as GDP growth causes export growth in the next 7 quarters.1.

The domestic market of the RA is too small, and export has a significant role for ensuring the economic growth in the RA. And the fact, that export-led growth hypothesis is valid for Armenia, is a big plus for our country. So we can state that nowadays the export promotion, diversification and competitiveness in the foreign market must be the main direction of foreign economic policy, provided by the RA.

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