



ЭКОНОМИКА И УПРАВЛЕНИЕ НАРОДНЫМ  
ХОЗЯЙСТВОМ / ECONOMICS AND MANAGEMENT  
OF NATIONAL ECONOMY

УДК 339.564:339.727.24(1-87)

http://regionsar.ru

ISSN 2587-8549 (Print)

DOI: 10.15507/2413-1407.106.027.201902.206-223

ISSN 2413-1407 (Online)

Export, Foreign Direct Investment and Gross Domestic  
Product: Case of the Commonwealth of Independent  
States Countries and Armenia

L. N. Sargsyan

*M. Kotanyan Institute of Economics, National Academy  
of Sciences of the Republic of Armenia (Yerevan, Armenia),  
sarg.lilit@yahoo.com*



**Introduction.** Export and foreign direct investment have great significance for economic development of the developing and transition countries, like Armenia and the Commonwealth of Independent States countries. As the domestic market of the Republic of Armenia is small, Armenia's economic development depends on external demand. The aim of this article is to estimate the impact of foreign direct investment and export on gross domestic product of the Commonwealth of Independent States countries and the Republic of Armenia.

**Materials and Methods.** For the Commonwealth of Independent States countries, regression analysis with panel data was performed using Stata V10 statistical package. For Armenia, correlation and regression analysis was performed, the results of the Granger causality test were revealed. The regression analysis employed the least squares method.

**Results.** The performed analysis has shown that in the Commonwealth of Independent States countries the export growth of 1 % causes the gross domestic product growth of 0.92 % and the increase in foreign direct investment of 1 % causes the gross domestic product growth of 0.4 %. In the Republic of Armenia, the export growth of 1 unit causes the gross domestic product growth of 8.89 units and the increase in foreign direct investment of 1 unit causes the gross domestic product growth of 1.23 units.

**Discussion and Conclusion.** Comparison of the obtained results with those of the similar analysis conducted earlier by the author makes it possible to state that in the Commonwealth of Independent States countries the impact of export has decreased while the impact of foreign direct investment has increased. In Armenia, the impact of both export and foreign direct investment is higher than before. The materials of

© Sargsyan L. N., 2019



Контент доступен под лицензией Creative Commons Attribution 4.0 License.  
This work is licensed under a Creative Commons Attribution 4.0 License.



this article may be useful for other researcher studying this issue, as well as for the governments of the Commonwealth of Independent States countries and the Republic of Armenia responsible for the development of the economic policy.

*Keywords:* export, foreign direct investment, gross domestic product, export-led growth hypothesis, econometric analysis

Экспорт, прямые иностранные инвестиции и валовой  
внутренний продукт: пример стран Содружества  
Независимых Государств и Армении

Л. Н. Саргсян

*Институт экономики имени М. Котаняна Национальной академии  
наук Республики Армения (г. Ереван, Армения),  
sarg.lilit@yahoo.com*

**Введение.** Экспорт и прямые иностранные инвестиции имеют большое значение для экономического развития развивающихся стран и стран с переходной экономикой, таких как Армения и страны Содружества Независимых Государств. Внутренний рынок Армении небольшой, поэтому опорой для экономического развития страны может послужить внешний спрос. Цель статьи – провести оценку влияния прямых иностранных инвестиций и экспорта на валовой внутренний продукт стран Содружества Независимых Государств и Армении.

**Материалы и методы.** Регрессионный анализ с панельными данными для стран Содружества Независимых Государств был выполнен с помощью статистического пакета Stata V10. Для Армении проводился корреляционный и регрессионный анализ, а также показаны результаты теста Грэнджера. Регрессионный анализ проводился методом наименьших квадратов.

**Результаты исследования.** Анализ показал, что в странах Содружества Независимых Государств рост экспорта на 1 % приводит к росту валового внутреннего продукта на 0,92 %, а рост прямых иностранных инвестиций на 1 % – к росту валового внутреннего продукта на 0,4 %. По Республике Армения выявлены следующие показатели: рост экспорта на одну условную единицу приводит к росту валового внутреннего продукта на 8,89 единиц, а рост прямых иностранных инвестиций – к росту валового внутреннего продукта на 1,23 единицы.

**Обсуждение и заключение.** Сравнивая полученные результаты с данными аналогичного анализа, проведенного нами ранее, можно сказать, что в странах Содружества Независимых Государств влияние экспорта снизилось, а прямых иностранных инвестиций – возросло. В Армении влияние и экспорта, и прямых иностранных инвестиций на данный момент выше, чем раньше. Материалы статьи могут быть полезны исследователям, занимающимся данной проблемой, а также руководящим органам стран Содружества Независимых Государств и Республики Армения, разрабатывающим экономическую политику.

*Ключевые слова:* экспорт, прямые иностранные инвестиции, валовой внутренний продукт, гипотеза роста с экспортной ориентацией, эконометрический анализ



**Introduction.** Foreign trade and foreign direct investment are the important factors affecting on every country's economic development. There are many analyzes in the economic literature that argued the relationship between foreign trade and foreign direct investment (FDI), as well as their significant role in achieving economic growth. Two components of the country's foreign trade, export and import, show the level of economic development of the country. Usually raw materials are the main components of export of the countries with weak economies. The opposite situation is in the countries with developed contrary.

Nevertheless, even the countries with most developed economies cannot produce and export all kinds of products. Depending on the existing resources and other circumstances of the country, the country may have a comparative or competitive advantage in terms of production and export of some products.

Surely the export and import have some impact on economic growth and economic development of the country. It must be noted also that the impact of export and import on economic growth is related to their commodity structure. In the countries, which export is high-technology oriented, this impact is higher, than in the countries with export oriented to the raw materials.

What about FDI, it enables the development of the economy thanks to the financial resources of the residents of other countries. However, it is clear that foreign investments cannot be implemented in each sector of the economy as the foreign investor first of all thinks of getting maximum profits and he will not investing in non-efficient sectors of the economy.

Thus, from the point of view of involvement of FDI, it is also very important to reveal the sectors, which have comparative or competitive advantage of the economy, and to combine them with the favorable investment climate.

The best practices show that FDI plays an important role in the achievement of economic development and economic growth. The economy of Republic of Armenia (RA) is quite small, that is why the FDI in the economy of RA are inconsistent. The problem became even more acute in 2015, when in RA economy FDI reduced by more than 50 % in comparison to last year. For the development of more effective policy for attraction of FDI, it is quite essential to assess the impact of FDI on economic growth in RA and show how it differs from the average global indicator [1].

The aim of this article is to estimate the impact of FDI and export on economic growth in CIS countries and in RA, using panel data analysis, and showing the ways of expressing it in separate countries.

**Literature Review.** FDI and foreign trade have been the main driver forces for the development of the global economy for a long time. It is clear that to export some products the producer must make them competitive in the foreign market. Overall the necessary condition for the growth of competitiveness of the national economy is the involvement of foreign direct



investment, which brings new technologies and modern management methods, as well as causes raise of domestic investments that play a significant role in the economic growth of the country.

Based on the experience of a number of South-East Asian emerging countries, we can say that local investment growth in the economy begins when there are some inflow of foreign capital.

One of the most frequent problems in developing countries is lack of savings. Because of this the government of these countries have to involve the foreign investments to provide economic development. To illustrate the importance of this problem, many authors have studied the impact of FDI on economic growth.

Some economists argued that FDI is one of the factors impacting on economic growth, as well as it is the main ways to transfer the knowledge and technology from one country to the other [2; 3]. The other economists focused on the existence of multinational firms, which means that host countries attract FDI because of the possibilities of higher returns [4].

Many authors have revealed the positive relation between FDI and economic growth. For example Zekariya analyzing the panel data of 14 African countries for the time period of 34 years (1980–2013) confirmed the positive relation between these two variables [5]. He stated that to involve the FDI the African countries must improve the investment climate, must develop the human capital and some infrastructures, and also have to provide the export stimulation policy.

Mohammed and Abadi have revealed the positive impact of FDI on economic growth by the data of Jordan during the period of 1990–2009. The authors explained this impact by favorable investment climate, by well-developed infrastructure etc. [6].

Besides this Demirsel, Ögüt and Mucuk based on the data (2002–2014) of Turkey stated that there is not a relationship between FDI and economic growth for a long-run period<sup>1</sup>.

Sothan has provided the same analysis for Cambodia, based on data of 1980–2014. As a result he stated that in the short-run period there is a negative relation between FDI and economic growth, but in the long-run period this relation is positive [7].

Another economist based on the data of Pakistan over the period 1966–2014 has shown that the FDI has a significant positive relation with economic growth both in short- and long-run periods<sup>2</sup>.

<sup>1</sup> Demirsel M.T., Ögüt A., Mucuk M. The Effect of Foreign Direct Investment on Economic Growth: The Case of Turkey. 01 September 2014. 12<sup>th</sup> International Academic Conference. Prague. ISBN 978-80-87927-04-5, IISES. p. 297-306.

<sup>2</sup> Javaid W. Impact of FDI on Economic Growth of Pakistan, Pakistan; 2016. Available at: <http://www.diva-portal.org/smash/get/diva2:944306/FULLTEXT01.pdf> (accessed 17.02.2019).



Another analysis for Pakistan too revealed the positive relation between FDI and economic growth [8].

Choi and Baek have shown based on the example of India, that the inflow of FDI to India indeed improves total factor productivity growth through positive spillover effects [9].

Analyzing the impact of FDI on GDP growth in the Central and Eastern European countries during the period of 2000–2012, especially for the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia Hlavacek and Bal-Domanska have shown that the FDI has a big significance for economic growth of Estonia, Hungary, Czech Republic and Slovakia, but the influence has been low in Lithuania, Poland, Latvia, and Slovenia [10].

Another study shows that there is a relationship between FDI, trade, and GDP per capita for Bangladesh for the period of 1973–2014. The VECM analysis shows that there is a long-run relationship between FDI, trade and GDP per capita [11].

Caroline Ekholm in her study want to show the effect of greenfield and M&A on economic growth in developing countries. Analyzing the panel data for 32 countries over the time-period 2003–2015, she found an inconclusive effect these variables on economic growth<sup>3</sup>.

Some economists would like to estimate the impact of FDI on economic growth. The study of Akpan and Eweke focused on the nexus between FDI, Industrial Sector Development and Economic Growth in Nigeria, using data from 1981–2015. They argued that the the FDI growth by 1 % causes GDP growth in the next period by 0.0000007 % [12].

S. Koojaroenprasit revealed another coefficient of impact of FDI on GDP growth based on the data of South Korea. The author stated that the FDI growth by 1 unit causes GDP growth by 61.9 unit [13].

Aida Barkauskaite and Violeta Naraskeviciute calculated the impact coefficient of FDI on GDP growth for Estonia and Lithuania during the period of 2000–2012. The analysis shows that the FDI impact on GDP is lower in Estonia, but higher in Lithuania [14].

Analysis of correlation coefficients between world's and Armenian FDI and GDP growth shows that significant correlation exists between FDI and economic growth both in the world (0.53) and in RA (0.50) [15].

What about relationship between trade and GDP, this is the most analyzed problems of international economics. Besides this the problem is interesting till nowadays.

Unexpected economic growth in the number of South-East Asian economies during post-war era, accompanied by a similarly unexpected growth of

<sup>3</sup> Ekholm C. Foreign Direct Investment's Effect on Economic Growth in Developing Countries: Cross-Border Mergers and Acquisitions versus Greenfield Investments. August 2017. Lund University School of Economics and Management. p. 26-27.



exports. At the same period the economic growth in Latin America was too weak, because of its economic policy which was based on domestic market. This comparative analysis shows that the export and foreign trade plays an important role for economic development of any country.

Being the countries with poor base of resources, densely populated and mostly agricultural economies, a number of South-East Asian countries were able to increase the average level of real income in a short time period. It must be noted that for getting this big growth rate these countries have to shift from import substitution to the export stimulation policy<sup>4</sup>.

The empirical study of Ahmad, Afzal and Khan examined the impact of exports on the economic growth of Pakistan. The study obtained annual time series data from 1972–2014. As a result revealed that export positively affect the economic growth while imports, consumer price index and terms of trade negatively affect the economic growth. Policy measures to promoting exports of valuable goods and importing capital goods for the further economic activity must be encouraged [16].

The paper of Sayef Bakari and Mohamed Mabrouki investigated the relationship between exports, imports, and economic growth in Panama. As a result they found that there is a bidirectional causality between imports and economic growth and also between exports and economic growth in Panama [17].

Nguyen Thanh Hai based on regression analysis revealed the positive relationship between export and economic growth in Vietnam. The autor shaowed also that 1 unit export growth can cause the DP growth by 6.113 unit [18].

Another interesting issue provided by Jetter M. He was developed an index measuring the average market form of a country's exports. As a result he shows that 1 unit increase caused the growth by 0.885 % [19].

Shivneil Kumar Raj and Priteshni Pratibha Chanda aimed to show the relationship between exports and economic growth in Fiji, using the regression analysis. As a results they stated that there is a strong positive relationship between Fiji's exports and economic growth during the period 2000–2015. Moreover the authors show the sectors, which development can raise the Fiji's exports in future. These sectores are sugar, garment, tourism and agriculture [20].

Jeton Shaqiri based on the data of Macedonia argued that 1 % of export growth generates 10.3 % of growth in GDP in Macedonia [21].

The more large research is provided by Zahonogo Pam. He showed how trade openness affects economic growth in developing countries, based on data of sub-Saharan Africa. He used a dynamic growth model with data from 42 for the time period since 1980 to 2012. He indicated that there

<sup>4</sup> Kokko A. Export-Led Growth in East Asia: Lessons for Europe's Transition Economies. EIJ Working Paper No 142. 2002. p. 25.

is a trade threshold, which is the margin for impact on economic growth: trade openness, more than this margin raises GDP, and less than this margin decreases GDP [22].

In general the export growth causes the scale effect, as well as the inflow of foreign currency. First of them can bring more effective resources allocation, and the second way can let us to import raw materials, intermediate goods, technologies etc. As a result of all this process will raise the efficiency of production and finally this will cause the economic growth. This is the main mechanism for export to impact on economic growth. So in this analysis will be checked this mechanism of impact [23].

There are many analyses to check if the export-led growth hypothesis is valid for this or that country. The results of these issues are not the same. Sometimes they reject each other.

Balssa, summarizing the postwar experience, noted that the countries with the development strategy based on export and import have a dominant effect both in terms of export, economic growth and employment<sup>5</sup>.

Rally, the countries that have applied this policy, for example the “Tiger” countries of Asia, have the highest rates of growth, despite the Asian crisis. As Barron and Salla-i-Martin argued, in the 1960–2000s Taiwan (6.4 %), Singapore (6.2 %), South Korea (5.9 %) and Hong Kong (5.4 %), have the highest rate of GDP per capita growth (among 112 countries)<sup>6</sup>.

Another analysis for Pakistan was provided by A. Fatemah and A. Qayyum. They show if the Export-led Growth hypothesis is valid for Pakistan during the period 1971–2016. The authors stated that the export is one of more important factors affecting on economic growth of Pakistan. The analysis revealed that besides export there are more factors, which impact on economic growth of Pakistan in long and short run period. These factors are labor, investment and domestic credit to private sector<sup>7</sup>.

Early-stage surveys on export and economic growth were provided the analysis based on cross-section or panel data. Based on 1950–73s data of 41 developing countries Michaely revealed that in the 23 most developed countries there are the significant positive relation between GDP per capita growth and export/GDP. But he can not reveal any relation for poor countries. Based on these results he argued that export can cause economic growth only when the countries have reached a minimum level of development<sup>8</sup>.

<sup>5</sup> Balassa B. Exports and Economic Growth: Further Evidence. *Journal of Development Economics*. 1978; 5(2):181-189.

<sup>6</sup> Barro R.J., Sala-i-Martin X. *Economic Growth* (2nd Edition ed.). The MIT Press. 2004.

<sup>7</sup> Fatemah A., Qayyum A. Modeling the Impact of Exports on the Economic Growth of Pakistan. MPRA Paper No. 83929. Posted 16 January 2018. p. 21. Available at: [https://mpra.ub.uni-muenchen.de/83929/1/MPRA\\_paper\\_83929.pdf](https://mpra.ub.uni-muenchen.de/83929/1/MPRA_paper_83929.pdf) (accessed 17.02.2019).

<sup>8</sup> Michaely M. Exports and Growth: An Empirical Investigation. *Journal of Development Economics*. 1977; (4):49-53.

The same analysis was provided by Balassa for 11 developing countries. Using the time series data for the period of 1960–73s he stated the same result of Michaely<sup>9</sup>.

A. A. M. Turkhan and N. Shirazi were examined the export-led growth hypothesis for 5 South Asian countries. Strong support for a long-run relationship among export, import and GDP for all the countries except Shri Lanka were found [24].

E. J. Medina-Smith analyses the 41 issues, provided during the period of 1967–98. 19 issues were provided using time series, and 22 of them are by panel data. Thus, he argued that only 2 of analysed 22 panel data analysis has totally reject the export-led-growth hypothesis. And 11 of the time series studies have only partly confirmed this version<sup>10</sup>.

Thus the analysis above shows that export and FDI have a great impact on economic growth. So we want to calculate this impact for CIS countries, as well as for Armenia.

**Materials and Methods.** For CIS countries the regression analysis will be performed with panel data, using the statistical package Stata V10. The method for regression analysis is the least squares method. The annual data of 11 CIS countries will be analysed for the time period of 2000–2017. The fixed effect and random effect methods will be checked out. The data analysed are follow: GDP by constant prices in 2000, export by constant prices in 2000, FDI by constant prices in 2000. The number of observation will be 173. All the data will be presented by natural logarithm. The data base is electronic data of World bank.

For Armenia the correlation, regression analysis will be performed, as well as the results of Granger-causality test will be shown. For this analysis the data are chosen quarterly 1998:Q1 – 2017:Q4. The data used are follow: quarterly data of GDP 1998:Q1 – 2017:Q4, by current prices in US dollar, quarterly data of export 1998:Q1 – 2017:Q4, by current prices in US dollar, quarterly data of FDI 1998:Q1 – 2017:Q4, in US dollar. The database for this analysis is the electronic database of the Statistical Committee of RA. The observation number will be 79 after adjusted endpoints. The method for regression analysis is the least squares method provided by Eviews 4.

**Results.** In this article, we examine the impact of exports and FDI on economic growth in the CIS countries in order to reveal the development trends of each country. To achieve this goal, we will provide a regression analysis with panel data from 11 CIS countries (Armenia, Azerbaijan, Be-

<sup>9</sup> Balassa B. Exports and Economic Growth: Further Evidence. *Journal of Development Economics*. 1978; 5(2):181-189.

<sup>10</sup> Medina-Smith E.J. Is the Export-Led Growth Hypothesis Valid for Developing Countries? A Case Study of Costa Rica, Policy Issues in International Trade and Commodities Study Series no. 7. UNCTAD. 2001. p. 57.



larus, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan).

There is a possibility that in each country there may be some constant variables that affect GDP, but we did not take them into account in the model (these could be any characteristic features for each country, for example, the number of populations, or the unemployment rate, or something else). To study all these cases, we will use the fixed-effects method. The results are shown in the table 1.

Table 1. The result of our model after using the fixed-effect method

Таблица 1. Результаты модели после применения метода фиксированных эффектов

Factors affecting on GDP/ Факторы, влияющие на ВВП	Coefficients (Standard error) / Коэффициенты (стандартная ошибка)
Export / Экспорт	0.92 (0.113)**
FDI / ПИИ	0.40 (0.106)**
Constant / Константа	1.42e+10
Adj R-squared = 0.966 / Скорректированный R-квадрат равен 0.966	

So we can show the regression model as follow:

$$GDP = 1.42e + 10 + 0.92 \times Exp + 0.4 \times FDI.$$

But, as we know, not only constant variables can impact on economic growth, but also the random variables. For example, in each country, some random and unexpected changes could occur during the study period, which could negatively or positively affect economic growth. To take these cases into account we must use the random-effects method. The results are shown in table 2.

In this case the regression model can be presented as follow:

$$GDP = -2.27e + 06 + 2.25 \times Exp + 1.111 \times FDI.$$

And after all this, we are faced with the question – which of the above effects is more significant for our model? To answer this question, we test the significance of the effects using the Hausman test. The Hausman test showed that the significance of the effects of constant variables is much higher than the significance of the effects of random variables. Thus, the model that best represents the dependence of GDP on export and FDI is a model with fixed-effect methods. So we can state that the raise of export by 1 % causes economic growth in 0.92 %, and 1 % raise of FDI caused GDP growth by 0.4 %.



Table 2. The result of our model after using the random-effect method

Таблица 2. Результаты модели после применения метода случайных эффектов

Factors affecting on GDP / Факторы, влияющие на ВВП	Coefficients (Standard error) / Коэффициенты (стандартная ошибка)
Export / Экспорт	2.25 (0.112)**
FDI / ПИИ	1.111 (0.201)**
Constant / Константа	-2.27e+06
Adj R-squared = 0.98 / Скорректированный R-квадрат равен 0.98	

The analysis above can show the average impact of export and FDI on GDP. That is why we would like to provide also the same analysis for Armenia. This analysis is shown below.

To reveal the coefficient of impact of export on economic growth in RA, we must check the existence of correlation between the used variables. Table 3 shows that the correlation coefficient between export and FDI is 0.24, so we can use them in the same regression model. What about the coefficient between export and GDP, it is 0.81. It is thruly high, but it is not shows, that the export causes the economic growth.

Table 3. Correlation matrix

Таблица 3. Корреляционная матрица

Indicator / Показатель	DEXPORT / Рост экспорта	DFDI / Рост ПИИ	DGDP / Рост ВВП
DEXPORT/ Рост экспорта	1.0	0.24	0.81
DFDI/ Рост ПИИ	0.24	1.0	0.33
DGDP/ Рост ВВП	0.81	0.33	1.0

We must also check if the export causes the economic growth in RA. By Granger causality test we check the causality between these two variables. The results are shown in table 4.

So we can reject the hypothesis “Export growth does not cause GDP growth” for 8 lags.

It must be noted also that we were checked the causality relations for 0–7 lags. The results are shown in table 5.

For 0 and 2 lags too we can reject this hypothesis, but for 1, 3, 4, 5, 6, 7 lags we cannot reject it.

To reveal the most significant coefficient of impact of export on economic growth, we would include in the model the FDI too. So to show the impact of export and FDI on GDP we must estimate the model follow:

$$DGDP(t) = a_0 + a_1 \times DEXPORT(t) + a_2 \times DFDI(t) + e(t).$$

The results are shown in the table 6.

Table 4. The results of Granger causality test for export and GDP

Таблица 4. Результаты теста Грэнджера на причинно-следственную зависимость экспорта и ВВП

Pairwise Granger Causality Tests / Попарный тест Грэнджера на причинность

Date / Дата: 11/26/2018; Time / Время: 11:18

Sample / Отбор данных: 1998:3, 2017:4

Lags / Временной лаг: 8

Null hypothesis / Нулевая гипотеза	Obs / Данные всего	F-Statistic / F-статистика	Probability / Вероятность
DGDP does not Granger Cause DEXPORT / Рост ВВП не является причиной роста экспорта (согласно тесту Грэнджера)	69	1.88484	0.08238
DEXPORT does not Granger Cause DGDP / Рост экспорта не является причиной роста ВВП (согласно тесту Грэнджера)		2.83546	0.01087

Table 5. The results of Granger causality test for export and GDP

Таблица 5. Результаты теста Грэнджера на причинно-следственную зависимость экспорта и ВВП

Pairwise Granger Causality Tests / Попарный тест Грэнджера на причинность

Date / Дата: 11/26/2018; Time / Время: 11:25

Sample / Отбор данных: 1998:3, 2017:4

Lags / Временной лаг:	0	1	2	3	4	5	6	7
Prob. "DGDP does not Granger Cause DEXPORT" / Вероятность того, что рост ВВП не является причиной роста экспорта (согласно тесту Грэнджера)	0.062	0.055	0.018	0.044	0.032	0.018	0.024	0.035
Prob. "DEXPORT does not Granger Cause DGDP" / Вероятность того, что рост экспорта не является причиной роста ВВП (согласно тесту Грэнджера)	0.015	0.054	0.036	0.062	0.082	0.052	0.066	0.078

Table 6. Regression model for impact of export and FDI on economic growth  
Таблица 6. Регрессионная модель влияния экспорта и ПИИ на экономический рост

Dependent Variable: DGDP / Зависимая переменная: рост ВВП

Method: Least Squares / Метод: наименьших квадратов

Date / Дата: 12/04/2018; Time / Время: 11:23

Sample (adjusted) / Скорректированные данные: 1998:2, 2017:4

Included observations: 79 after adjusting endpoints / Включенные наблюдения: 79 после корректировки конечных точек

Variable / Переменная	Coefficient / Коэффициент	Standard Error / Стандартная ошибка	t-Statistic / t-статистика	Probability / Вероятность
C / Константа	-13.54	50.01	-0.27	0.79
DEXPORT / Рост экспорта	8.89	0.76	11.69	0.00
DFDI / Рост ПИИ	1.23	0.56	2.19	0.03

R-squared = 0.68 / R-квадрат равен 0.68

Adjusted R-squared = 0.67 / Скорректированный R-квадрат равен 0.67

Adjusted R-squared = 0.67, so export growth and FDI growth can explain the GDP growth by 67 %. The probability for each variable is less, than 0.05, so the estimated coefficients are statistically significant. The errors have not autocorrelation and heteroscedasticity.

As a result we can show that the main regression model for impact of export and FDI on GDP in RA is follow:

$$DGDP(t) = -13.54 + 8.89 \times DEXPORT + 1.23 \times DFDI.$$

This means that when all other things being equal, the raise of export by 1 unit causes the raise of GDP by 8.89 unit.

What about FDI, the raise of FDI by 1 unit causes the raise of GDP by 1.23 unit.

**Discussion and Conclusion.** As a result for the analysis for CIS countries it must be noted that on the economic growth of CIS countries has a big significance the impact of constant variables. It must be noted also, that early we were provide this analysis, and we found that the raise of export by 1 % caused economic growth in 0.97 % (in this analysis the coefficient is 0.92), and 1 % raise of FDI caused GDP growth by 0.362 % (in this analysis the coefficient is 0.4) [25]. So we can state that during 2017 the impact of export has gone down, and the impact of FDI has raised. Analysing the data for each CIS country, we can explain this fact. In 2017 GDP has grown in all CIS countries, except Uzbekistan. So we can state, that in case of Uzbekistan GDP growth, the average coefficient of impact was a little

more, than we have. Moreover, for deep analysis we must check also the export and FDI for each countries under review. In 2017 export has grown in all CIS countries, except Tajikistan and Ukraine. The decrease of average impact coefficient of export on GDP can be caused by this fact, as well as by changes in export structure in every country from more favorable for GDP to the less favorable. And finally the analysis of FDI for each country shows that in 2017 the FDI has gone down in all countries, except Moldova, Turkmenistan and Uzbekistan. So it must be noted, that in case of FDI growth in all countries, the coefficient of impact of FDI will be bigger, than now. And also we can state, that even in countries, where the FDI has gone down in 2017, therefore the investment in these countries were provided in more efficiency sectors of economy, that is why the impact coefficient is more than for analysis in 2000–2016.

Although, the results above can show the average impact of export and FDI on GDP growth. That is why we wanted to calculate the impact of these two factors on economic growth of RA too.

As a result of Granger-causality test we can state that for RA the export growth in any quarter causes GDP growth in the same quarter, after 2 quarter, and in the last quarter after 2 year. And the GDP growth causes export growth for 2–7 lags.

As a result of regression analysis we can argue that the raise of export by 1 unit causes the raise of GDP by 8.89 unit. We can compare it with the similar analysis provided by us with quarterly data for 1998–2010. In this case the raise of export by 1 unit caused the raise of GDP by 6.3 unit. So we can state that in early 8 years the impact of export on GDP is higher, than before this.

What about FDI, the raise of FDI by 1 unit causes the raise of GDP by 1.23 unit. In the analysis provided with data of 1998–2010 this coefficient was 1.1. So we can state also that impact of FDI on economic growth now is higher too.

Although this analysis can be useful for other economists, which provide the similar analysis. As well as it can be used by the Government of CIS countries and RA, for development future economic policy, which can bring the most efficiency for their country.

## REFERENCES

1. Sargsyan L., Harutyunyan H. Impact of FDI on the Economy of Armenia. *Mizhnarodnij naukovij zhurnal "Internauka". Seriya: Ekonomichni nauki* = International Scientific Journal "Internauka". Series: Economic Sciences. 2017; (5):92-95. Available at: <https://www.inter-nauka.com/issues/economic2017/5/2916> (accessed 17.01.2019).

2. Rodriguez-Clare A. Multinationals, Linkages and Economic Development. *American Economic Review*. 1996; 86(4):852-873. Available at: <https://www.jstor.org/stable/2118308> (accessed 17.01.2019).

3. Borensztein E., De Gregorio J., Lee J.W. How Does Foreign Direct Investment Affect Economic Growth? *Journal of International Economics*. 1998; 45(1):115-135. DOI: [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)

4. Markusen J. The Boundaries of Multinational Enterprises and the Theory of International Trade. *The Journal of Economic Perspectives*. 1995; 9(2):169-189. Available at: <https://www.jstor.org/stable/2138172> (accessed 17.01.2019).

5. Minota Zekariya S. The Impact of FDI on Economic Growth in Eastern Africa. *Applied Economics and Finance*. 2016; 3(1):145-160. DOI: <https://doi.org/10.11114/aef.v3i1.1317>

6. Mohammed L.B., Abadi A. The Impact of Foreign Direct Investment on Economic Growth in Jordan. *International Journal of Research and Reviews in Applied Sciences*. 2011; 8(2):253-258. Available at: [https://www.arpapress.com/Volumes/Vol8Issue2/IJRRAS\\_8\\_2\\_16.pdf](https://www.arpapress.com/Volumes/Vol8Issue2/IJRRAS_8_2_16.pdf) (accessed 17.01.2019).

7. Sothan S. Causality between Foreign Direct Investment and Economic Growth for Cambodia. *Cogent Economics & Finance*. 2017; 5(1):1277860. DOI: <https://doi.org/10.1080/23322039.2016.1277860>

8. Ali N., Hussain H. Impact of Foreign Direct Investment on the Economic Growth of Pakistan. *American Journal of Economics*. 2017; 7(4):163-170. DOI: <https://doi.org/10.5923/j.economics.20170704.01>

9. Choi Y.J., Baek J. Does FDI Really Matter to Economic Growth in India? *Economies*. 2017; 5(2):2-9. DOI: <https://doi.org/10.3390/economies5020020>

10. Hlavacek P., Bal-Domanska B. Impact of Foreign Direct Investment on Economic Growth in Central and Eastern European Countries. *Engineering Economics*. 2016; 27(3):294-303. DOI: <http://dx.doi.org/10.5755/j01.ee.27.3.3914>

11. Hussain M.E., Haque M. Foreign Direct Investment, Trade, and Economic Growth: An Empirical Analysis of Bangladesh. *Economies*. 2016; 4(2):1-14. DOI: <https://doi.org/10.3390/economies4020007>

12. Akpan E.S., Eweke G.O. Foreign Direct Investment and Industrial Sector Performance: Assessing the Long-Run Implication on Economic Growth in Nigeria. *Journal of Mathematical Finance*. 2017; 7(2):391-411. DOI: <https://doi.org/10.4236/jmf.2017.72021>

13. Koojaroenprasit S. The Impact of Foreign Direct Investment on Economic Growth: A Case Study of South Korea. *International Journal of Business and Social Science*. 2012; 3(21):8-19. Available at: [http://ijbssnet.com/journals/Vol\\_3\\_No\\_21\\_November\\_2012/2.pdf](http://ijbssnet.com/journals/Vol_3_No_21_November_2012/2.pdf) (accessed 17.01.2019).

14. Barkauskaite A., Naraskeviciute V. Foreign Direct Investment Impact on Economic Indicators of the Baltic Countries. *Economics and Business*. 2016; 28(1):61-67. DOI: <https://doi.org/10.1515/eb-2016-0009>

15. Sargsyan L. Impact of FDI on Economic Growth in the World and in Armenia. *Mizhnarodnij naukovij zhurnal "Internauka". Seriya: Ekonomichni nauki* = International Scientific Journal "Internauka". Series: Economic Sciences. 2017; (5):89-91. Available at: <https://www.inter-nauka.com/issues/economic2017/5/2915> (accessed 17.01.2019).



16. Ahmad D., Afzal M., Khan U. Impact of Exports on Economic Growth Empirical Evidence of Pakistan. *International Journal of Applied Economic Studies*. 2016; 4(6):1-9. Available at: [https://www.researchgate.net/publication/319643399\\_Impact\\_of\\_Exports\\_on\\_Economic\\_Growth\\_Empirical\\_Evidence\\_of\\_Pakistan](https://www.researchgate.net/publication/319643399_Impact_of_Exports_on_Economic_Growth_Empirical_Evidence_of_Pakistan) (accessed 17.01.2019).

17. Bakari S., Mabrouki M. Impact of Exports and Imports on Economic Growth: New Evidence from Panama. *Journal of Smart Economic Growth*. 2017; 2(1):67-79. Available at: <https://ideas.repec.org/a/seg/012016/v1y2017i2p67-79.html> (accessed 17.01.2019).

18. Hai N.Th. Impact of Export on Economic Growth in Vietnam: Empirical Research and Recommendations. *International Business and Management*. 2016; 13(3):45-52. DOI: <https://doi.org/10.3968/9040>

19. Jetter M. The Impact of Exports on Economic Growth: It's the Market Form. *The World Economy*. 2017; 40(6):1040-1052. DOI: <https://doi.org/10.1111/twec.12461>

20. Raj Sh., Chand P. Analysis of Fiji's Export and Its Impact on Economic Growth. *International Journal of Business and Social Research*. 2017; 7(4):1-14. DOI: <http://dx.doi.org/10.18533/ijbsr.v7i4.1031>

21. Shaqiri J. The Impact of Export and Foreign Direct Investments on Macedonian GDP Growth – Empirical Analysis. *European Scientific Journal*. 2017; 13(25): 276-287. DOI: <http://dx.doi.org/10.19044/esj.2017.v13n25p276>

22. Zahongo P. Trade and Economic Growth in Developing Countries: Evidence from Sub-Saharan Africa. *Journal of African Trade*. 2016; 3(1-2):41-56. DOI: <https://doi.org/10.1016/j.joat.2017.02.001>

23. Sargsyan L. [Comparative Analysis of the Impact of Export and Import on Economic Growth in the World and in Armenia]. *Mizhnarodnij naukovij zhurnal "Internauka"*. Seriya: Ekonomichni nauki = International Scientific Journal "Internauka". Series: Economic Sciences. 2018; (2):131-136. Available at: <https://www.inter-nauka.com/issues/economic2018/2/3461> (accessed 17.01.2019). (In Russ.)

24. Turkhan A.A.M., Shirazi N. Export-Led Growth Hypothesis: Further Econometric Evidence from South Asia. *The Developing Economies*. 2005; 43(4):472-488. DOI: <https://doi.org/10.1111/j.1746-1049.2005.tb00955.x>

25. Sargsyan L.N. [Impact of International Trade and Foreign Direct Investment on the Economic Growth of the Country (the Case Study of the CIS Countries)]. *Regionalnye problemy preobrazovaniya ehkonomiki* = Regional Issues of Transforming the Economy. 2018; (4):91-99. (In Russ.) DOI: <https://doi.org/10.26726/1812-7096-2018-4-91-99>

Submitted 28.02.2019; accepted for publication 18.03.2019; published online 28.06.2019.

#### About the author:

**Lilit N. Sargsyan**, Research Associate, M. Kotanyan Institute of Economics, National Academy of Sciences of the Republic of Armenia (15 Grigor Lusavorich St., Yerevan 0015, Armenia), Ph. D. (Economics), ORCID: <https://orcid.org/0000-0002-5516-7655>, [sarg.lilit@yahoo.com](mailto:sarg.lilit@yahoo.com)

*Acknowledgments.* The author is grateful to the anonymous reviewer, whose comments allowed improve the quality of the text.

#### For citation:

Sargsyan L.N. Export, Foreign Direct Investment and Gross Domestic Product: Case of the Commonwealth of Independent States Countries and Armenia. *Regionology* = Russian Journal of Regional Studies. 2019; 27(2):206-223. DOI: <https://doi.org/10.15507/2413-1407.106.027.201902.206-223>

*The author has read and approved the final version of the manuscript.*

### СПИСОК ИСПОЛЬЗОВАННЫХ ИСТОЧНИКОВ

1. Sargsyan L., Harutyunyan H. Impact of FDI on the Economy of Armenia // Міжнародний науковий журнал «Інтернаука». Серія: Економічні науки. 2017. № 5. С. 92–95. URL: <https://www.inter-nauka.com/issues/economic2017/5/2916> (дата обращения: 17.01.2019).

2. Rodriguez-Clare A. Multinationals, Linkages and Economic Development // American Economic Review. 1996. Vol. 86, no. 4. Pp. 852–873. URL: <https://www.jstor.org/stable/2118308> (дата обращения: 17.01.2019).

3. Borensztein E., De Gregorio J., Lee J. W. How Does Foreign Direct Investment Affect Economic Growth? // Journal of International Economics. 1998. Vol. 45, issue 1. Pp. 115–135. DOI: [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)

4. Markusen J. The Boundaries of Multinational Enterprises and the Theory of International Trade // The Journal of Economic Perspectives. 1995. Vol. 9, no. 2. Pp. 169–189. URL: <https://www.jstor.org/stable/2138172> (дата обращения: 17.01.2019).

5. Minota Zekariya S. The Impact of FDI on Economic Growth in Eastern Africa // Applied Economics and Finance. 2016. Vol. 3, no. 1. Pp. 145–160. DOI: <https://doi.org/10.11114/aef.v3i1.1317>

6. Mohammed L. B., Abadi A. The Impact of Foreign Direct Investment on Economic Growth in Jordan // International Journal of Research and Reviews in Applied Sciences. 2011. Vol. 8, issue 2. Pp. 253–258. URL: [https://www.arpapress.com/Volumes/Vol8Issue2/IJRRAS\\_8\\_2\\_16.pdf](https://www.arpapress.com/Volumes/Vol8Issue2/IJRRAS_8_2_16.pdf) (дата обращения: 17.01.2019).

7. Sothan S. Causality Between Foreign Direct Investment and Economic Growth for Cambodia // Cogent Economics & Finance. 2017. Vol. 5, issue 1. DOI: <https://doi.org/10.1080/23322039.2016.1277860>

8. Ali N., Hussain H. Impact of Foreign Direct Investment on the Economic Growth of Pakistan // American Journal of Economics. 2017. Vol. 7, issue 4. Pp. 163–170. DOI: <https://doi.org/10.5923/j.economics.20170704.01>

9. Choi Y.J., Baek J. Does FDI Really Matter to Economic Growth in India? // Economies. 2017. Vol. 5, issue 2. Pp. 2–9. DOI: <https://doi.org/10.3390/economies5020020>



10. Hlavacek P., Bal-Domanska B. Impact of Foreign Direct Investment on Economic Growth in Central and Eastern European Countries // *Engineering Economics*. 2016. Vol. 27, no. 3. Pp. 294–303. DOI: <http://dx.doi.org/10.5755/j01.ee.27.3.3914>
11. Hussain M. E., Haque M. Foreign Direct Investment, Trade, and Economic Growth: An Empirical Analysis of Bangladesh // *Economies*. 2016. Vol. 4, issue 2. Pp. 1–14. DOI: <https://doi.org/10.3390/economies4020007>
12. Akpan E. S., Eweke G. O. Foreign Direct Investment and Industrial Sector Performance: Assessing the Long-Run Implication on Economic Growth in Nigeria // *Journal of Mathematical Finance*. 2017. Vol. 7, no. 2. Pp. 391–411. DOI: <https://doi.org/10.4236/jmf.2017.72021>
13. Koojaroenprasit S. The Impact of Foreign Direct Investment on Economic Growth: A Case Study of South Korea // *International Journal of Business and Social Science*. 2012. Vol. 3, no. 21. Pp. 8–19. URL: [http://ijbssnet.com/journals/Vol\\_3\\_No\\_21\\_November\\_2012/2.pdf](http://ijbssnet.com/journals/Vol_3_No_21_November_2012/2.pdf) (дата обращения: 17.01.2019).
14. Barkauskaite A., Naraskeviciute V. Foreign Direct Investment Impact on Economic Indicators of the Baltic Countries // *Economics and Business*. 2016. Vol. 28, issue 1. Pp. 61–67. DOI: <https://doi.org/10.1515/eb-2016-0009>
15. Sargsyan L. Impact of FDI on Economic Growth in the World and in Armenia // *Міжнародний науковий журнал «Інтернаука». Серія: Економічні науки*. 2017. № 5. С. 89–91. URL: <https://www.inter-nauka.com/issues/economic2017/5/2915> (дата обращения: 17.01.2019).
16. Ahmad D., Afzal M., Khan U. Impact of Exports on Economic Growth Empirical Evidence of Pakistan // *International Journal of Applied Economic Studies*. 2016. Vol. 4, issue 6. Pp. 1–9. URL: [https://www.researchgate.net/publication/319643399\\_Impact\\_of\\_Exports\\_on\\_Economic\\_Growth\\_Empirical\\_Evidence\\_of\\_Pakistan](https://www.researchgate.net/publication/319643399_Impact_of_Exports_on_Economic_Growth_Empirical_Evidence_of_Pakistan) (дата обращения: 17.01.2019).
17. Bakari S., Mabrouki M. Impact of Exports and Imports on Economic Growth: New Evidence from Panama // *Journal of Smart Economic Growth*. 2017. Vol. 2, no. 1. Pp. 67–79. URL: <https://ideas.repec.org/a/seg/012016/v1y2017i2p67-79.html> (дата обращения: 17.01.2019).
18. Hai N. Th. Impact of Export on Economic Growth in Vietnam: Empirical Research and Recommendations // *International Business and Management*. 2016. Vol. 13, no. 3. Pp. 45–52. DOI: <https://doi.org/10.3968/9040>
19. Jetter M. The Impact of Exports on Economic Growth: It's the Market Form // *The World Economy*. 2017. Vol. 40, issue 6. Pp. 1040–1052. DOI: <https://doi.org/10.1111/twec.12461>
20. Raj Sh., Chand P. Analysis of Fiji's Export and Its Impact on Economic Growth // *International Journal of Business and Social Research*. 2017. Vol. 7, no. 4. Pp. 1–14. DOI: <http://dx.doi.org/10.18533/ijbsr.v7i4.1031>
21. Shaqiri J. The Impact of Export and Foreign Direct Investments on Macedonian GDP Growth – Empirical Analysis // *European Scientific Journal*. 2017. Vol. 13, no. 25. Pp. 276–287. DOI: <http://dx.doi.org/10.19044/esj.2017.v13n25p276>
22. Zahongo P. Trade and Economic Growth in Developing Countries: Evidence from Sub-Saharan Africa // *Journal of African Trade*. 2016. Vol. 3, issue 1-2. Pp. 41–56. DOI: <https://doi.org/10.1016/j.joat.2017.02.001>



23. Саргсян Л. Н. Сравнительный анализ влияния экспорта и импорта на экономический рост в мире и в Армении // *Міжнародний науковий журнал «Інтернаука». Серія: Економічні науки*. 2018. № 2 (10). С. 131–136. URL: <https://www.inter-nauka.com/issues/economic2018/2/3461> (дата обращения: 17.01.2019).
24. Turkhan A.A.M., Shirazi N. Export-led Growth Hypothesis: Further Econometric Evidence from South Asia // *The Developing Economies*. 2005. Vol. 43, issue 4. Pp. 472–488. DOI: <https://doi.org/10.1111/j.1746-1049.2005.tb00955.x>
25. Саргсян Л. Н. Влияние внешней торговли и прямых иностранных инвестиций на экономический рост страны (на примере стран СНГ) // *Региональные проблемы преобразования экономики*. 2018. № 4. С. 91–99. DOI: <https://doi.org/10.26726/1812-7096-2018-4-91-99>

Поступила 28.02.2019; принята к публикации 18.03.2019; опубликована онлайн 28.06.2019.

*Об авторе:*

**Саргсян Лилит Норайровна**, научный сотрудник Института экономики имени М. Котаняна Национальной академии наук Республики Армения (0015, Республика Армения, г. Ереван, ул. Григора Лусаворича, д. 15), кандидат экономических наук, ORCID: <https://orcid.org/0000-0002-5516-7655>, [sarg.lilit@yahoo.com](mailto:sarg.lilit@yahoo.com)

*Благодарности.* Автор выражает благодарность анонимному рецензенту, чьи комментарии позволили улучшить качество текста.

*Для цитирования:*

Саргсян Л. Н. Экспорт, прямые иностранные инвестиции и валовой внутренний продукт: пример стран Содружества Независимых Государств и Армении // *Регионология*. 2019. Т. 27, № 2. С. 206–223. DOI: <https://doi.org/10.15507/2413-1407.106.027.201902.206-223>

*Автор прочитал и одобрил окончательный вариант рукописи.*