



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2019; 5(8): 260-264  
www.allresearchjournal.com  
Received: 21-06-2019  
Accepted: 23-07-2019

**Mohannad Alobid**

Department of Applied  
Economic and Science,  
University of Debrecen,  
Károly Ihrig Doctoral School  
of Management and Business,  
Hungary

**Szucs Istvan**

Department of Applied  
Economic and Science,  
University of Debrecen,  
Hungary

**Muhamad Zeed**

Faculty of Agricultural  
Engineering, AL-Furat  
University, Syria

**Yasien Alobied**

Faculty of Agricultural  
Engineering, AL-Furat  
University, Syria

## An analytical study of the efficiency of agricultural investment in Syria

**Mohannad Alobid, Szucs Istvan, Muhamad Zeed and Yasien Alobied**

### Abstract

Investment is considered an essential means for agricultural development, where the success of agricultural development in their ability to enlargement the agricultural investment. The research focuses on the study of GDP, Agricultural GDP, Total investment and Agricultural investment during the period 2004-2016 "before and after the crisis in Syria". Via using descriptive economic analysis and econometric analysis tools. The study found some of the most important results: By studying GDP development, Agricultural GDP development, Total investment, and agricultural investment, the results show that there was an increase on that analysis in the period between 2004-2011 and then began to decline from 2011 within the starting point of the crisis. Through calculating some economic indicators to measure the efficiency of agricultural investment we can say that between 2004 until 2011 there was efficiency on the investment of agriculture after that the deterioration began from 2011 until now.

**Keywords:** Agricultural GDP development, Agricultural investment, descriptive analysis, efficiency

### 1. Introduction

The investment (in both public and private) is essential if agriculture is to achieve its important function of contributing to economic development and food security. Agricultural production needs to increase by at least 60% over the next 40 years to meet the growing demand for food resulting from population growth, rising income levels and lifestyle changes (OECD, Food, & Nations, 2012) <sup>[14]</sup>. Concerning the limited scope of the net expansion in the World, agricultural growth will depend mainly on new increases in productivity, supported mainly by private investment in physical, human and cognitive capital (OECD, 2014) <sup>[13]</sup>. Therefore, agricultural investment is necessary to expand agricultural production in the context of land and water scarcity (Anderson *et al.*, 2006; Turner, Georgiou, Clark, Brouwer, & Burke, 2004) <sup>[2]</sup>. It can also enhance income and consumption in rural areas, thereby improving global food security by improving food availability (Godfray & Garnett, 2014) <sup>[10]</sup>.

The crucial policy goal in developing countries -where agriculture represents an important sector in the economy is improving the production capacity of agriculture through productivity increases. Investment is of exceptional interest as a limiting factor to agricultural production capacity and production because an alarming trend is being observed public and private investment in agriculture has been declining (Zepeda, 2001) <sup>[20]</sup>. The decline in public investment is of particular concern because public investment in basic infrastructure, human capital formation, and research and development are essential conditions for private investment (Antholt, 1994; Evenson & Pray, 1991; Pardey, Roseboom, & Craig, 1992) <sup>[3, 6, 15]</sup>.

The return that is reflected in the increase in technological savings, with the low rate of economic performance and the establishment of new productive and human projects, leading to increased income and economic well-being, economic policies must be directed to increase the total size of the establishment in general and agricultural investments in particular so that the agricultural sector products of this sector (Kozma, 2005; Rogers, Jalal, & Boyd, 2012; Rosenberg & Nathan, 1982) <sup>[11, 16, 17]</sup>.

The Syrian economy was relatively stable with annual GDP growth averaging around 5% before the war began. The GDP per capita was \$2,835, an amount that was similar to Egypt and Morocco, but lower than most countries in the MENA region (Burner, 2015) <sup>[5]</sup>.

**Correspondence**

**Mohannad Alobid**

Department of Applied  
Economic and Science,  
University of Debrecen,  
Károly Ihrig Doctoral School  
of Management and Business,  
Hungary

Agriculture was and remains today, incredibly important making up 19% of GDP and employing 26% of the economically active population in 2011 (Alexander w, 2018; Nations, 2018) <sup>[1, 12]</sup>.

Agricultural investment is considered one of the most sustainable agricultural elements in the Syrian Arab Republic and hence an achievement Food security, agricultural accountability Increasing investment growth rates, where development changes cannot be made without adequate investment, and investment is one of the most important factors that occur in covering the change in the Syrian economic structure (F. W. FAO, 2018; W. FAO, 2015; Zurayk, Woertz, & Bahn, 2018) <sup>[7, 9, 21]</sup>.

Before the outbreak of the crisis in Syria in 2011, the agriculture sector was a source of livelihood opportunities for half of the population (Tull, 2017) <sup>[18]</sup>. Today, non-internally displaced people households still living in rural areas continue to depend on agriculture as their main livelihood, with around 80 percent involved in annual crop production (Bradbury & Proudfoot, 2018; Tull, 2017) <sup>[4, 18]</sup>.

The objective of this study is to know the current situation regarding the agriculture investment in Syria by:

- Identifying the GDP development in Syria between 2004-2016
- Determining the GDP agricultural development in Syria between 2004-2016
- Identifying the development of total investment and agricultural investment in the same period.
- Determining economic indicators for measuring the efficiency of agricultural investment in Syria between 2004-2016.

**2. Research Methodology and Data Sources**

The study relies on the use of the Descriptive Economic Analysis, as well as the adoption of Statistical and Econometric Analysis tools in the calculation of Economic Indicators, that are necessary to measure the agricultural investment efficiency. The indicators are:

$$\text{Investment Rate (IR)} = \frac{\text{Total Investment}}{\text{GDP}}$$

$$\text{Return on Investment (ROI)} = \frac{\text{GDP}}{\text{Total Investment}}$$

$$\text{Investment Multiplier (IM)} = \frac{\text{Change in GDP}}{\text{Change in Investment}}$$

Location Quotient

$$= \frac{\text{Percentage of Agricultural Investment from the Total Investment}}{\text{Agricultural GDP from the GDP}}$$

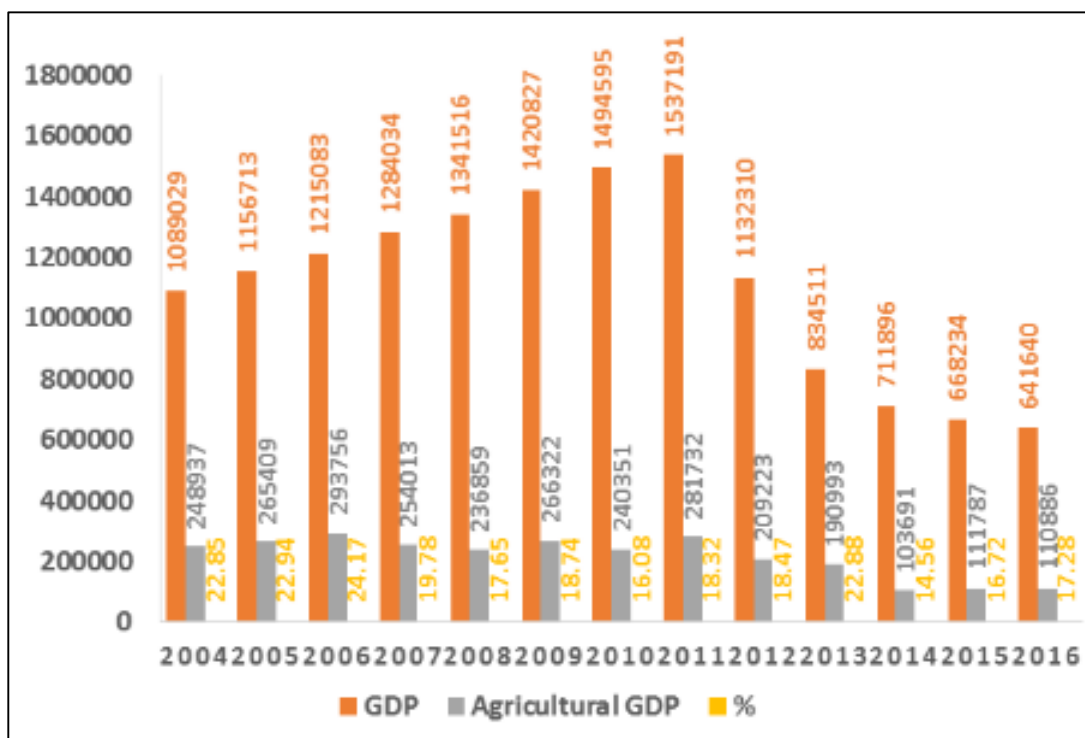
The source of the data on this research are collected year by year from the Central Bureau of Statistics in Syria, the Ministry of Agriculture in Syria during (2004-2016) and the World Bank.

**3. Results and Discussion**

**3.1 Development of Gross Domestic Production (GDP) and Agricultural GDP in Syria during (2004-2016)**

**3.1.1 GDP development in Syria**

As shown in Figure1, the gross domestic production (GDP) in 2016 reached for a minimum approximates 641640 million Syrian pounds, while in 2011 has reached about 1537191 million Syrian pounds. We note that gross domestic product (GDP) has begun to increase from 2004 to 2011, wherein 2004 is approximate 108929 million Syrian pounds. In 2011, it has reached 1537 million Syrian pounds. Gross domestic product (GDP) start to decline from 2012 to 2016, reaching about 1132310 million in 2012. In 2016, it reached 641640 million Syrian pounds see Table1.



**Fig 1:** Development of GDP and Agricultural GDP in Syria (in Syrian Pounds £S)

### 3.1.2 Agricultural GDP development in Syria

Figure 1 shows that, in 2016, agricultural GDP was approximately 110886 million Syrian pounds, up from 2011 to about 281732 million Syrian pounds. We note that gross domestic product (GDP) has begun to increase from 2004 to 2011, reaching about 281732 million Syrian pounds in 2004. In 2011, it reached 1537 million Syrian pounds. Gross domestic product (GDP) began to decline from 2012 to 2016, reaching about 209223 million in 2012. In 2016, it reached 110886 million Syrian pounds see more detailed in Table1.

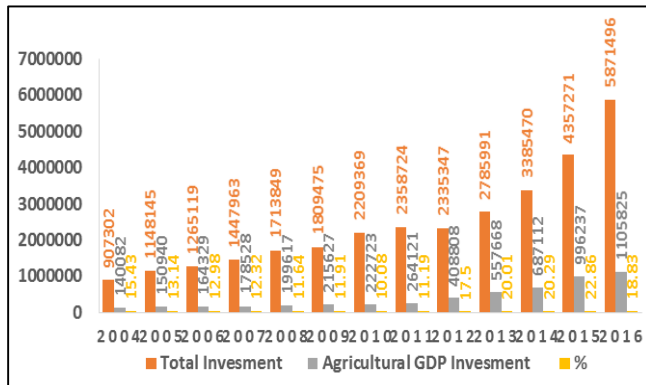
**Table 1:** Development of GDP and Agricultural GDP in Syria (in Syrian Pounds £S) <sup>[1]</sup>.

%	PDG Agricultural	PDG	Year
22.85	248937	1089029	2004
22.94	265409	1156713	2005
24.17	293756	1215083	2006
19.78	254013	1284034	2007
17.65	236859	1341516	2008
18.74	266322	1420827	2009
16.08	240351	1494595	2010
18.32	281732	1537191	2011
18.47	209223	1132310	2012
22.88	190993	834511	2013
14.56	103691	711896	2014
16.72	111787	668234	2015
17.28	110886	641640	2016

### 3.2 The development of total investment and agricultural investment in Syria during the period (2004-2016)

#### 3.2.1 The development of total investment

As can be seen in Figure2 the gross total investment at the national level in 2004 was about 907302 million Syrian pounds, whereas in 2011 it reached about 2538724 million Syrian pounds see Table 2.



**Fig 2:** Development of Total Investment and Agricultural GDP Investment in Syria (in Syrian Pounds £S)

#### 3.2.2 The development of Agricultural GDP

Figure2 Display that the agricultural GDP investment in 2004 was approximately 140082 million Syrian pounds contribution amounted to 15.4% of the total investment for 2004, against 1105825 million Syrian pounds in 2016. With

contribution as a percentage of 18.83% of total investments for 2016 also see Table 2.

**Table 2:** Development of Total Investment and Agricultural GDP Investment in Syria (in Syrian Pounds £S) <sup>[2]</sup>.

%	Agricultural GDP Investment	Total Investment	Year
15.43	140082	907302	2004
13.14	150940	1148145	2005
12.98	164329	1265119	2006
12.32	178528	1447963	2007
11.64	199617	1713849	2008
11.91	215627	1809475	2009
10.08	227273	2209369	2010
11.19	264121	2358724	2011
17.50	408808	2335347	2012
20.01	557668	2785991	2013
20.29	687112	3385470	2014
22.86	996237	4357271	2015
18.83	1105825	5871496	2016

### 3.3 Economic indicators to measure the efficiency of agricultural investment in Syria

Agricultural investment is one of the most important resources that lead to the success of the agricultural development process as it is considered a key resource for increasing agricultural production and income and creating new jobs. This section reviews ways to measure the efficiency of agricultural investment in the Syrian Arab Republic through several criteria: Investment Rate (IR), Return on Investment (ROI), Investment Multiplier (IM) and location quotient (LQ).

#### 3.3.1 Investment Rate (IR)

Which is equal to the total investment divided by the GDP. IR shows the investment volume needed to produce one unit of GDP.  $IR < 1$  indicates the right level of investment efficiency directed to this sector and vice versa. Table3 detailed that the total agricultural investment rate IR in 2006 was about 0.55 and reached 9.97 in 2016 by an average of 2.79. From previous results it is clear that the investment rate was less than the one from 2004 to 2011, indicating that the agricultural investment was efficient during this period.

#### 3.3.2 Return on Investment (ROI)

That is equal to the GDP divided by the total investment (inverse of the investment rate), ROI illustrates the investment efficiency and the important economic decisions making. ROI also shows that the value of the output generated by one unit of agricultural investment, when  $ROI > 1$ , it indicates an efficient investment. Table 3 elaborate that the return on investment ROI for agricultural investments in 2016 was about 0.10 and peak of hit in 2006 at 1.78 with an average of about 0.6 for the period 2004 to 2016, we notice from the previous data that the value of the return on investment was more than once in the period from 2004 to 2011 demonstrating that the efficiency of investments destined for the agricultural sector and we notes

<sup>1</sup> Resource: the annual data were collected from the Central Bureau of Statistics in Syria, the ministry of agriculture in Syria and the world bank year by year.

<sup>2</sup> Resource: the annual data were collected from the Central Bureau of Statistics in Syria, the ministry of agriculture in Syria and the World Bank year by year.

that the return on investment was less than one for the period from 2012 to 2016, demonstrating a lack of efficiency in investment intended to this sector.

**3.3.3 Investment multiplier (IM)**

Which is equal to Change in GDP divided by Change in investment, IM indicates that investment is efficient when it is more than 1 and vice versa. If the investment multiplier value is negative that is a meaningful investment in the current year is less than the investment in the previous year or the domestic product in the current year is less than the GDP per year Previous. Table3 shows that the total agricultural investment multiplier in 2012 was the lowest value approximated 3.65 and the largest value in 2006 was 2.11 with an average of 0.059. Since 2004 until 2006 we observe that the investment multiplier has increased, which indicates that the efficiency of agricultural investment during this period was good. Since 2011the decreasing in the investment multiplier, which indicates that there is a lack of the efficiency of agricultural investment during this period that means the agricultural investment are inefficient.

**3.3.4 Location quotient (LQ)**

The location quotient refers to the contribution of the agriculture sector to GDP according to the investment in this sector by measuring the efficiency of investment. Location quotient equal to the percentage of agricultural investment from the total investment divided by the agricultural GDP from the GDP. When this factor (LQ < 1) indicates that the right level of investment efficiency directed to this sector and vice versa. Table 3 shows that the location quotient for investments in the Syrian agricultural sector was 0.53 in 2006, while the lowest value in 2014 was 1.39 with an average of 0.81. From the previous data, we notes that the location quotient factor was less than one for the period from 2004 to 2013 indicating that there is efficiency in the investments directed to this sector also we see that the value of this factor was more than 1 for the period 2014 - 2016, indicating the low efficiency of investments directed to this sector during this period.

**Table 3:** Economic Indicators for measuring the Agricultural Investment Efficiency in (Syrian Pounds £S <sup>[3]</sup>)

location quotient	Investment Multiplier (IM)	Return on Investment (ROI)	Investment Rate (IR)	Year
0.675430175	1.302438	1.777080567	0.562721	2004
0.572951127	1.517038	1.758374188	0.568707	2005
0.537281681	2.117186	1.787609004	0.559406	2006
0.623260287	-2.799	1.42281883	0.70283	2007
0.65967638	-0.81341	1.186567276	0.842767	2008
0.635747574	1.840287	1.235105066	0.809648	2009
0.62686555	-3.65995	1.079147641	0.926657	2010
0.61096659	0.999589	1.066677773	0.93749	2011
0.947379284	-0.50114	0.51178793	1.953934	2012
0.874602331	-0.12246	0.342485135	2.919835	2013
1.393426461	-0.67444	0.15090844	6.626535	2014
1.366738295	0.02619	0.112209243	8.911922	2015
1.089813912	-0.00822	0.100274456	9.97263	2016

**4. Conclusions**

The study concluded the following

- By studying the GDP development in Syria between 2004-2016 it was indicating that the GDP has been

increasing from 2004 until 2011. Then we have seen the decline in GDP development with the beginning of the crisis in 2011 -2012

- Via studying the development of agricultural GDP between 2004-2016 denoting that the agricultural GDP had taken an increasing trend from 2004 until 2011 then it began to decline from 2011 the starting point of crisis.
- Regarding the development of total investment and agriculture investment at the same period, we notice that the agriculture development was taken an increasing trend since 2004 until 2016 and even the contribution of the agricultural sector reached a maximum in 2016.
- Assessment of economic indicators to measure the efficiency of the agricultural investment during the period 2004-2016 shows that the investment rate was less than one for the period between 2004-2011 that is indicating the efficiency of agricultural investment. And in 2012-2016 we found that the investment rate was greater than one Indicates the lack of efficiency in investments.
- It is found that the return on investment is greater than one between 2004-2011, which indicates that investment is efficient, at the opposite, the value of return on investment was less than one for the period 2012-2016, that is led to the investment was inefficient.
- Concerning with the investment multiplier, we note that it took an increasing trend in the period between 2004-2011, indicating the efficiency of agricultural investment and we have seen the decline in agricultural investment since 2011, indicating the lack of efficiency in agricultural investment during this period.

We can see that the agricultural investment was good and developed during the period 2004-2011, whereas it began to decline since the outbreak of the crisis in Syria, where all indicators indicate the decline of efficiency in agricultural investment since 2012 until now.

**5. Recommendations**

The study reached the following recommendations:

- Attentions to the programs for sustainable agricultural development to raise the efficiency of agricultural economic resources, thus increasing the production necessary to push the economic development process.
- Encouraging agricultural investment by decreasing the interest rate and reducing taxes to subsidize investors to put money into agricultural projects.
- Following an expansionary monetary policy to increase investment in the agricultural sector.

**6. References**

- Alexander W. Syria: Economic impact of the war’s next stage. Global Risk Insights, 2018.
- Anderson J, Arblaster K, Bartley J, Cooper T, Kettunen M, Kaphengst T *et al.* Climate change-induced water stress and its impact on natural and managed ecosystems, 2006.
- Antholt CH. Getting ready for the twenty-first century: Technical change and institutional modernization in agriculture: The World Bank, 1994.
- Bradbury J, Proudfoot P. Agriculture in the Fertile Crescent, from the deep past to the modern conflict. British Academy Review. 2018; 33:35.

<sup>3</sup> calculated from Table1 and table 2

5. Burner D. Syria's Economy: Picking Up the Pieces: Chatham House, 2015.
6. Evenson RE, Pray CE. Research and productivity in Asian agriculture: Cornell University Press, 1991.
7. FAO FW. Crop and food security assessment mission to the Syrian Arab, 2018.
8. *Republic*. Retrieved from <http://www.fao.org/3/CA1805EN/ca1805en.pdf>.
9. FAO W. FAO/WFP Crop and Food Security Assessment Mission to the Syrian Arab Republic. Special Report, 2015.
10. Godfray HCJ, Garnett T. Food security and sustainable intensification. *Philosophical transactions of the Royal Society B: biological sciences*. 2014; 369(1639):20120273.
11. Kozma RB. National policies that connect ICT-based education reform to economic and social development. *Human Technology: An interdisciplinary journal on humans in ICT environments*, 2005.
12. Nations U. World Economic Situation and Prospects, 2018.
13. OECD. Policy Framework for Investment in Agriculture, 2014.
14. OECD Food, Nations, AOOTU. OECD-FAO Agricultural Outlook, 2012.
15. Pardey PG, Roseboom J, Craig BJ. A yardstick for international comparisons: An application to national agricultural research expenditures. *Economic Development and Cultural Change*. 1992; 40(2):333-349.
16. Rogers PP, Jalal KF, Boyd JA. An introduction to sustainable development: Routledge, 2012.
17. Rosenberg N, Nathan R. Inside the black box: technology and economics: Cambridge University press.
18. Tull K. Agriculture in Syria. K4D Helpdesk Report. Retrieved from <https://www.gov.uk/dfid-research-outputs/agriculture-in-syria#citation>
19. Turner RK, Georgiou S, Clark R, Brouwer R, Burke JJ. Economic valuation of water resources in agriculture: From the sectoral to a functional perspective of natural resource management: Food & Agriculture Org, 2004, 27.
20. Zepeda L. Agricultural investment and productivity in developing countries: Food & Agriculture Org, 2001.
21. Zurayk R, Woertz E, Bahn R. Crisis and Conflict in Agriculture, 2018.