



THE IMPACT OF THE AGRICULTURE SECTOR ON GDP: A CASE STUDY ON BUDGETARY SUBSIDIES IN ALBANIA

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Abstract

This study investigates the impact of Albania's agricultural sector on GDP, focusing on the role of budgetary subsidies. Agriculture remains a cornerstone of Albania's economy, contributing significantly to employment and rural incomes. The analysis includes the effects of financial support mechanisms, such as subsidies and investments, on sectoral performance. Using descriptive and econometric methods, the study highlights the relationship between financial measures and cultivated land area, while also examining the sector's resilience during crises, including the COVID-19 pandemic. The research aims to highlight how crises such as the earthquake in September 2019 and the subsequent COVID-19 pandemic, along with the further opening of markets due to the EU integration process, have brought Albanian farmers into more competitive agricultural markets, thereby increasing the need for political support. For the main hypothesis, this study seeks to analyze the impact of the agricultural sector on GDP and assess how budgetary support measures have influenced the sector. Notably, agriculture is the primary source of employment and income in rural areas, contributing 21% to GDP and representing 43.3% of the total workforce (INSTAT, 2024). The findings underscore the importance of strategic funding and policy alignment to enhance agricultural productivity and GDP contributions.

Keywords: Economic Growth, Agricultural Sector, Subsidies, EU Integration



INTRODUCTION

Gross Domestic Product (GDP) is an economic indicator representing the market value of all goods and services produced within a country over a specified period (usually one year). GDP should not be confused with Gross National Product (GNP), which reflects the market value of all goods and services produced by the labor and property of a country's residents, regardless of whether the production occurs within or outside the country's borders during the same period. GDP is one of the primary macroeconomic indicators used to measure economic growth. It can be categorized into two types:

- Real GDP: Measures the final goods and services at constant prices.
- Nominal GDP: Measures the final goods and services at current prices.

In terms of sectoral impact, agriculture is a primary source of employment and income in rural areas, contributing 21% to GDP and accounting for 43.3% of the total workforce (INSTAT, 2022).

Since 2007, Albania's Ministry of Agriculture, Food, and Consumer Protection (now the Ministry of Agriculture and Rural Development) has provided support to various agricultural sub-sectors through different schemes. Recently, the European Union, via the IPARD II instrument, has also supported investments in several agro-food sub-sectors in Albania.

The primary research problem in this study is the ongoing debate, both internationally and nationally, regarding the impact of economic sectors on GDP and the effect of subsidies provided to the agricultural sector. This topic has drawn significant attention from international organizations such as the IMF, OECD, and World Bank due to its complex and multifaceted nature.

The study is motivated by recent crises, such as the September 2019 earthquake and the subsequent COVID-19 pandemic. The further opening of markets driven by Albania's EU integration process presents additional challenges for Albanian farmers as they face more competitive agricultural markets. These developments underscore the need for increased political and financial support for the agricultural sector.

The primary aim of this research is to analyze the extent to which subsidies have impacted the agricultural sector and how this sector, in turn, has influenced GDP.

According to the World Bank's May 2020 report, agriculture in Albania remained largely unaffected by the COVID-19 pandemic, except for disruptions caused by limited imports of agricultural inputs and production factors due to border closures. This resilience highlights the agricultural sector's importance as a cornerstone of economic stability during crises.

LITERATURE REVIEW

The agricultural sector in Albania has experienced continuous growth. The annual growth rate has ranged between 2.7% and 7.9%, largely dependent on weather conditions. Over the past four years, the sector has achieved higher growth rates than other economic sectors (IPARD Program). Consequently, its impact on GDP has been substantial.

Agriculture is a cornerstone of developing countries, with immense potential to support development, drive economic growth, and reduce poverty (Zeller, 2003). Despite its critical contribution, agriculture remains an underdeveloped sector in many regions, including Albania, with rural populations often living in poverty. Therefore, agricultural development demands greater support for micro-enterprises (Zeller, 2003).

The nature of agricultural products has created a need for entrepreneurs to invest in technologies that improve production processes, irrigation, and efficient equipment to increase production and storage capacities. However, agriculture in Albania faces numerous challenges.

Among the country's economic sectors, agriculture remains a priority. Currently, the main focus is on increasing agricultural production and agro-processing as a sustainable and long-term alternative for national development. This has prompted the government to enhance supportive policies, including direct measures (subsidies) and investments. Nevertheless, these efforts have been insufficient to achieve the desired level of development. A critical missing factor in most agricultural development strategies is the financial resources required, primarily from the state budget and financial institutions.

Globally, many studies have analyzed the effectiveness of agricultural support programs. Research findings vary depending on the country, sector, indicators, methodology, and time period. A significant portion of studies focus on the EU, particularly on the Common Agricultural Policy (CAP). This literature review highlights the diversity of approaches within Europe, especially within the EU, as Albania aims to join the EU.

Most studies analyzing the effectiveness of agricultural support programs in Europe focus on their impact on agricultural production and productivity. Regarding productivity, Minviel and Latruffe (2017) argue in their review that 25% of models show a significant positive effect, about 50% reveal a notable negative impact, while the rest report insignificant effects of agricultural support policies on farms' technical efficiency in Europe.

Until recent years, agricultural support policies focused primarily on export-oriented investments. Recently, there has been a shift toward supporting increased domestic production to reduce agricultural imports.

One major challenge in increasing agricultural grants from the EU and other donors requiring institutional support is the formalization of beneficiaries and their investments. This

involves creating a fundamental registry for farms, issuing construction permits for agricultural business facilities, implementing social insurance for farmers, taxing agricultural land, and ensuring the sale of agricultural products with proper invoices. These remain the primary issues in Albania's agricultural sector.

Another body of research examines the impact of CAP on rural household income levels. According to the European Commission, direct payments constitute a significant portion of agricultural income in Europe, with substantial differences across Member States and product types (EC, 2015). Overall, the impacts of agricultural support programs vary, yet there are notable positive effects in agriculture.

Currently, two budgetary schemes are used to subsidize farmers in Albania's agro-processing industry. One is funded by the European Union, and the other by the government, aiming not only to encourage farmers to increase production at lower costs but also to use these funds more efficiently and effectively.

For example, in 2020, the IPARD scheme, funded by the European Union and the Albanian government, concentrated on farms and agro-industry. Meanwhile, the government's budgetary scheme provided direct support to farmers.

A study by Mergos (1999) applied a multi-market model to Albania, a predominantly agricultural country transitioning from centralized policies to integrating into the global economic system. The model provides valuable insights into the impact of alternative options for agricultural pricing and trade policies.

National agricultural models are closely tied to the development and reform of the CAP (Garforth & Rehman, 2006).

In terms of literature from 2020, the World Bank's May 2020 report confirmed that agriculture has remained largely unaffected, except for limited supplies of imported inputs due to border closures (World Bank, 2020).

Technological innovation has expanded opportunities to benefit from international experiences and foster economically beneficial exchanges (Bosworth & Ofer, 2000). In this context, increased attention to investments in agriculture, combined with tourism, could raise incomes and directly impact GDP.

METHODOLOGY

This descriptive study includes secondary data from official sources, including the Ministry of Agriculture and Rural Development and INSTAT. Additionally, the study includes an in-depth literature review and a descriptive statistics. Through processed graphs and tables related to the agricultural sector and subsidies, a comprehensive overview of the collected data is provided.

A comparative analysis over the years was conducted on the effects of different economic sectors on GDP, as well as a comparison of the agricultural sector's quarterly impact on GDP for the years 2016–2020. The reason why this time period is taken into analyses is that agriculture subsidies do not give direct output for the first year of implementation, that means no direct impact is given to GDP either, a period of up to four years after implementation is need to really measure the impact of it.

Another analysis used in this study is the multiple econometric model, which examines the relationship between the dependent variable (cultivated area in hectares) for three agricultural schemes (olive, nuts, vineyards/orchards) and the independent variables (financed projects and the value of subsidies).

ANALYSIS AND RESULTS

The analysis of the impact of the agricultural sector on GDP (Gross Domestic Product) for the period 2017-2020

The analysis of the impact of the agricultural sector on GDP can include a review of the changes and impacts of the agricultural sector on the economic growth of a country. For the period 2016-2020, this impact is analyzed through these components:

1.1. Importance of the Agricultural Sector in the Country's Economy

- The participation of the agricultural sector in GDP during 2016-2020.
- The impact of agriculture on the country's exports and job creation.

The linkages of the agricultural sector with other sectors, such as the processing industry and trade.

1.2. Analysis of the Performance of the Agricultural Sector

- The increase or decrease in agricultural output in the period 2017-2020.
- % of contributors of different sectors of agriculture, such as crops, livestock, and fisheries.
- Factors that have influenced the performance of the agricultural sector (climate change, agricultural policies, investments).

1.3. Data and Measurements of Impact on GDP

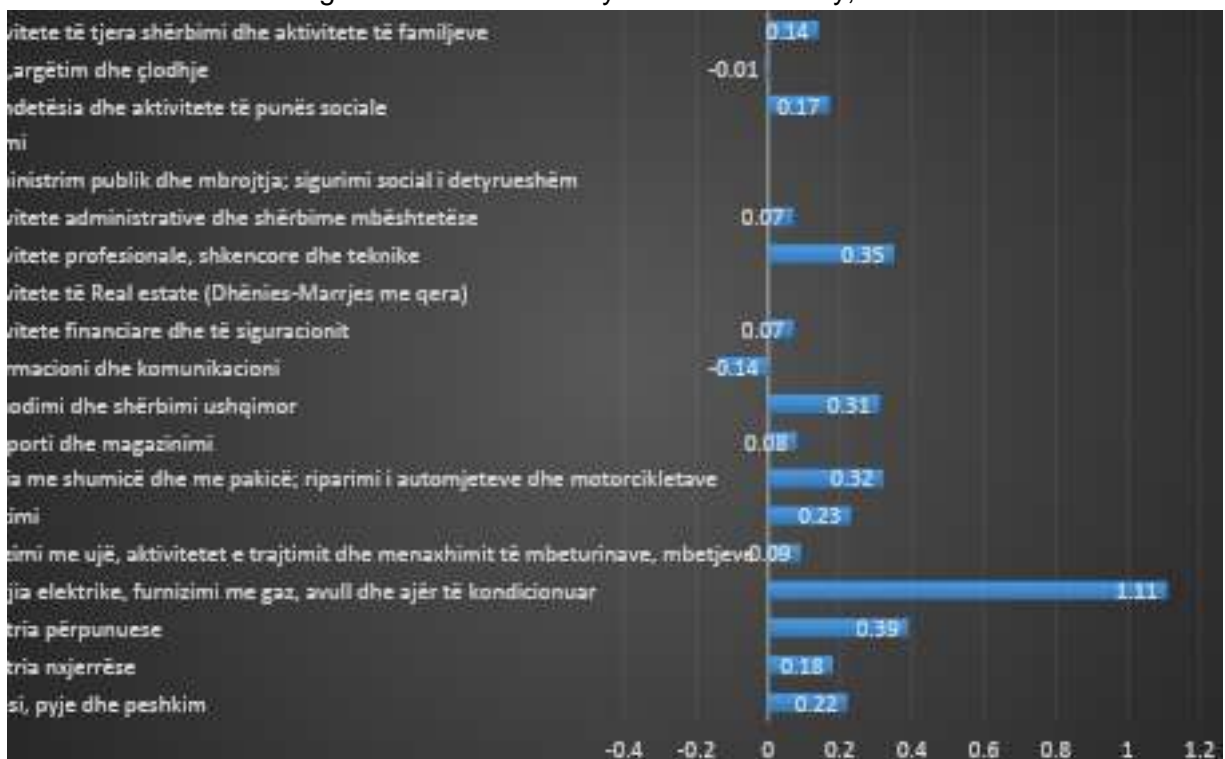
- Data for 2016-2020 for the agricultural sector in GDP, including statistics such as the sector's productivity and its share in economic growth.
- Analysis of statistical data that link the agricultural sector to overall economic developments.

1.4. Prospects for the Agricultural Sector and GDP

Projections for the potential impact of the agricultural sector on GDP for future periods, including the consequences of climate change, technological developments, and economic policies.

The main branches of the economy, for the first quarter of 2019, compared to the first quarter of 2018, appear as follows: The Agriculture, Forestry and Fishing activity had an increase of 1.33%. The Industry, Energy and Water activity had a decrease of 6.05%. The main impact on this decrease was given by the Energy and Metal Products Industry activities, which marked a decrease of 43.8% and 6.85% respectively. The Construction activity had an increase of 5.95%. The Trade, Transport, Accommodation and Food Service activity group had an increase of 4.61%, mainly influenced by Wholesale Trade, which marked an increase of 6.70%. The Information and Communication activity group appeared with an increase of 8.63%. The Financial and Insurance activity has marked an increase of 8.90%. The Real Estate activity has marked an increase of 9.68%. The Professional Activities and Administrative Services group appeared with an increase of 5.27%. The Public Administration, Education and Health activities group experienced an increase of 2.88%. The Arts, Entertainment and Recreation, Other Service Activities activity group had a decrease of 20.13%. Net Taxes on Products increased by 3.88%.

Figure 1: Contribution by economic activity, 2018



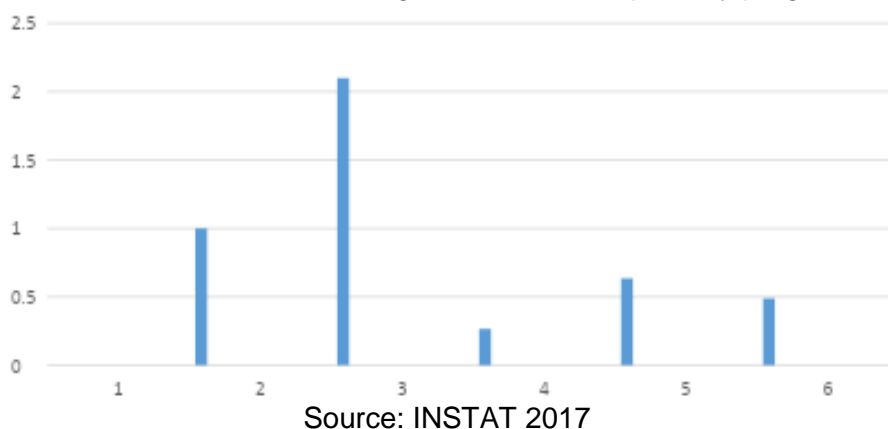
Source: INSTAT 2018

For 2018, from the comparison of the impact that specific sectors have had, the Electricity, gas, steam and air conditioning supply sector has contributed the largest share to GDP with 110%, followed by manufacturing with 39%, wholesale and retail trade; repair of

vehicles and motorcycles; professional, scientific and technical activities wholesale and retail trade with 35%; repair of vehicles and motorcycles 32% as well as legal and accounting activities, management, architecture and engineering 32%, accommodation and food service activities with 31%, production of textiles, clothing; leather and footwear industry 27%, construction 23%, agriculture, forestry and fishing with about 22%, leaving behind other sectors such as the extractive industry, health, etc. according to the graph above.

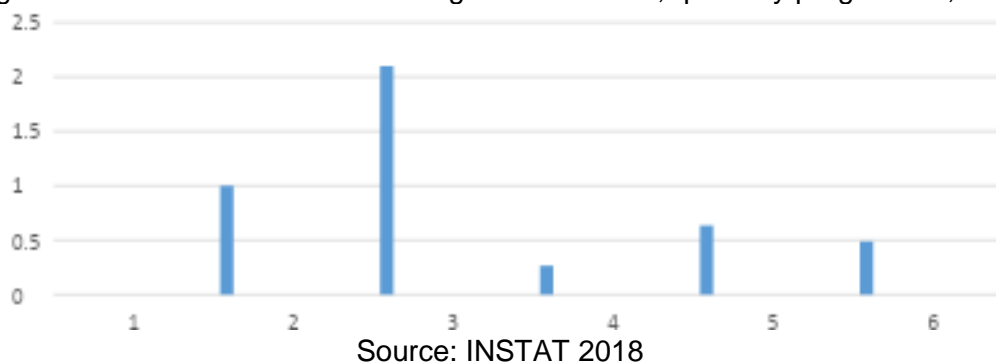
The following discusses the impact of the three-month progressive Agriculture Sector for the period 2016-2019

Figure 2: Gross value added in the Agriculture sector, quarterly progressive, 2016



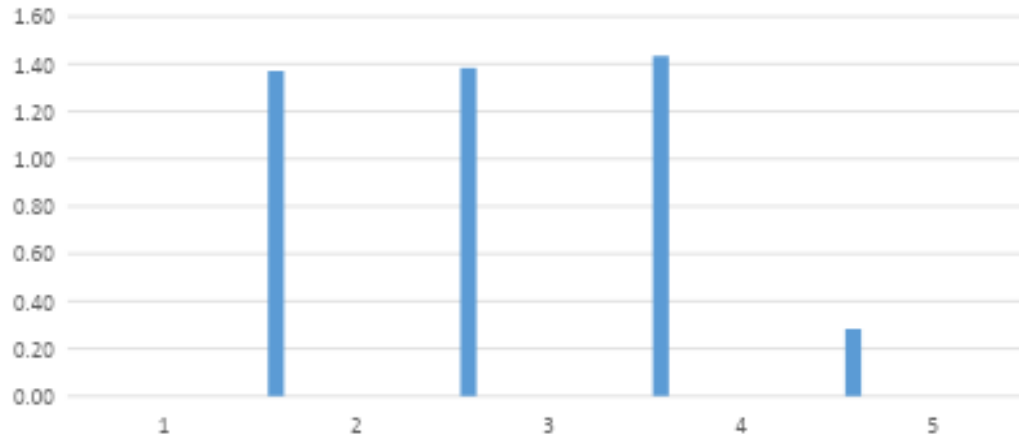
From the data in the figure above, it is clear that for 2016, the agricultural sector had the most impact during the first quarter.

Figure 3: Gross value added in the Agriculture sector, quarterly progressive, 2017



From the data in the figure above, it is clear that for 2017, the agricultural sector had the greatest impact during the first quarter.

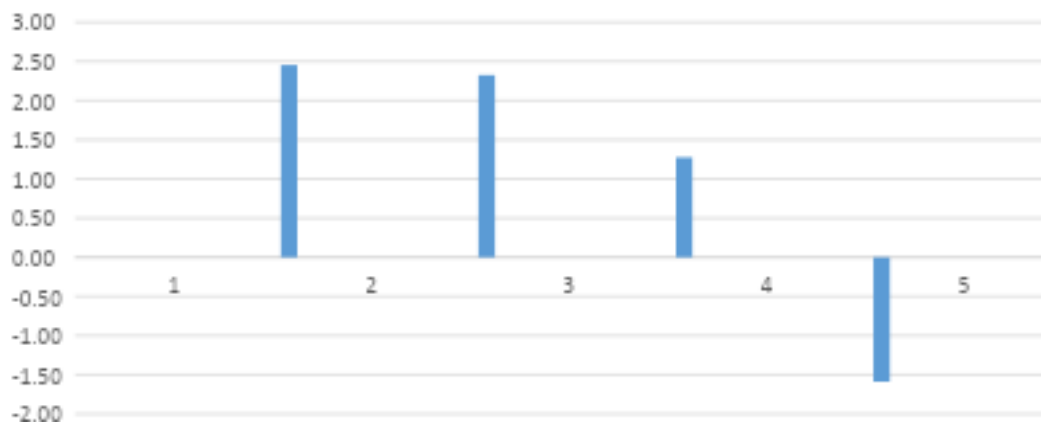
Figure 4: Gross value added of the Agriculture sector, progressive every quarter, 2018



Source: INSTAT 2019

From the data in the figure above, it is clear that for 2018 the agriculture sector had the most impact during the third quarter.

Figure 5: Gross Value Added Agriculture Sector, Quarterly Progress, 2019



Source: INSTAT 2020

From the data in the figure above, it is clear that for 2019, the agricultural sector had the most impact during the first and second quarters.

Agricultural Sector Descriptive Analysis

The agricultural sector in Albania has been growing continuously. The annual growth rate has ranged from 2.7% to 7.9%, depending mainly on weather conditions. Over the last four years, the sector has had a higher growth than the rest of the economy (cit. IPARD Program).

Labor productivity in agriculture measured by gross value added per annual work unit has resulted in a significant increase over recent years.

Albania has a very high trade deficit in agri-food products. The value of imports is 6.7 times higher than the value of exports (cit. IPARD Program). During 2016-2020, agri-food exports, although with a narrow base, have registered a high growth of 68%. The trade deficit in agri-food products has increased by 45%, but over the last four years the increase in the deficit has been small. Although there is a positive trend towards farm consolidation, the competitiveness of the agricultural sector has been negatively affected by the small surface area of agricultural farms. According to MAFRDW statistics, about 1.6 million people live on farms, of which 47% are women. About 96% of farmers are men and only 4% of farmers are women; despite the fact that women are the main workforce on farms.

The age structure of farmers has also deteriorated. The number of young farmers under 25 has decreased and is estimated to be only 1%, while 33% of farmers are over 65 years of age (2012).

Data from various surveys show that in Albania the skills of the agricultural workforce have been reduced as a result of aging, emigration and the lack of opportunities for newly employed workers to be educated or trained. Only 3% of farmers have a university degree, 37% have secondary education, while 60% of them have eight-year, primary or neither. About a third of farmers are educated in the field of agriculture. These are likely to be older farmers who were educated in agricultural vocational schools in the past.

Given that the level of technological progress is low, farms in Albania require high labor intensity. A high % of farms have outdated mechanization, as well as inadequate agricultural buildings or storage facilities. The low intensity of return on capital from production has resulted in low productivity, relatively high production costs, low quality, losses and low profits.

Compliance with environmental, food safety and animal welfare standards remains low. A high percentage of agricultural farms fail to meet these standards due to limited financial resources to improve facilities or technologies, as well as a lack of awareness or knowledge about these standards. Implementation of legislation is still weak, which reduces the incentive to invest in meeting these standards.

Investment in agriculture is very low due to its small scale, limitations on farmers' own resources, and difficulties in obtaining loans. The banking system is the main financial intermediary in Albania. The share of loans granted to the agricultural sector is very low – less than 5% of the total loan portfolio in Albania. Bank credit supply to agriculture is limited by structural problems in the sector, including farm size, aging farmers, lack of collateral assets, underdeveloped land market, and lack of information on the financial situation of applicants.

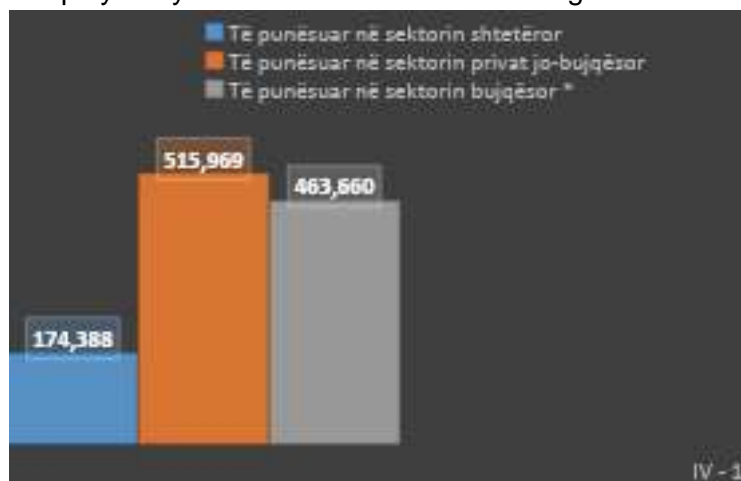
The microfinance industry is estimated to cover 2.4% of the population and approximately 80% of the country. The microfinance industry lends to small and medium-sized

enterprises (SMEs), including the unemployed and start-ups, and some of these institutions also provide technical assistance to entrepreneurs (training or studies).

The agricultural vocational education system includes 9 secondary schools covering the following areas: crop production (in 9 schools), animal production (in 1 school), veterinary medicine (in 2 schools), agribusiness (in 5 schools), forestry, wood and furniture production (in 1 school), and agricultural mechanization (in 2 schools). University-level education in agricultural sciences is provided by the Agricultural University of Tirana (UBT) and the Faculty of Agriculture of Korça. UBT is the only university specialized in providing undergraduate and postgraduate studies, scientific research, training and extension in the field of agriculture and food processing.

Food processing is a relatively small economic sector in Albania. In 2019, the gross value added of the food industry amounted to 78.2 million Euros, with a total employment of 463,660 individuals.

Figure 6: Employed by administrative sources and agricultural sector, 2019



Source: INSTAT 2019

Approximately 2000 companies operate in the food processing industry, 95% of which are micro-enterprises. The most important food processing industries in Albania are flour and bread production, non-alcoholic beverage production, and meat and milk processing.

The development of the food processing sector in Albania is limited by a number of factors, some of which are related to the insufficiency of raw materials, the lack of homogeneity in terms of its quantity and quality, the underdeveloped vertical integration between raw material producers and the processing industry, the lack of resources for quality improvement through the introduction of quality and food safety systems. The introduction of quality and food safety systems has started, but so far only in large processing companies. Investments in meeting environmental protection standards and waste treatment are currently scarce.

In order to improve the sustainability of farms, the competitiveness of the agri-food sector, sustainable resource management, quality of life and the territorial and economic development of rural areas, it is necessary that medium and long-term priorities benefit from adapted support policies in the agricultural sectors. In addition, strategic documents and programs that include these priorities should also be identified or aligned with EU requirements (or the EU CAP). In some Western Balkan countries, key priorities (listed in their programs for agriculture and rural development) also include stabilizing farmer incomes, organizing the food chain, promoting food quality and safety standards, and investing in human capital, knowledge transfer and innovation, etc.

Programs such as the Instrument for Pre-Accession Assistance for Rural Development (IPARD) in most Balkan countries (including Albania), include key documents regarding EU pre-accession support in the field of agriculture. The aim of these key documents is to create institutions and improve the agricultural sector.

Statistics of Subsidy Support for the Agricultural Sector 2017-2020

Table 2: Number of beneficiaries and benefit value for support schemes 2016

Nr	Grup-Skemat	Skema Mbeshtetese	Nr. i projekteve te financuara	Vlera e financiar (ALL)	Financimi/Perfitues (ALL)
1	Mbeshtetje per përmirësimin e teknologjisë të kultivimit dhe mbrojtjes së bimëve	Mbjelje Vreshti	40	9.897.240,00	247.431,00
		Mbjelje Pemtores	34	5.333.680,00	156.872,94
		Mbjelje Arrores	13	2.181.000,00	167.769,23
		Mbjelje Bimë medicinale	5	3.540.000,00	708.000,00
		Ferma Organike BIO	1	80.000,00	80.000,00
		Ujitje me Pika	44	12.173.450,00	276.669,32
		Mbrojtja e Ullishteve nga miza	8.832	128.952.422,00	14.600,59
2	Mbarëshkrimi i blegtorisë, bletarisë dhe akuakulturës	Dele/dhitë matrikuluar	2.047	491.463.336,00	240.089,56
		Lopë regjim gjysëm stallor të matrikuluar	142	11.685.000,00	82.288,73
		Mbeshtetja e Akuakulturës rasat	5	1.230.000,00	246.000,00
		Mbeshtetja e Akuakulturës ushqim	5	1.000.000,00	200.000,00
3	Furnizimi i qëndrueshëm i tregut dhe rrjetit të ardhurave financiare për familjet e zonave rurale	Dorëzim fruta	18	4.141.787,00	230.099,28
		Dorëzim Perime	135	32.912.652,00	243.797,42
		Mbeshtetja për Dorëzim Qumështi	127	40.325.440,00	317.523,15
		Mbeshtetja për Dorëzim Midhje	1	221.800,00	221.800,00
4	Ndihja e investimeve dhe kreditimit bankar në sektorin e bujqësisë, blegtorisë, shpendëve, bletarisë, akuakulturës dhe bimëve medicinale	Normë interesi kredie 70%	19	10.364.924,80	545.522,36
		Mbeshtetje investimeve deri ne 50% te investimit	43	719.268.419,00	16.727.172,53
		Ndertim Sere	4	39.312.376,00	9.828.094,00
		Mekanizim dhe pajisje per mekanizim	1	20.037.600,00	20.037.600,00
TOTALI			11.516	1.534.121.126,80	133.216,49

Referring to the table above, the schemes that have had the highest impact in terms of the number of beneficiaries have been the olive fly protection scheme and the livestock breeding scheme, this also due to the specificity of the Albanian farm itself, which is dominated by livestock breeding and olive cultivation according to climatic characteristics. What is worth noting is that almost all applicants who met the eligibility criteria have benefited from the 2016 support schemes, so the budget is sufficient for everyone.

Table 3: Number of beneficiaries and benefit value for support schemes 2017

			Viti 2017	
Grup-Skemat	Skema Mbeshtetese	Nr. i projekteve te financuara	Vlera e financuar (ALL)	
A	Mbështetje për përmirësimin e teknologjisë të kultivimit	Mbjellje Vreshti	67	20,874,020.00
		Mbjellje Pentore	69	11,590,620.00
		Mbjellje Arrore	69	7,993,440.00
		Mbjellje Bimë medicinale	97	33,773,250.00
		Ferma Organike BIO	8	1,600,000.00
		Ujitje me Pika	77	26,565,100.00
		Mbrojtja e ullishteve nga miza e ullirit	16,240	204,081,405.50
B	Mbarësimi i blegtorisë, bletarisë dhe akvakulturës	Dele/dhi të matrualluara	3,235	489,212,400.00
		Lopë regjim gjysëm stallor të matrualluara	192	21,042,500.00
		Mbështetja e Akvakulturës ushqim dhe rasat	10	2,935,000.00
		Bletaria	568	57,513,000.00
C	Furnizimi i qën drueshëm i tregut dhe rrëzja e të ardhurave financiare për familjet e zonave rurale	Dorëzim fruta	57	16,407,890.00
		Dorëzim Perime	215	52,546,382.00
		Mbështetja për Dorëzim Qumështi	236	80,500,000.00
		Mbështetja për Dorëzim Midhje	2	1,430,000.00
TOTALI		21,142	1,028,065,008	

Shënim: Në tabelë nuk është përfshirë Grup/Skema Ç: Investimet.

Referring to the table above, the schemes that have had the highest impact in terms of the number of beneficiaries have been the olive fly protection scheme with 16,240 projects financed, followed by the livestock breeding scheme with 3,235 projects, and then comes the beekeeping scheme with 568 projects. These schemes have also had the greatest interest in applications.

Table 4: Applications and implementation by direct support measures as of 31 December 2018

Nr. Masave	MASAT E PERFITIMIT	Aplikime në total	BUXHETI PËLLIMVITI 2018		BUXHETI PAS AKTIT NORMATIV		Realizimi date 31.12.2018	
			Nr	Vlerë	Nr	Vlerë	Nr	Vlerë
1	Mbjetje e mollës me kultivarë të kërkuar nga tregu	88	81	21,315,000	32	9,168,325	32	9,168,325
2	Mbjetje e qershisë me kultivarë të kërkuar nga tregu	31	27	13,050,000	7	1,140,500	6	931,000
3	Mbjetje arrash me kultivarë të kërkuar nga tregu	149	136	15,660,000	43	11,683,875	43	11,683,875
4	Mbjetje e lajthisë dhe shëgës me kultivarë të kërkuar nga tregu	206	191	67,425,000	70	16,363,888	70	16,363,888
5	Mbjetje gëshenje	18	17	7,830,000	5	453,000	5	453,000
6	Mbjetje e ullinje me ficanë autoktonë	491	479	78,300,000	127	18,471,767	127	18,471,767
7	Plotësimi i numrit të bimëve në ullshet e vjetra/degraduara	12	11	1,513,000	1	90,000	1	90,000
8	Mbjetje e agrumëve me kultivarë të kërkuar nga tregu	51	46	20,880,000	12	3,039,080	12	3,039,080
9	Mbjetje vreshti, me kultivarë për rrush tavolme	120	114	45,240,000	39	9,902,885	40	9,902,885
10	Mbjetje huleshtrydesh në serra	35	33	13,920,000	21	3,648,100	21	3,648,100
11	Mbjetje bimë medicinale dhe aromatike	199	189	11,197,000	92	58,076,390	92	58,076,390
13	Përmirësimin e teknikave të njihtes nëpërmjet instalimit të njihtes me r	1,040	985	5,046,000	321	66,690,360	321	66,690,360
14	Instalimin e sistemit të ngrohjes me biomasë (pelet) në serrat me ngur	76	76	7,308,000	3	5,317,200	3	5,317,200
15	Zëvendësimin e plastmasit termik për serrat dhe/ose ekzistuese	403	395	26,100,000	163	46,046,250	163	46,046,250
16	Prodhimin e bostanoreve në tunelë	180	173	26,100,000	36	5,575,510	36	5,482,200
17	Rrjeta për mbrojtjen e prodhimit nga breshëri në blloqet ekzistuese	15	15	3,915,000	2	7,708,500	2	7,708,500
18	Polenizimin e kulturave perimore në serra me bltë polenizuese	60	60	1,220,000	4	85,750	2	48,965
19	Projekte për sistemet e automatizimit të kontrollit në serra	10	10	4,350,000	-	-	-	-
25	Implementimi dhe certifikimi Global GAP	5	5	6,090,000	2	372,420	1	197,420
26	Për standardet IPS	1	1	2,827,000	1	650,000	1	650,000
27	Fermat organike	49	44	3,480,000	23	3,100,000	23	3,100,000
28	Për implementimin dhe certifikimin për standardin ISO 22000:2005	5	4	1,044,000	1	117,774	1	117,774
30	Për kreutë të lindur të matrikuar	1,679	1,541	243,600,000	2,083	173,360,000	2,083	173,360,000
31	Për enë të certifikuara për transportin e qumështit	16	16	82,215,000	2	200,000	1	50,000
37	Mbështetje për dorëzimin e qumështit lëndë e parë	375	326	87,000,000	284	110,000,000	284	109,111,400
38	Mbështetje për bltarinë	615	592	43,391,000	560	70,888,000	560	70,887,000
41	Mbështetje për pëkat e grumbullimit dhe fermerët	22	20	125,280,000	4	12,000,000	4	11,590,682
42	Mbështetje, në vlerën 20 (njëzet) lekë/kg për acuge dhe sardele	17	12	40,000,000	10	10,311,488	5	10,311,488
43	Për fermerët/subjektet që kultivojnë jo më pak se 5 ha tokë bujqësore	90	86	30,450,000	2	275,000	1	142,500
Totali skema kombëtare		6,058	5,685	1,035,746,000	3,950	644,736,062	3,940	642,405,059

As can be seen, the largest percentage of applications is for smallholder support measures, around 28% of the total number of applications, although not in line with the expectations of this measure in terms of allocated funds, installation of drip irrigation, around 17% of total applications, beekeeping breeding at 10% of applications and planting of indigenous olive trees at 8% of applications. Referring to applications from previous years, there is an increase in the number of applications for organic farms, which indicates that the change in support policies for this measure has been motivating for farmers.

Table 5: Applications and beneficiaries in number and value for (Investments), 2018

Nr. Mbrojtës	MASAT E PËRFORMIMIT	Aplikimeve total	BUXHETI I FILLIM VITI		BUXHETI PAS AKTIV NORMATIV		Realizimi date 31.12.2018	
			Nr	Vlera	Nr	Vlera	Nr	Vlera
12	Ndërtimi i serrave diellore për kultivimin e domates, kastravecit dhe specit	59	31	281,278,106	19	177,299,597	19	171,307,412
20	Ambiente grumbullimi dhe frigoriferike për fruta perime dhe prodhimet peshkore	34	19	353,286,922	15	221,772,962	15	208,268,713
21	Ambiente grumbullimi për fruta dhe perime	9	7	61,324,843	6	59,044,156	6	47,596,556
22	Linja përpunimi/trankimi paqije për fruta – perime, vaj ulliri dhe verë	34	21	268,300,000	15	212,617,773	15	206,791,449
23	Linja selek., paketimi, arb. për fruta, perime dhe bimë medicinale	16	8	35,747,680	4	17,956,940	4	17,771,620
24	Linja për fletimin, tharjen, tymosjen e produkteve peshkore	1	1	3,000,000	-	-	0	0
32	Ndërtimi dhe thertoreve dhe paqijeve	24	12	156,600,000	11	152,654,332	11	123,363,596
33	Ndërtimi dhe pakave të reja të grumbullimit të quajësit dhe paqijeve	5	2	4,464,960	1	3,000,000	1	3,000,000
34	Ndërtimi dhe ambienteve për mbledhjen dhe kashëve dhe trankimi dhe paqije	31	12	191,696,373	12	148,747,453	12	129,563,885
35	Sisteme ftohëse të quajësit për pakat e grumbullimit	1	0	-				
36	Përmirësimi të infrastrukturës së tregjeve të kashëve	1	0	-				
39	Mbështetje të anijeve të peshkimit dhe/ose OMP	1	1	15,555,000	1	5,000,000	0	0
40	Mbështetje deri në 70% të vlerës për instalimin e bankinave hidroese	0	0	-	-	-	0	0
44	Mbështetje për ngrijen ose rikonstruksionin të turizmit rural	19	8	14,286,000	4	5,836,286	4	5,611,494
45	Mbështetje për investime në agroturizimin	57	19	186,800,000	13	115,862,879	13	75,332,861
46	Konstruksion ambientesh prod. tradicionale	0	0	-				
47	Makineri dhe paqije për prod. tradicionale	0	0	-				
48	Marketing për produktet tradicionale	1	0	-				
49	Start up në zhvillimin rural	1	0	-				
50	Mbështetje për përmirësimin e kushteve në stube	12	4	1,400,000	1	200,000	1	200,000
51	Mbështetje për ngrijen e inkubatorëve	4	4	42,550,815	2	17,695,305	2	14,444,771
52	Mbështetje në rrjetin e subjekteve të shitjes me pakicë të produkteve	4	4	8,012,374	2	4,000,000	2	3,663,303
	TOTALI	314	153	1,624,303,073	106	1,141,787,683	105	1,001,916,005

Total applicants 6,370 of these:

- Direct Measures – 6,056 applications; (5,973 + 83 including the base group)
- Investments - 314 applications

Total beneficiaries 4,053 applicants of these:

- Direct Measures – 3,940 applicants
 - Investments (including 8 interest rate beneficiaries) – 113 applicants
- Total financing of farmers and agro-processors 13.2 million EUR of these:
- Direct Measures 5.1 million EUR
 - Investments 8.1 million EUR

The amount of benefit per applicant has varied depending on the amount of financing.

It is noted that during 2018, support was mainly given to investment measures that have the greatest social and economic impact.

In 2019, for direct support measures, the online application procedure continued, based on the "zero documents" principle, at the time of application. For the seven direct support measures there was a total number of 7553 applications, of which:

- 2,258 applications or 29% constitute applications for Measure 1, Registered basic herd,
- 3,157 applications or 41% constitute applications for Measure 2. Delivery of milk production for cattle/small animals,
- 934 applications or 12% constitute applications for Measure 3: Beekeeping,
- 4 applications or 0.05 constitute applications for Measure 4. Support for fishing vessels with Albanian flag for anchovies and/or sardines caught,
- 671 applications or 9% constitute applications for Measure 5. For planting new olive groves,
- 23 applications or 0.31% constitute applications for Measure 5.1 For old/degraded olive groves.
- 486 applications or 6% are applications for Measure 13. For the improvement of irrigation techniques through the installation of drip irrigation in olive groves.
- Total beneficiaries for 2019 of the support schemes are 1800 beneficiaries

It turns out that direct support measures for the Agriculture sector have been increasing from 2016 to 2017, but in 2018 a downward trend is observed in direct measures in terms of the number of projects, but not the value of financing. Meanwhile, as for investments, we see an upward trend in both the number of projects financed and the value of financing.

Selection of variables and analysis of the multiple model

To deepen the analysis, we created an economic model with two independent variables. For this, we focused mainly on the value financed by subsidies, financed projects and the cultivated area per hectare that benefited from subsidies for three subsidy schemes such as olive, walnut and vineyard/orchard subsidies in the period 2007-2018.

The two independent variables are financed projects and the financed value and the dependent variable is the cultivated area.

The purpose of this analysis is to understand if the subsidy and the number of projects financed have affected the cultivated area for several schemes, mainly for the olive, walnut and vineyard/orchard schemes. We focused mainly on these 3 schemes since the data were available, but also because they are three of the schemes that benefit the most from subsidies.

Multiple regression model

Table 6: Multiple regression model testing

Dependent Variable: SIPERFAQE				
Method: Least Squares				
Date: 07/01/20 Time: 23:21				
Sample: 2007 2018				
Included observations: 12				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	339.1545	363.1415	0.933946	0.3747
PROJEKTE_TE_FINANCUARA	0.639200	0.082990	7.702106	0.0000
VLERA_FINANCUAR	-9.12E-08	2.86E-07	-0.318921	0.7571
R-squared	0.873177	Mean dependent var		1224.500
Adjusted R-squared	0.844995	S.D. dependent var		1073.770
S.E. of regression	422.7512	Akaike info criterion		15.14376
Sum squared resid	1608467.	Schwarz criterion		15.26499
Log likelihood	-87.86258	Hannan-Quinn criter.		15.09888
F-statistic	30.98263	Durbin-Watson stat		0.974253
Prob(F-statistic)	0.000092			

Source: Processed in E views 11

Estimation Command:

LS SURFACE C PROJECTS_FUNDED_VALUES_FUNDED

Estimation Equation:

SURFACE = C(1) + C(2)*PROJECTS_FUNDED + C(3)*VALUES_FUNDED

Substituted Coefficients:

SURFACE = 339.154549007 + 0.639200222516*PROJECTS_FUNDED - 9.121*VALUES_FUNDED

Interpretation:

According to the given model we see that the variable projects financed has a positive relationship with the cultivated surface area. So that with the increase in the number of projects that are subsidized we have an increase in the cultivated surface area. The opposite happens with the other independent variable where it is seen that the financed value does not positively affect the increase in the cultivated area. Also, if the projects and subsidies were zero, the cultivated area would increase by 339.15 units as farmers would use other private initiatives such as microcredit to increase the cultivated area.

The corrected R^2 is 0.84, so 84% of the variation in the cultivated area is explained by the number of subsidized projects and the value financed by the subsidies.

We test the global significance of the model using Fisher.

Hypotheses:

$H_0 : \beta_1 = \beta_2 = 0$. (Model not significant.)

H_a : At least one $\neq 0$. (Model significant.)

We see that the observed Fisher is $F_v = 30.98 > F_k = 5$. This means H_0 is rejected. The model is statistically significant.

Testing the significance of partial coefficients

Significance of partial coefficient β_1 (funded projects)

Hypotheses:

$H_0 : \beta_1 = 0$ (The coefficient is statistically insignificant)

$H_a : \beta_1 \neq 0$ (The coefficient is statistically significant)

H_0 is rejected if:

♣ $|t_v| = 7.7 > |t_k| = 2 \rightarrow H_0 \downarrow \rightarrow$ Significant coefficient

♣ $p < 0.05 \rightarrow p = 0.00 < 0.05$ Same as above

So $H_0 \downarrow$ means that the partial coefficient β_1 (funded projects) is statistically significant.

Significance of the partial coefficient β_2 (funded value)

$H_0 : \beta_2 = 0$ (The coefficient is statistically insignificant.)

$H_a : \beta_2 \neq 0$ (The coefficient is statistically significant.)

H_0 falls short if:

♣ $|t_v| = 0.3 < |t_k| = 2 \rightarrow H_0 \downarrow \rightarrow$ Non-significant coefficient

♣ $p < 0.05 \rightarrow p = 0.75 < 0.05$ Same as above

So H_0 does not fall below means that the partial coefficient β_2 (financed value) is statistically insignificant. The fact that the financed value is an insignificant coefficient is explained by the fact that the cultivated area is more influenced by other factors such as private initiative of farmers through microcredits or financing from remittances of family members living abroad.

RAMSEY Test

Hypotheses:

H_0 : Linear form is appropriate

H_a : Linear form is not appropriate

Table 7: Ramsey Reset Test

Equation: EQ01
Omitted Variables: Squares of fitted values
Specification: SIPERFAQE C PROJEKTE_TE_FINANCUARA
VLERA_FINANCUAR

	Value	df	Probability
t-statistic	4.219046	8	0.0029
F-statistic	17.80035	(1, 8)	0.0029
Likelihood ratio	14.05136	1	0.0002

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	1109725.	1	1109725.
Restricted SSR	1608467.	9	178718.6
Unrestricted SSR	498742.9	8	62342.86

LR test summary:

	Value
Restricted LogL	-87.86258
Unrestricted LogL	-80.83690

Unrestricted Test Equation:
Dependent Variable: SIPERFAQE
Method: Least Squares
Date: 07/01/20 Time: 23:32
Sample: 2007 2018
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.29633	231.9359	-0.143558	0.8894
PROJEKTE_TE_FINANCUARA	1.409366	0.189011	7.456521	0.0001
VLERA_FINANCUAR	4.04E-08	1.72E-07	0.235045	0.8201
FITTED^2	-0.000390	9.25E-05	-4.219046	0.0029

R-squared	0.960676	Mean dependent var	1224.500
Adjusted R-squared	0.945929	S.D. dependent var	1073.770
S.E. of regression	249.6855	Akaike info criterion	14.13948
Sum squared resid	498742.9	Schwarz criterion	14.30112
Log likelihood	-80.83690	Hannan-Quinn criter.	14.07964
F-statistic	65.14550	Durbin-Watson stat	1.662271
Prob(F-statistic)	0.000006		

$H_0 \downarrow mqs |Fv|=17.8 > |Fk|$, so the linear form is not appropriate

Causality test (granger causality)

Granger test is used in cases when we do not know for sure who should be used as the dependent variable. In our case, the model comes out very good, statistically significant and the value of the coefficient of determination comes out high. So we should not have doubts about who could be the dependent variable, however, for illustration we are presenting two cases.

In this case the hypotheses are:

H_0 = SURFACE does not cause a granger effect on FINANCED_PROJECTS

H_a = SURFACE causes a granger effect on FINANCED_PROJECTS

We see that the value of $F_v = 2.4 < F_{kr}=5$, and $p=0.0.18 > 0.05$ \diamond The base hypothesis holds. PROJECTS_FINANCED causes a Granger effect on SURFACE (so the cultivated surface depends on financed projects and not vice versa).

In this case the hypotheses are:

H_0 = SURFACE does not cause a Granger effect on VALUE_FINANCED

H_a = SURFACE causes a Granger effect on VALUE_FINANCED

Table 8: Pairwise Granger Causality Test

Date: 07/01/20 Time: 23:34

Sample: 2007 2018

Lags: 2

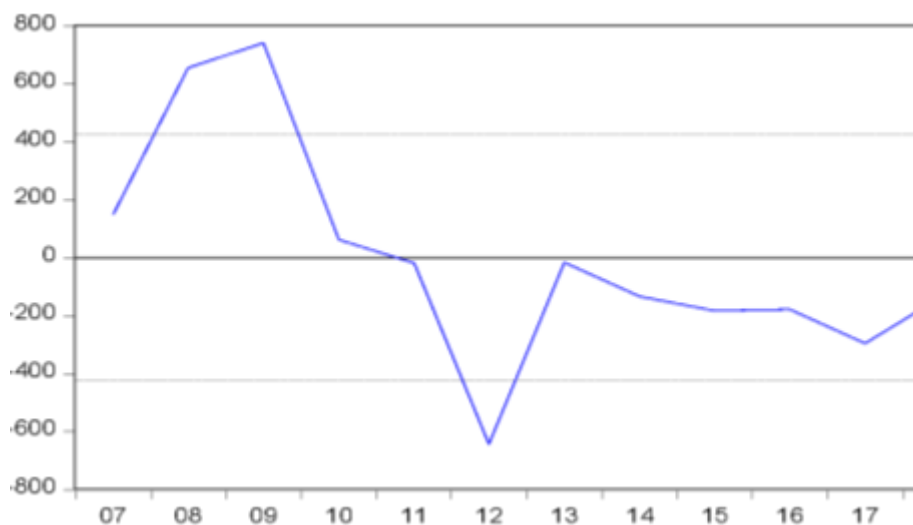
Null Hypothesis:	Obs	F-Statistic	Prob.
PROJEKTE_TE_FINANCUARA does not Granger Cause SIPERFAQE	10	1.87687	0.2466
SIPERFAQE does not Granger Cause PROJEKTE_TE_FINANCUARA		2.40735	0.1852

We see that the value of $F_v = 2.2 < F_{kr}=5$, and $p=0.0.20 > 0.05$ \diamond The base hypothesis holds. VALUE_FINANCED causes a Granger effect on SURFACE (so the cultivated area depends on the financed value and not vice versa).

Autocorrelation

Autocorrelation indicates the relationship between the terms of a time series and is a typical problem of models that are built primarily on time series.

Figure 7: Autocorrelation Test



Based on the tests performed, we result in a statistically significant model and one of the coefficients resulted in significant (financed projects). The Fisher test resulted in good results, as did the Student test. The relationship that exists between them is:

- As the number of projects increases, the cultivated area for the 3 schemes such as olives, walnuts and vineyards/orchards in the country also increases.
- The financed value (subsidy) is not a significant coefficient and its increase does not have any impact on the increase in the cultivated area.
- We present the Granger test (causality test) between the cultivated area and the two independent variables and the result was as expected. So the variables “financed projects” and “financed value” cause an effect on the variable “cultivated area”, but not vice versa.
- Regarding the basic assumptions of OLS, we have reached the conclusions that the residuals have a normal distribution.
- The model does not suffer from heteroscedasticity and autocorrelation. This is from the conclusions we reached with the Glaeser and BG test
- According to the Ramsey test, the model is not linear.

CONCLUSIONS AND RECOMMENDATIONS

1. The agricultural sector is the main source of employment and income in rural areas, contributing 21% to GDP and representing 43.3% of the total workforce. It is recommended that a higher budget be planned for the agricultural sector by the government.

2. The Albanian government provides support to various agricultural sub-sectors through various schemes. It is recommended that agricultural support measures also focus on the implementation of EU standards, enabling the competitiveness of Albanian agro-processors to increase in EU markets.

3. This study is going to be a reference for measuring the impact of GDP in other research papers, for upcoming years related to agriculture support for Budgetary Subsidies.

4. Based on the tests performed, we result in a statistically significant model and one of the coefficients was significant (financed projects). Fisher's test was good, as was the Student's test. The relationship between them is:

- The number of projects increases, the cultivated area also increases for the 3 schemes such as olives, walnuts and vineyards/orchards in the country.
- The financed value (subsidy) is not a significant coefficient and its increase does not have any impact on the increase in the cultivated area.

- We present the Granger test (causality test) between the cultivated area and the two independent variables and the result was as expected. So that the variables "financed projects" and "financed value" cause an effect on the variable "cultivated area", but not vice versa.
- Regarding the basic assumptions of OLS, we have reached the conclusions that the residuals have a normal distribution.
- The model does not suffer from heteroscedasticity and autocorrelation. This is from the conclusions we reached with the Glaser and BG test
- According to the Ramsey test, the model is not linear.

It is recommended that the model be reevaluated and brought to a more appropriate form either by removing one of the independent variables, Value Financed, and replacing it with another more appropriate variable, such as lending, or using another lin-log form.

It is recommended for Policy Adjustments: Allocate higher budgets to agriculture and prioritize subsidy schemes that directly impact productivity and market integration. Focus on EU Standards: Enhance compliance with EU safety and quality standards to improve the competitiveness of Albanian agro-processors in European markets.

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