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THE IMPACT ON PRODUCTIVITY OF AGRICULTURAL INPUTS EXEMPTED FROM VAT IN ALBANIA

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Abstract. *Agriculture is one of the main sectors and the most important contributors to the Albanian economy, holding a significant weight both in the Gross Domestic Product (GDP) as well as in the labor market, where compared to the countries of the region, it has the highest employment level. Although, it is a sector with a high rate of informality, in recent years the Albanian government has intervened several times in support of agriculture through various fiscal policies such as changing the compensation rate for farmers, subsidies in agriculture, or exempting agricultural inputs from VAT. In this paper, we will refer to the analysis of the VAT exemption of agricultural inputs, where in Albania the trade of these inputs, according to some legal amendments, was considered a supply exempt from VAT from 2019 until the end of 2021. The purpose of the exemptions is directly related to increasing investments in agriculture, increasing farmers' incomes, reducing the production costs for agricultural products, and their competitiveness in the market. Furthermore, we will analyze how the exemption of agricultural inputs from VAT for the period 2019-2021 affected, compared to the previous period where the standard VAT rate of 20% was applied or the current reduced rate of 10%, whether their exemption from VAT has been effective for the farmers, and how it has influenced the price, production cost, and productivity of agricultural products during these years. In this study we will analyze how the exclusion of agricultural inputs from VAT has affected, whether it has been effective for farmers, how it has influenced the price, production cost, and productivity of agricultural products in recent years.*

Keywords*: agriculture, agricultural producer, exempt rate*

INTRODUCTION

Apart from being a vital sector in the Albanian economy, which is directly or indirectly related to the biological survival of the population, agriculture is also one of the main components of the Albanian economy, contributing about 20% to the Gross Domestic Product (GDP) (AIDA, 2021), as well as about 31% of total employment (ILOSTAT, 2026).

Essentially, agriculture has been considered one of the most difficult sectors to tax (RAJARAMAN, 2004 and CRICLIVAIA, 2016), due to the high level of informality and the lack of accounting data or records. Thanks to the national strategy for agricultural development, the Albanian government has undertaken a series of supportive initiatives through fiscal policies such as changing the compensation rate for farmers, various grants, and changing the VAT rate for agricultural inputs, including seeds, seedlings, or pesticides. Referring to the relevant tax legislation[1], until 2018 the VAT rate for agricultural inputs was the same as the standard VAT rate in the country of 20%.

Furthermore, for the period 2019-2021, these rates changed from the standard 20% rate to the exempt 0% rate with the aim of reducing production costs for farmers or which could use the revenues saved from the tax exemption to meet their other needs. From 2022

[1] Law no 92/2014 "On Value Added Tax in the Republic of Albania" (as amended)

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until now, a reduced VAT rate of 10% has been applied to these agricultural inputs, as presented in the table below:

Table 1

The VAT rate on agricultural inputs over the years

Period	VAT rate
- 2018	20%
2019 - 2021	0%
2022 - 2024	10%

Source: General Directorate of Tax, 2026

In this study, we will analyze the impact of VAT exemption over the period 2019-2022 for agricultural inputs, that is the 0% rate[2], compared to other periods, in which the standard VAT rate of 20% and the reduced rate of 10% were applied, referring to the vegetable sector in Albania.

MATERIAL AND METHODS

About the vegetable sector and taxation in agriculture

According to statistical data from INSTAT, the vegetable sector in Albania has experienced growth over the past 10 years, as shown in the table below:

Table 2

Indicators according to INSTAT for the period 2015-2024

Year (s)	Vegetable production (USD)	Vegetable production (t)	Area of cultivated vegetables (ha)
2024	58,096,687	1,424,404	44,664
2023	56,608,861	1,384,483	43,261
2022	58,039,562	1,357,825	43,599
2021	55,449,827	1,338,218	42,994
2020	54,653,807	1,295,726	42,673
2019	51,939,166	1,258,012	42,500
2018	48,294,362	1,166,283	43,000
2017	46,722,725	1,151,928	42,740
2016	45,103,372	1,129,101	41,893
2015	40,524,515	1,030,000	37,000

Source: FAOSTAT & INSTAT, 2025

In fact, in order to have further development of the sector, we need to focus on agricultural productivity. Productivity is also related to other stimulating factors such as subsidies, fiscal incentives thanks to the exclusion of the tax burden, etc.

Different authors have their own perspectives on the exemption of the VAT rate. According to LATRUFFE (2018), the exemption of inputs can have negative consequences because producers may invest more in the exempted inputs, which would risk reducing agricultural production.

[2] DCM no. 12, date 09.01.2019

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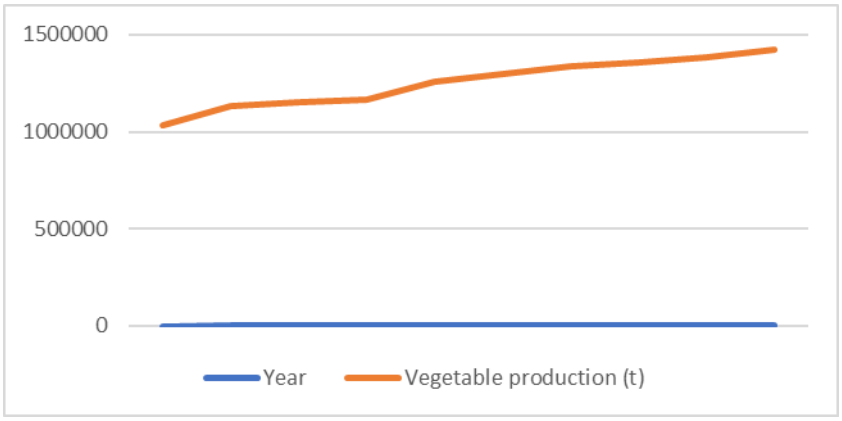

Figure. 1 Vegetable production (t) for the period 2015-2024

Similarly, Boccanfuso et al. (2010) emphasize that indirect tax is related to elasticity and it is more easily transferred to the consumer when supply is elastic and the producer is a price setter.

Another problem is that the excluded inputs can be used by farmers for other purposes (Awotide et al., 2013) by redirecting them to farmers who have less access. Subsidies on chemical fertilizers have a positive impact on food security and yield (Holden, 2013; Sibande et al., 2015). VAT paid on inputs becomes a final cost. The quality of seeds and chemical fertilizers has a positive effect on productivity, but productivity decreases due to the weight of these excluded inputs in intermediate consumption (Diouf. A, 2020).

Also, reduced and exempt VAT rates may further encourage the tax gap, which is related to the lack of revenue in relation to the reduced rates and VAT exemption for goods and services (European Commission, 2018).

Sometimes tax incentives may not be effective in improving agricultural productivity because farmers might overinvest in VAT-exempt inputs, and this would lead to allocative inefficiency (Rizov, Pokrivcak & Ciaian, 2013). Furthermore, farmers who benefit more from the exemptions may reduce their managerial efforts. According to Nivievskyi (2014), the removal of the tax burden has a positive, but weak impact in the short term.

The drawback of exemptions is that excluded or subsidized inputs can be used by farmers for other purposes, where farmers who benefit from these inputs can sell them or part of them to farmers who do not benefit (Awotide, Karimov, Diagne & Nakelse, 2013). In developing countries, direct subsidies for seeds and fertilizers have had disappointing results (Synth, 2008).

According to other authors, a tax burden on this sector would lead to a reduction in the price received by the producer, or an increase in production costs, and consequently would have a negative impact on productivity, while reducing this tax burden would increase productivity in agriculture and would encourage farmers to invest in new technologies[3].

Methods

In this paper, secondary data with a quantitative character have been used. These data were obtained from the Institute of Statistics in Albania (INSTAT), the Ministry of Agriculture

[3] Araujo-Bonjean & Chambas, 2001; Fulginiti & Perrin, 1993; Malan, Berkhout, & Bouma, 2016; Zhong, Turvey, Zhang, & Xu, 2011;Rakotoarisoa ,2011.

and Rural Development, the General Directorate of Taxes, the Food and Agriculture Organization of the United Nations, FAOSTAT, the International Labour Organization (ILO), EUROSTAT, etc.

Additionally, the methodology used also consists of utilizing literature for scientific articles by various authors related to this study, bulletins, journals, as well as various internet research.

Based on the data mentioned above, we have built an econometric regression model. The data were collected in a time series over 15 years, from 2010 to 2024. As an independent variable (Y), we took the vegetable production in monetary value, the data of which we converted into a base-10 logarithm in the model. The dependent variables in the model will be X1 as the index of agricultural input prices, pesticides in percentage, and the other variable X2 as the usage of pesticides in kg/ha for production. Considering a change in the VAT rate during different periods, we used a Dummy variable with the aim of comparing the impact of the exempted 0% rate with the reduced VAT rate of 10% and the standard rate of 20%.

In Dummy with 1 we have identified the exempt VAT rate and the reduced rate, while with 0 we have identified the standard VAT rate according to the respective periods. So, we will obtain such a regression model for interpretation:

$$Y_i = a + b_1 X_{i1} + b_2 X_{i2} + g_1 D_{i1} + g_2 D_{i2} + e_i$$

So, we will look at the effects of changing the independent variables (X1, X2) on the dependent variable (Y) and how statistically significant they are at a 95% confidence level.

The limitations of this paper are that in Albania, data or accounting records kept by farmers are mostly lacking, and the analyzed data were taken at a general macro level.

RESULTS AND DISCUSSIONS

After we processed our data explained above in the Excel program, these regression model parameters appear to us as follows:

Table 3

Model indicators

Regression Statistics	
Multiple R	0.880184
R Square	0.774725
Adjusted R Square	0.684615
Standard Error	0.048358
Observations	15

ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	0.080422	0.020105	8.597531	0.002828
Residual	10	0.023385	0.002339		
Total	14	0.103807			

Source: Author's calculation

According to the above indicators for the data collected over 15 years, the result is $R^2 = 0.774$, which means that approximately 77.4% of the changes in production are explained by the variables included in this model. This indicates that our model is a relatively good model. Adjusted $R^2 = 0.684$ indicates that after adjustment for the number of variables, the model explains about 68.4% of the variation, which is an acceptable value in our study.

On the other hand, an important indicator is also Signif. F = 0.0028. With a 95% confidence level, in this case we have p < 0.05, which shows that the variables together have an impact on production. Therefore, overall the model is statistically significant.

Table 4

Coefficients of the model variables

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 90.0%*	*Upper 90.0%*
Intercept	7.4708	0.1230	60.7358	0.0000	7.1967	7.7449	7.2479	7.6937
Prices Index (X1)	0.0009	0.0009	1.0138	0.3346	-0.0011	0.0030	-0.0007	0.0026
Pesticides use kg /ha (X2)	0.0517	0.1181	0.4381	0.6706	-0.2113	0.3148	-0.1622	0.2657
Dummy (VAT 0%)	0.1315	0.0431	3.0511	0.0122	0.0355	0.2276	0.0534	0.2097
Dummy (VAT 10%)	0.1243	0.0705	1.7638	0.1082	-0.0327	0.2814	-0.0034	0.2521

Source: Author's calculation

Referring to the model parameters, the Intercept is 7.47, which means that when all other variables are 0, then the logarithm of output is around 7.47. Being a constant coefficient, this indicator usually does not have much economic significance.

Regarding the independent variable X1, which relates to the input price index, pesticides expressed in percentage, it results in a coefficient of 0.0009, indicating that an increase of 1 unit in the price index increases the logarithm of output by 0.0009. As seen in percentage terms, the impact of this variable is very small.

On the other hand, we have a p-value = 0.334, which is greater than 0.05, leading us to the conclusion that it is not statistically significant that the change in input prices has affected production.

The other independent variable X2, which relates to the use of pesticides according to the table, has a coefficient of 0.0517, which implies that an increase in pesticide use by 1 kg/ha increases the logarithm of production by about 5.17%. Since the p-value of 0.67 is greater than 0.05, this variable is not statistically significant and we cannot show that the use of pesticides has had a significant impact on production.

To distinguish the impact of the VAT rate change compared to the standard rate, we used the Dummy variable, which, having a p-value of 0.012 < 0.05, is a significant variable. This indicates that for the 0% VAT rate, we have a coefficient of 0.1315 or, converted to a numerical base, 1.35 (10^{0.1315}), which means we have a production about 35% higher compared to production when the standard VAT rate was applied. Therefore, the exemption of VAT for agricultural inputs by reducing production costs has had a positive impact on vegetable production.

On the other hand, the reduced VAT rate for agricultural inputs of 10%, through the coefficient p-value 0.108 < 0.05, is also a statistically significant indicator. This shows that for the 10% VAT rate we have the coefficient 0.1243 or, converted into a numerical base, 1.33 (10^{0.1243}), which means that we have production around 33% higher compared to production when the standard VAT rate was applied. Therefore, the reduced VAT rate for agricultural inputs also had a positive impact on vegetable production.

CONCLUSIONS

Based on this study, which examined the impact of the VAT rate exemption for agricultural inputs according to macro-level data, the results of our econometric model show that the fiscal policy of VAT exemption has positively influenced the increase in vegetable production in Albania.

The price index and the use of pesticides do not have a statistically significant effect. The current reduced VAT rate of 10% has a positive impact on production, although not as statistically strong compared to the exempted rate.

Thus, the greatest impact on the increase in vegetable production comes from the VAT rate exemption, which means that a reduction in the tax burden leads to the encouragement and stimulation of production by agricultural producers.

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