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GOVERNMENT EXPENDITURE ON AGRICULTURE – A EUROPEAN, REGIONAL AND WORLD PERSPECTIVE

Key words: government expenditure, agriculture's contribution to GDP, Agriculture Orientation Index (AOI)

ABSTRACT. The aim of the paper was to present the changes taking place in relation to public expenditure on agriculture, the share of agriculture in creating GDP, and the level of orientation of national economies on agriculture using the Agricultural Orientation Index from a global, SDG regions' and European countries' perspective. The data source was the Food and Agriculture Organization of the United Nations (FAO). The adopted research period covered the years 2003-2017. The research results showed that national governments spent less than 2% of their total expenditure on agriculture. Taking into account an SDG regional groupings' perspective, Central and Southern Asia and Eastern and South-Eastern Asia were two regions allocating the largest part of central government expenditure to the agricultural sector. Among SDG regions, the highest AOI levels were represented by Europe and Northern America. European countries spending relatively the most on agriculture were Belarus, Switzerland and the Republic of Moldova. However, the most agri-oriented countries in Europe were Switzerland, Luxemburg and Finland. Agriculture did not belong to the priority list for national central governments in allocating budgets towards this sector, worldwide. The study should be considered comparative and a challenge for future research.

INTRODUCTION

Agriculture plays a crucial role in the economy and the welfare of its people. Investing in agriculture should be treated as one of the most effective strategies in reducing poverty and hunger, enhancing agricultural productivity and promoting sustainable development [Syed, Miyazako 2013]. The importance of agriculture in the national economy is, in many instances, an aggregation of different developments [Lains, Pinilla 2008]. Public expenditure is a crucial tool of government interventions [Yu et al. 2015]. The role of the government (central or local) in agriculture is significant in each step from the farm to the market [Dastagiri 2019]. Increased government expenditure cannot immediately solve the basic problems of the agricultural sector [Czyżewski, Matuszczak 2014]. There have been numerous studies on the role of government spending economic growth [Mellor 1976, Aschauer 1989, Barro 2007]. Isabelle Tsakok and Bruce Gardner [2007] researched the role of the agricultural sector in economic development. Many studies have also attempted

to link government spending to agricultural growth and poverty reduction [Elias 1985, Fan, Rao 2003, Akroyd, Smith 2007, Fischer et al. 2009]. Douglas Gollin et al., [2002] showed that changes affecting the agricultural sector affect macroeconomic activity. Will Martin and Peter Warr [1990] explain that economic development proceeds a decline of agriculture as a proportion of GDP. However, as the economy is transformed, agriculture can still grow fast in absolute size [Mellor 2008]. The literature on budget trade-offs is mainly focused on the decision of how governments should allocate their budgets, i.e. spending on *guns versus butter* (defense vs. social welfare). However studying budgetary trade-offs to the case of public expenditure on agriculture versus other spending categories is crucial, especially in a developing country context [Mogues 2012, Mogues et al. 2015].

RESEARCH MATERIAL AND METHODS

The subject of the study accounted for dynamics of public expenditure on agriculture, the share of agriculture in creating GDP, and the level of orientation of national economies on agriculture using the Agriculture Orientation Index (AOI) for central government expenditure. The choice of the AOI was dictated by its popularity and reliability. The interpretation and rationale of the AOI are presented in the research results section. The evaluation of the studied phenomena from a regional perspective was made using the SDG regional grouping classification, which divides the world into the following seven regions: Europe and Northern America, Eastern and South-Eastern Asia, Central and Southern Asia, Northern Africa and Western Asia, Sub-Saharan Africa, Latin America and the Caribbean, and Oceania. Due to the size of the topic, the remainder of this study focuses on European countries. The data source was the Food and Agriculture Organization of the United Nations (FAO). The adopted research period covered the years 2003-2017, due to data availability. The analyzed period was divided into three subperiods, i.e. 2003-2007, 2008-2012, 2013-2017. Changes in the economic growth rate, the occurrence of the global economic crisis and food crisis were the reasons for that division. The research results were presented using tabular and graphic methods as well as selected statistical methods. The study should be treated as comparative and considered as a challenge for future research.

RESEARCH RESULTS

Figure 1 shows that on a global scale, slight fluctuations of central government expenditure on agriculture were observed in the analyzed period. From 2003 onwards, national governments spent less than 2% of their total expenditure on agriculture. Between 2003 and 2017 national governments spent, on average, from 1.46 in 2003 to 1.86% of GDP on agriculture, in 2008, during the food price crisis. In case of agriculture's added value share in GDP, an increased trend was observed. The agriculture sector input in GDP grew more than 50% from 2003 to 2017 (a change from 4.04 to 6.15% of GDP). It means that agriculture's contribution to GDP was more than three times bigger than central government spending on agriculture in relation to GDP at the same time.

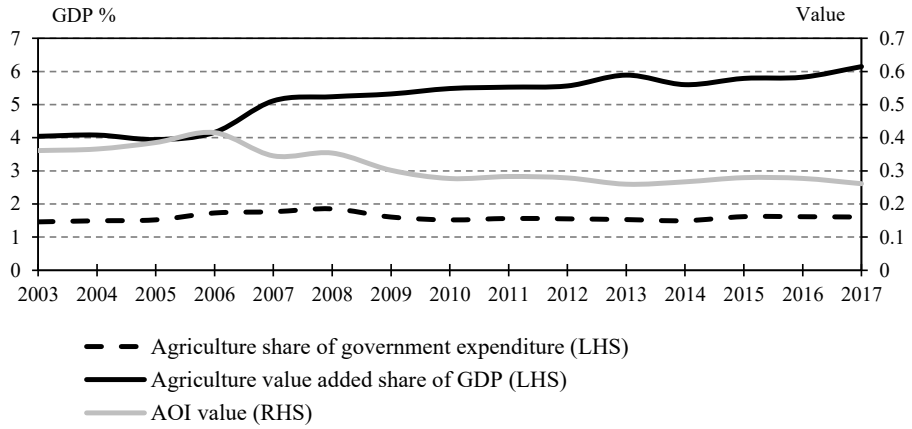

Figure 1. Share of central government expenditure on agriculture, agriculture's contribution to GDP and the AOI – based on world data in 2003-2017

Source: own elaboration based on FAO data

The assessment of the central government towards the agriculture's orientation was effected by The Agriculture Orientation Index (AOI). The AOI for central government expenditure is built by the Food and Agriculture Organization of the United Nations (FAO). The AOI is defined as the share of central government expenditure allocated to agriculture in total central government expenditure, in relation to agriculture value added share of GDP. The AOI compares the central government's contribution to the agricultural sector with the sector's contribution to GDP. Agriculture is referred to as the agriculture, forestry, fishing and hunting sector. The index is a currency-free measure, calculated as a ratio of two above mentioned shares. National governments are requested to compile central government expenditure according to Government Finance Statistics (GFS) and the Classification of the Functions of Government (COFOG). Agriculture value added share of GDP is compiled according to the System of National Accounts (SNA). The AOI indicates political costs and political benefits [Dastagiri 2019]. The rationale for the AOI is as follows. An AOI greater than 1 refers to a higher orientation towards the sector of agriculture, which receives a higher share of government spending relative to its contribution to GDP. An AOI lesser than 1 reflects a lower orientation of the central government towards the sector of agriculture. An AOI equal to 1 indicates neutrality in the central government's orientation to the sector of agriculture [FAO 2018]. The AOI values presented on the right axis of figure 1 show that the central government's orientation towards the agricultural sector fell significantly worldwide. It is worth noting that, on average, national governments were not agriculturally oriented in the whole analyzed period (AOI fell from 0,36 in 2003 to 0,26 in 2017). The presented data are in opposition to United Nations Goal 2 of the 2030 Agenda for Sustainable Development [UN 2015], which is monitored through AOI values.

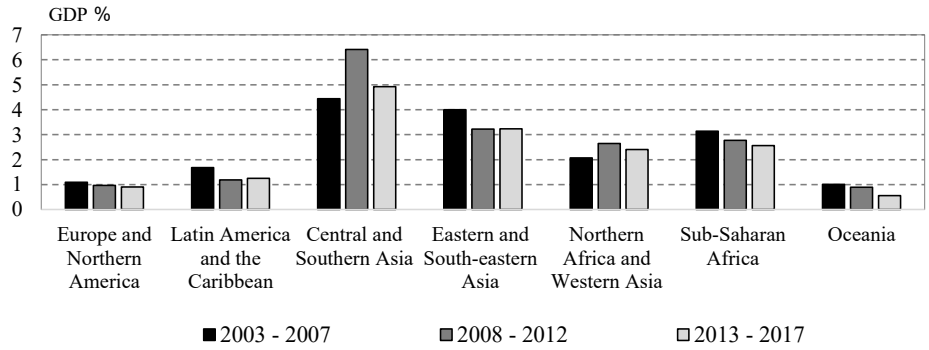

Figure 2. Share of central government expenditure on agriculture – an SDG regional comparison in 2003-2017

Source: own calculations and elaboration based on FAO data

Asian regions represented the highest percentage of central government expenditure on agriculture between the analyzed periods, followed by Africa, where spending on agriculture declined progressively. In the case of Central and Southern Asia, a substantial increase in government spending on agriculture was observed between 2008-2012, which was connected with the food price crisis in that region. The most developed SDG regions, namely Europe and Northern America and Oceania provided the lowest share of central government expenditure on agriculture (less than one percent of total government spending). Moreover, the negative trend was observed in two of the above mentioned SDG regions within three analyzed periods. The presented data correspond to previous studies indicating that, in developing countries, agriculture is critical both for economic development and poverty reduction [Akroyd, Smith 2007, Fan, Rao 2003]. However, decreasing public spending on agriculture in African and Asian countries over the 2013-2017 period presents a trend change, comparing to research of Bingxin Yu et al. [2015].

Figure 3 shows that Central and Southern Asia and Sub-Saharan Africa represented agriculture's highest value added share of GDP (not less than 13.5%) but with a visible agricultural input to GDP decrease in all three subperiods. Although agriculture constitutes a substantial part of the economy and is the largest labour force employer in many developing countries, especially African [Goyal, Nash 2017], this sector only received less than 5 per cent of total expenditure for developing countries from 1980 to 2010, on average [Yu et al. 2015]. The negative trend caused by decreasing relative public spending on agriculture should be treated as threatening, particularly for Africa. As Xinshen Diao et al. [2010] prove, there is little evidence to suggest that African countries can bypass a broad-based agricultural revolution to successfully launch their economic transformations. The most significant negative trend was observed in Latin America and the Caribbean. The agricultural sector in Europe and Northern America and Oceania regions contributed the least in GDP (about 2%).

The central government's orientation towards the agricultural sector fluctuated significantly in SDG regions in analyzed subperiods. The highest AOI levels represented the

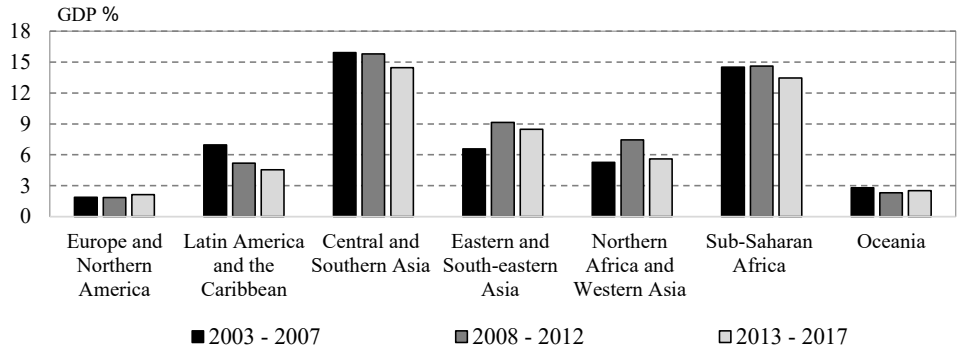

Figure 3. Agriculture's contribution to GDP – based on an SDG regional comparison in 2003-2017
Source: own calculations and elaboration based on FAO data

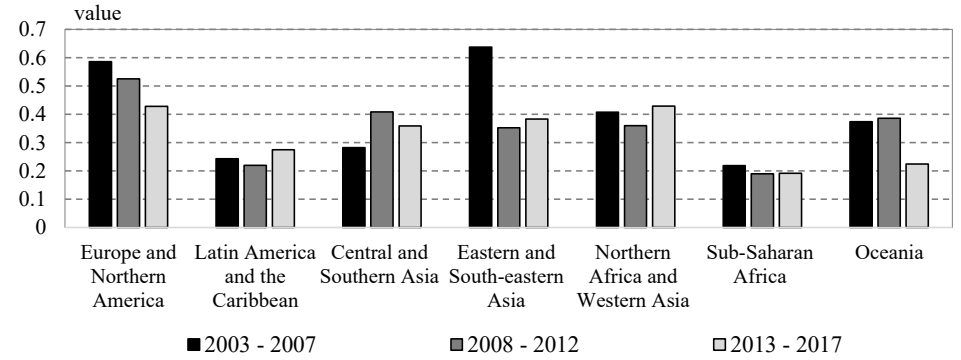

Figure 4. Agriculture Orientation Index for government expenditure – based on an SDG regional comparison in 2003-2017
Source: own calculations and elaboration based on FAO data

region of Europe and Northern America, but the trend was negative. The biggest drop in government's agricultural orientation was associated with Eastern and South-eastern Asia. Data from figure 4 indicate that none of the SDG regions were agriculturally oriented and they failed to meet the 2030 Agenda for Sustainable Development requirements (AOI levels were lesser than one).

Figure 5 shows that national government expenditure on agriculture in European countries (on average) represented a similar level (close to one percent of total spending) and should be considered low in comparison to other above mentioned world regions. Agriculture's contribution to GDP fluctuated slightly in the 2003-2016 period. The last presented year brought a substantial increase (50%) in the agriculture value added share of GDP. That increase was caused by increased agricultural spending, a growth in agricultural production, and a change (more profitable) in production directions. Data on the AOI indicate a decrease in the agricultural orientation of European countries, on average, in 2003-2017.

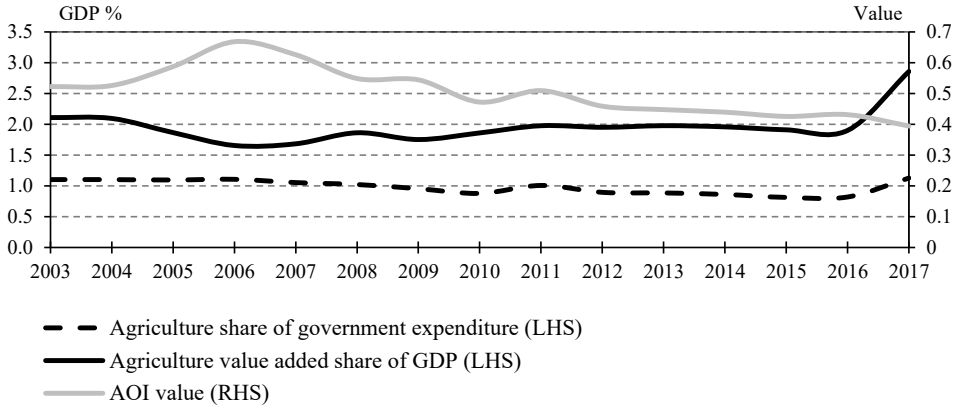

Figure 5. Share of central government expenditure on agriculture, agriculture's contribution to GDP and the AOI – based on European data in 2003-2017

Source: own elaboration based on FAO data

Table 1. Ranking (top and least) of European countries in agricultural spending in 2003-2017

Period	Ranking – highest values		Ranking – lowest values	
	country	value	country	value
2003-2007	Belarus	12.60	Belgium	0.06
	Switzerland	7.05	Greece	0.23
	Finland	5.36	Denmark	0.38
	The Republic of Moldova	5.10	The United Kingdom	0.54
	Lithuania	4.57	Sweden	0.61
2008-2012	Belarus	7.83	Belgium	0.02
	Switzerland	5.87	The United Kingdom	0.35
	The Republic of Moldova	5.46	Greece	0.39
	Latvia	4.58	Denmark	0.43
	Finland	4.53	Spain	0.51
2013-2017	Belarus	6.74	Belgium	0.00
	Switzerland	5.51	The United Kingdom	0.28
	The Republic of Moldova	5.31	Spain	0.29
	Croatia	3.82	Denmark	0.39
	Finland	3.71	Italy	0.43

Source: own calculations based on FAO data

Table 1 shows that regardless of the analysed subperiods, the top European countries spending most on agriculture (in relation to total expenditure) were Belarus, Switzerland and the Republic of Moldova, more than in any European Union member states. One of the causes of this situation is that the above mentioned countries do not belong to any union which provides additional financial support like the Common Agricultural Policy in the European Union. Despite a significant contribution of the central government to agriculture in the three above mentioned countries, a substantial negative trend in the case of Belarus was observable. The right column of table 1 groups European countries which spent the least (less than 0.5%) of total expenditure on agriculture in three analyzed subperiods in 2003-2017. That ranking was led by Belgium, the United Kingdom and Denmark.

Table 2 shows that the agriculture share in GDP for less developed European countries was much greater than for most developed European Union countries. Moreover, the high availability of arable land contributes to the high share of agriculture to its GDP. The study indicates that high-income economies are focused more on the service sector than on agriculture. The right column of figure 2 shows that the agriculture contribution to GDP in those countries is smaller than 1%.

Table 2. Ranking (top and least) of European countries in agricultural contribution to GDP in 2003-2017

Period	Ranking – highest values		Ranking – lowest values	
	country	value	country	value
2003-2007	Albania	21.28	Luxembourg	0.42
	The Republic of Moldova	13.51	The United Kingdom	0.63
	Serbia	10.31	Switzerland	0.87
	Ukraine	8.40	Belgium	0.93
	Belarus	8.29	Ireland	1.17
2008-2012	Albania	18.30	Luxembourg	0.28
	The Republic of Moldova	10.05	The United Kingdom	0.61
	Serbia	8.31	Belgium	0.71
	Belarus	8.13	Switzerland	0.72
	Montenegro	7.76	Ireland	0.83
2013-2017	Albania	19.68	Luxembourg	0.26
	The Republic of Moldova	12.37	The United Kingdom	0.62
	Ukraine	10.05	Belgium	0.67
	Montenegro	8.07	Switzerland	0.68
	Belarus	6.94	Ireland	1.01

Source: own calculations based on FAO data

Table 3. The most and least agri-oriented European countries based on the AOI in 2003-2017

Period	Ranking – highest values		Ranking – lowest values	
	country	value	country	value
2003-2007	Switzerland	8.08	Belgium	0.07
	Luxembourg	3.16	Greece	0.07
	Finland	2.33	Montenegro	0.09
	Ireland	1.69	Albania	0.14
	Norway	1.56	The Russian Federation	0.24
2008-2012	Switzerland	8.10	Belgium	0.03
	Luxembourg	4.75	Montenegro	0.09
	Finland	1.98	Albania	0.11
	Czechia	1.88	Greece	0.13
	Ireland	1.80	Serbia	0.22
2013-2017	Switzerland	8.09	Belgium	0.01
	Luxembourg	3.68	Montenegro	0.07
	Finland	1.55	Spain	0.11
	Czechia	1.45	The Ukraine	0.12
	Croatia	1.24	Albania	0.12

Source: Own calculations based on FAO data

Taking into account the AOI, the most agri-oriented countries in Europe were Switzerland, Luxemburg and Finland. All top five countries in each analyzed subperiod presented AOI values greater than one. The right column of table 3 shows the least agri-oriented European countries. The above mentioned group was led by Belgium.

CONCLUSIONS

The study of changes taking place in relation to public expenditure on agriculture, the share of agriculture in creating GDP, and the level of orientation of national economies on agriculture in the 2003-2017 period lead to the following conclusions.

1. The agriculture share of central government spending fluctuated between 1.46 and 1.86%, worldwide.
2. Central and Southern Asia and Eastern and South-Eastern Asia were two SDG regions allocating a higher percentage of central government expenditure to the agricultural sector.

3. Among SDG regions, the highest AOI levels were represented by Europe and Northern America.
4. European countries which spend relatively most on agriculture were Belarus, Switzerland and the Republic of Moldova.
5. Taking into account the AOI, the most agri-oriented European countries were Switzerland, Luxemburg and Finland.
6. Research showed that, globally, agriculture did not belong to the priority list for national central governments in allocating their budgets towards the agricultural sector.

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WYDATKI RZĄDOWE NA ROLNICTWO – PERSPEKTYWA EUROPEJSKA, REGIONALNA I ŚWIATOWA

Słowa kluczowe: wydatki publiczne, wkład rolnictwa w PKB, wskaźnik orientacji rolniczej (AOI)

ABSTRAKT

Celem artykułu jest zaprezentowanie zmian zachodzących w odniesieniu do wydatków publicznych na rolnictwo, udziału rolnictwa w tworzeniu PKB oraz poziomu zorientowania gospodarek narodowych na rolnictwo. Wykorzystano wskaźnik orientacji rolniczej (AOI) z perspektywy państw Europy, regionów SDG oraz w ujęciu światowym w latach 2003-2017. Źródło danych stanowiły dane FAO. Wyniki badań wykazały, że w ujęciu globalnym rządy krajowe przeciętnie wydawały na rolnictwo mniej niż 2% całkowitych wydatków publicznych. Biorąc pod uwagę perspektywę regionalną, Azja Środkowa i Południowa oraz Azja Wschodnia i Południowo-Wschodnia były dwoma regionami przeznaczającymi największą część wydatków administracji centralnej na sektor rolny. Jednak Europa i Ameryka Północna były najbardziej zorientowanymi rolniczo regionami świata. Spośród państw Europejskich, rządy Białorusi, Szwajcarii i Republiki Mołdowy przeznaczały największą część wydatków publicznych na rolnictwo. Natomiast krajami najbardziej zorientowanymi rolniczo w Europie były Szwajcaria, Luksemburg i Finlandia. Niski poziom indeksu orientacji rolniczej (AOI) wskazuje, że rolnictwo nie stanowiło jednego z priorytetowych sektorów gospodarki. Przeprowadzone badanie ma charakter porównawczy i stanowi przyczynek przyszłych badań.

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