DOI: 10.52335/dvqigjykff48

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Expenditure of Poland's Agricultural Budgets in the Context of Selected Macroeconomic Relations

1. Introduction: justifications for interventionism in the agricultural sector

Public spending on agriculture is an element of state interventionism in this sector. Interventionism instruments can be divided into two groups: market-type tools (regulating supply and influencing demand intervention prices) and non-market-type tools (direct and indirect subsidies and structural policy instruments) (Wigier and Chmurzyńska 2011; Matuszczak 2020). In the European Union, a gradual redirection of state intervention to non-market tracks has been observed since the 1992 in MacSharry reform. This direction has been deepened by the successive reforms of the Common Agricultural Policy (CAP). Agenda 2000 further reduced the guaranteed (intervention) prices in exchange for an increase in direct payments. In turn, the provisions of the 2003 CAP reform from Luxembourg went far beyond the previous measures. A system of decoupled payments was introduced. These reforms successfully improved the market balance and increased agricultural income, but they did not fully solve the problem of disparities in agricultural income. A still unresolved problem is the instability of agricultural income (Severini, Tommaso, Finger 2019) and the persistently large disparities in farmers' income between EU countries (Kryszak 2020). Moreover, intra-sectoral income inequalities between different farm groups are increasing in many EU countries, including Poland (Mishra, El-Osta, Gillespie

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2009; Kata and Wosiek 2020). Interventionism in agriculture implemented by means of different instruments, yet essentially based on budget expenditure (more broadly, financial transfers to agriculture), can be considered universal, as solutions introduced in different parts of the world, especially in highly economically developed countries (EU, USA, Japan, Canada and many others) are standardised (Kułyk 2013).

The justification for state intervention in agriculture and thus for public spending in agriculture is the allocative and redistributive dysfunctions of the market mechanism and the need to correct them. Governments of highly developed countries are fighting against the deep income disparity of farmers relative to other social/professional groups, the instability of agricultural income, the low profitability of assets involved in agricultural production, or the unstable and rising food prices for consumers (Hopkins and Taylor 2001; Matuszczak 2020). These issues, in addition to maintaining food security, ensuring agricultural competitiveness and efficiency and preserving and supporting farms, have also framed the main objectives of the Common Agricultural Policy in recent decades.

For several years, there has been a lively public debate on further changes (modifications) to the CAP, starting with the next programming period 2021–2027 (EC 2018). The necessity to modify the CAP stems from the changes that are taking place in agriculture, especially in the environment, as well as the resulting changes in the function of agriculture in the modern world. These phenomena are part of a broadly defined agrarian issue (or rather its evolution), understood as problems which are generated by the agricultural sector in the economy and which are felt at various levels by the whole economy, society and the natural environment (Wilkin 1986; McMichael 1997; Adamowicz 2008; Czyżewski and Matuszczak 2011; Bernstein 2011; Zegar 2019). They concern such issues as the disparity of agricultural income, which results e.g. from the drain of economic surplus, the high dependence of the agricultural sector on the other links (i.e. on the input sector for agriculture and on processing), ensuring food security, higher-than-average unemployment in rural areas, social exclusion, worse access to basic services, ageing of the rural population, disappearance of farmers as a separate social group, threat to the vitality of rural areas, loss of biodiversity, soil pollution and erosion, limited water resources, food security, increased volatility of agricultural prices, and increased risk of agricultural production due to climate change (Guthman 2004; Wilkin 2007; Yu, You, Fan 2009; Tarnowska 2010; FAO 2011; Ploeg 2012; Jakubowska 2016; Wasilewska 2017; Cosgrove and Rijsberman 2014; Krysztofiak and Pawlak 2017; Wąs and Kobus 2018; Matuszczak 2020). Climate change and environmental challenges have prompted the EU to make new ambitious international commitments to environmental and climate protection, included, in particular, in the European Green Deal strategy (EC 2019). According to the European Commission, farmers have an important role to play in combating climate change, protecting the environment and preserving biodiversity, and the CAP will remain a key

tool in supporting these efforts, while ensuring a decent living for farmers and their families. The objectives of the CAP are reflected in budgetary spending on agriculture (EU and national).

The concept of state intervention under the conditions of market economy is based on the assumption about the inefficiency of the market mechanism and the need for its correction. The reasons and consequences of this inefficiency in agriculture are widely described in the literature (see e.g. Acoccela 2002; Wilkin 2003; Zegar 2008, 2018; Czyżewski 2009). In general, inefficiencies of the market mechanism lead to inefficient allocation of resources in agriculture, low factor efficiency in this sector, high risk of agricultural production, and uncertainty of its effects, and depreciation of farmers' income resulting e.g. from the fact that the market mechanism does not value or provide farmers with payments for co-production of public goods and positive externalities (Mancur 1971; Brunstad et al. 1995, 2005; Baldock 2009). In addition, there is a paradox of development, according to which the level of support for agriculture increases with socioeconomic development (Czyżewski and Kułyk 2014). This is most often due to two issues, namely compensation for the previous outflow of some of the economic surplus from agriculture and payment for the society benefiting from positive externalities and public goods associated with agricultural activities (Matuszczak 2020). However, it should be underlined that the latest OECD data (2021) indicate that comparing the recent years (2018–2020) with the early 2000s (2000–2002), one can see a decline in the level of agricultural support (measured by the PSE indicator)[1] for all developed countries (OECD countries), from 28.4% to 18.2%. However, the support for agriculture in the group of the so-called emerging economies[2] increases, from 3.8% to 7.4% (OECD 2021). Also the systematic decrease of the share of CAP in total expenditure of the European Union budget proves that in developed countries the level of support for agriculture is decreasing. This may indicate that expenditure on support for agriculture (agricultural producers) increases along with the growth and economic development of a given country, but only up to a certain level of this development, after which it stabilizes. With the constantly growing GDP and with the increase in farmers' income obtained on the market, it means relatively lower support for agriculture both in the macroeconomic (in relation to GDP) and microeconomic (measured by the PSE indicator) terms.

It should be mentioned that in the literature we also find a different approach to interventionism and protectionism in agriculture, which is based on the claim that the low effectiveness of structures in this sector is caused by the limitation or even lack of market mechanism. According to some authors (Kowalski and

[1] PSE (Producer Support Estimate) - an indicator of agricultural producer support determining the value of annual cash transfers from consumers and taxpayers flowing to farmers. The PSE indicator presents the share of agricultural producer income obtained as a result of different support mechanisms in relation to the value of agricultural production determined in domestic producer prices (Kułyk 2013).

[2] The OECD counts 12 countries as emerging economies: Argentina, Brazil, China, Costa Rica, India, Indonesia, Kazakhstan, the Philippines, Russia, South Africa, Ukraine, and Vietnam.

Rembisz 2005; Rembisz 2010), such a profound interference in the market mechanism through the EU agricultural policy not only perpetuates low efficiency of agriculture, but also causes unreliable resource allocation in agriculture and impedes cost rationalisation. A partial verification of these views was the crisis on the global food market between 2008 and 2014 (expressed by a surge of food prices)[3], which, to some extent, resulted from the global financial crisis (capital flight from the financial market to the food market and increase in speculative food prices) and unfavourable weather conditions in many regions of the world. Similarly, the economic crisis caused by the COVID-19 pandemic and disruption of many supply chains in the global food trade may contribute to greater acceptance of interventionism and protectionism in agriculture in order to ensure food security for countries and regions of the world. Undoubtedly, an important factor in modifying approaches to state interventionism in agriculture is climate change, which entails increased volatility and unpredictability of agricultural production. This creates new risks connected with agricultural production, which have their consequences not only for agricultural producers, but also for consumers and the whole society as recipients of environmental goods.

It seems that today, after the experience of the economic crises and the deepening ecological and climatic problems on the global and regional scale, it is no longer a matter of dispute whether to support agriculture through the budgetary mechanism (public expenses). The open question is, however, where are the possible limits of state intervention in the market mechanism in agriculture, and what agricultural policy objectives should be pursued and with what instruments so that agriculture becomes an important element of sustainable development and fulfils its functions effectively.

Without going deeper into the issue of the reasons and effects of state interventionism in agriculture, it is worth examining the level, dynamics and breakdown of budget expenditure on agriculture, as well as the determinants of this expenditure. Such research may shed light on different objectives of the fiscal policy towards agriculture, which is an element of agricultural policy (in the area of the instruments of state interventionism). A long-term analysis of budget expenditure on agriculture, compared with the dynamics of the gross domestic product (GDP) or the total expenditure of the state budget, can be particularly interesting as it can show long-term or permanent trends in the fiscal policy on agriculture and objectify the assessment of these trends.

The subject of this article is the analysis of long-term budget spending on agriculture in Poland, i.e. between 1995 and 2020, in the context of its growth, proportions and trends. The above figures will then be related to GDP dynamics and state budget expenditure dynamics. This analysis will serve to answer the following question: Are the changes in Poland's agricultural budget expenditure proportionate to the changes in GDP and total state budget spending?

[3] It is indicated by the FAO Food Price Index (FFPI). A similar "jump" in food prices took place on the global market from Q4 2020 to mid-2021 (FAO 2021).

The answer to this question will allow us to verify the following hypotheses:

- H1 – agriculture in Poland over the past quarter century (1995–2020) has enjoyed the fruits of economic growth in a balanced way, i.e. in proportion to the GDP growth rate;
- H2 – total expenditure on agriculture from 1995 to 2020 grew more slowly than state budget expenditure in the pre-accession period, while after Poland's accession to the EU, the growth of the expenditure on agriculture was higher than the growth of state budget expenditure.

In this article, we understand state budget expenditure as national budget expenditure together with the budgets of voivodes. On the other hand, by expenditure of the agricultural budget of Poland, also referred to interchangeably in the article as the total agricultural budget, we understand all public spending directed directly or indirectly to agriculture. In reference to the agricultural budget of Poland, the analysis covers only expenditure, whereas intentionally budget revenues in sections related to the agricultural sector were omitted. Thus, the agricultural budget expenditure of Poland consists of:

1. Expenditure from the national budget allocated to agriculture, rural development and agricultural markets, together with the budgets of voivodes and specific reserves and expenses planned in other parts of the budget and allocated to the agricultural sector. This expenditure will also be referred to as "the national agricultural budget" or as "national expenditure on agriculture".
2. Expenditure from European funds on agriculture and rural areas under the instruments of the first and second pillars of the CAP. Until 2009, this expenditure was institutionally allocated to the national budget, while from 2010 onwards, it has been included in the European Resources Budget (EBR).

The main research period covers the years 1995–2020 and the analysis includes both the growth rate based on single years (base year 1995) and from year to year. Such a long period (a quarter of a century) allowed us to examine the long-term trends in the development of the studied quantities (agricultural budget expenditure, state budget expenditure, and GDP), to analyse the trends and identify the trend's functions, and to search relations between the studied quantities.

2. Sources of empirical materials and research methodology

The sources of empirical materials on the agricultural budget expenditure in Poland were primarily the data from the Ministry of Agriculture and Rural Development (formerly the Ministry of Agriculture and Food Economy) in the form of annual information on the draft state budget and the budget of European funds in the fields of agriculture, rural development and agricultural markets, as well as annual opinions (expert opinions) on the budget law regarding agriculture, prepared by Professor A. Czyżewski for the Sejm Office of Analyses in the Chancellery of the Senate of the Republic of Poland (until 2016) and, in some years, for the Sejm

Committee on Agriculture and Rural Development.[4] In addition, the sources were the CSO data on GDP and inflation and farm household income, available in the form of annual macroeconomic indicators (from 1995 to 2020), agricultural statistical yearbooks from 2007 to 2020, household budgets (from 2016 to 2019) and information on the situation of households according to household budget surveys (from 2003 to 2020). The publications of the Supreme Chamber of Control (NIK) on the implementation of state budgets were also a source of data.

In the analysis of the dynamics and variability of the examined values, we used the total agricultural budget spending and its components, as well as state budget expenditure and GDP, relative and absolute growth rates (constantly and year-on-year), single-base and chain dynamics indices and average rate of change, i.e. the average index, calculated as the geometric mean of the indices year-on-year.

The quantities covered by the study were included and analysed in nominal values (in current prices) and in real values (in constant prices). For this purpose, nominal values were converted (through deflating) by means of the Consumer Price Index (CPI) for individual years from 1995 to 2020. To maintain comparability of the analysed values, the same deflator, i.e. the CPI inflation index, was used for all the time series of the variables (which also concerns GDP).

In order to identify the trends across the studied values, we applied an additive model of development tendency in the form of a linear trend function.

3. Dynamics and structure of the Polish agricultural budget expenditure in 1995–2020

Table 1 presents data on the nominal level (in current prices) and make-up of Poland's agricultural budget expenditure in the past quarter of the century. It can be noticed that in 2004 there was a significant increase in budget spending on agriculture after the UE CAP funds were added to domestic funds (Table 1). Although some European funds (under the SAPARD programme) were being transferred to Polish agriculture already since 2000, the year 2004 was a breakthrough, because farmers received income support in the form of direct payments, LFA payments, agri-environmental payments and others. At the same time, we can observe significant changes in the proportions of the total agricultural budget after agriculture was included in the support programme from the EU funds. Since 2004, European funds have accounted for 20% to over 51% of the total agricultural budget of Poland and have become not only a significant supplement to domestic transfers to agriculture and rural areas, but also partly "relieved" these domestic transfers. This is indicated by the declining share of the national budget, especially when considered without subsidies for the Agricultural Social Insurance Fund (ASIF).

Between 1996 and 2020, the total agricultural budget decreased five times in nominal terms compared to the previous year (in 2009, 2011, 2016–2017, and 2019). In real terms, the agricultural budget exhibited negative growth in seven

[4] Also published in an abridged version in the periodical „Wieś Jutra" (publications in 2003–2017).

Table 1

The level and breakdown of Poland's total agricultural budget expenditure (national and EU funds) from 1995 to 2020 at current prices

Year	Total agricultural budget in PLN million	Including (in PLN million):		Structure of the total agricultural budget (in %)		
		Expenditure on ASIF	EU funds	ASIF	EU funds	National budget without ASIF
1995	8 673.6	6 269.1	–	72.3	–	27.7
Avg. 1996–1999	13 738.0	10 378.5	–	74.9	–	25.1
Avg. 2000–2003	20 396.7	15 392.1	1 165.3	75.6	5.7	18.8
2004	26 700.3	15 607.6	5 352.2	58.5	20.0	21.5
2005	30 241.0	14 538.1	8 808.4	48.1	29.1	22.8
2006	34 166.2	14 968.8	10 927.4	43.8	32.0	24.2
2007	45 470.8	15 152.0	11 814.0	33.3	26.0	40.7
2008	57 207.7	15 771.4	14 928.3	27.6	26.1	46.3
2009	49 055.2	16 558.0	13 205.0	33.8	26.9	39.3
2010	50 687.6	16 187.8	21 092.1	31.9	41.6	26.5
2011	46 773.4	15 811.7	24 007.4	33.8	51.3	14.9
2012	49 777.8	15 906.6	22 300.1	32.0	44.8	23.2
2013	52 504.8	16 490.1	25 029.4	31.4	47.7	20.9
2014	54 237.6	16 698.6	26 716.8	30.8	49.3	20.0
2015	55 240.9	17 565.7	28 561.8	31.8	51.7	16.5
2016	53 760.0	18 238.9	27 117.5	33.9	50.4	15.6
2017	48 414.9	17 924.8	20 803.4	37.0	43.0	20.0
2018	48 739.1	17 936.4	22 008.5	36.8	45.2	18.0
2019	47 467.5	17 700.5	20 588.5	37.3	43.4	19.3
2020	49 533.5	18 943.2	21 140.0	38.2	42.7	19.1

Source: Data of the Ministry of Agriculture and Rural Development on projects and implementation of the state budget and the budget of European funds in the field of agriculture, rural development and agricultural markets from 1996 to 2020.

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years out of the 25 years studied (also in 1997 and 2018 in addition to those mentioned above). The relatively large fluctuations in the agricultural budget may indicate that, in large part, spending on agriculture, agricultural markets, and rural development was used as a buffer to mitigate budget tensions in the economy. This claim is confirmed by the much higher variability of agricultural budget expenditure after excluding "fixed" expenditure on ASIF and expenditure from European funds. Expenditure from EU funds under the first pillar of the CAP was fairly stable, while slightly greater variability was observed in the funds of the so-called second pillar (under successive RDPs: 2004–2006, 2007–2013 and 2014–2020). In general, however, since 2004, European funds have had a significant impact not only on the surge in the volume of public funds allocated to agriculture, but they have also stabilised budget expenditure on agriculture, which, together with these funds, showed much lower variability, compared to expenditure coming only from the national budget with and without ASIF, which will be discussed later.

The importance of European funds for the agricultural budget is evidenced by the fact that, excluding subsidies to ASIF, the expenditure of this budget in 2020 expressed in constant prices was 352.3% higher than in 1995. However, if we excluded European funds and ASIF, national spending on agriculture in 2020 would be higher in real terms by only 37.7% compared to 1995. The average annual growth rate of budget spending on agriculture (without ASIF, but with EU funds) was 6.5% in the period in question, compared to 1.1% in the pre-accession period, and 8.8% between 2004 and 2020. If we take into account expenditure on agriculture only from the national budget without ASIF, it turns out that the national agricultural budget between 1996 and 2003 was shrinking in real terms by 2.7% year to year. Only since 2004, due to the need to partially cover the expenses realised with the use of EU funds with the national budget (e.g. direct payments), did average expenditure of this budget grow, by 3.2% year to year.

In the pre-accession period, between 1995 and 2003, expenditure on agriculture (in constant prices) per ha of UAA (utilised agricultural area) increased by 42% in real terms, while per 1 AWU (annual work unit)[5] it increased by 95.4%. Rapid growth of this expenditure in terms of land and labour resources in agriculture took place in the first years of Poland's membership in the EU, i.e. between 2004 and 2008 (Table 2). In 2008, this expenditure reached the highest level in the whole analysed period. Compared to 1995, it was higher in real terms per 1 ha of UAA by 225.8%, while per 1 AWU, it was higher by 365.5%. This difference results from a faster decrease in labour resources in agriculture compared to the agricultural land resources in the pre-accession period and in the first years of the EU membership. Since 2009, we observe a decrease and then a relative stabilisation of agricultural budget expenditure (from 2010 to 2014). On the other hand, between 2015 and 2019, there was a downward trend in agri-

[5] Full time equivalent of 2 120 hours of work per year. It is assumed that there can be no more than 1 AWU per 1 person.

cultural spending per 1 ha of utilised agricultural area and per full-time employee in the sector (Table 2), which was only slightly offset in 2020. Despite this trend, the level of agricultural spending in the whole post-accession period, including the last years of the examined period, was between 1.5 and 3.5 times higher than in the pre-accession period.

If we look at the share of the agricultural budget together with ASIF in the total state budget spending, we can see that, in the pre-accession period, it amounted to 10.9% on average, showing some annual fluctuations with a slight upward

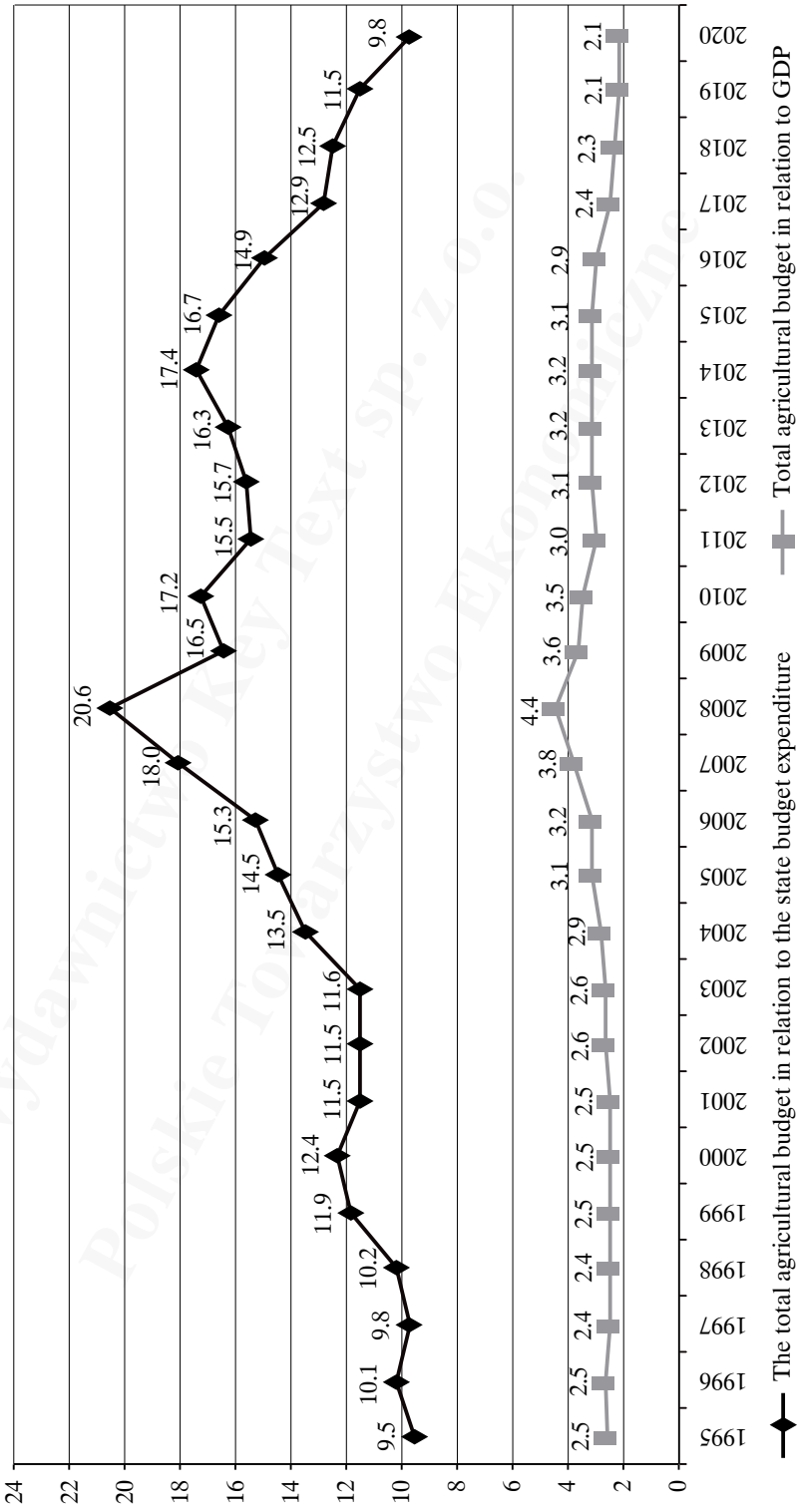
Table 2

Total expenditure of the agricultural budget (in constant prices of 2020) per 1 ha of agricultural land and per full-time employee in agriculture (AWU) in 1995–2020

Year	Agricultural budget expenditure per 1 ha of UAA		Agricultural budget expenditure per AWU	
	PLN	1995 = 100	PLN	1995 = 100
1995	1 360.6	–	7 011.1	–
Avg. 1996–1999	1 494.0	109.8	9 124.7	130.1
Avg 2000–2003	1 747.1	128.4	12 364.8	176.4
2004	2 253.5	165.6	16 114.9	229.8
2005	2 565.9	188.6	17 811.7	254.1
2006	2 863.0	210.4	20 423.4	291.3
2007	3 664.5	269.3	25 786.7	367.8
2008	4 432.8	325.8	32 633.9	465.5
2009	3 679.4	270.4	26 791.6	382.1
2010	3 863.6	284.0	28 426.1	405.4
2011	3 359.6	246.9	27 599.1	393.7
2012	3 483.3	256.0	27 997.9	399.3
2013	3 727.5	274.0	29 876.0	426.1
2014	3 863.2	283.9	31 379.5	447.6
2015	3 973.1	292.0	35 918.2	512.3
2016	3 934.0	289.1	35 166.4	501.6
2017	3 558.9	261.6	31 048.9	442.9
2018	3 514.3	258.3	30 779.3	439.0
2019	3 341.1	245.6	29 390.0	419.2
2020	3 374.2	248.0	29 660.8	423.1

Source: Based on data from Ministry of Agriculture and Rural Development, *Statistical Yearbook of Agriculture and Rural Areas 2007*, *Statistical Yearbook of Agriculture 2008* and subsequent years until 2020, CSO, Warsaw 2008–2021, *Small Statistical Yearbook of Poland 2021*, CSO, Warsaw 2021, and Eurostat data: https://appsso.eurostat.ec.europa.eu.

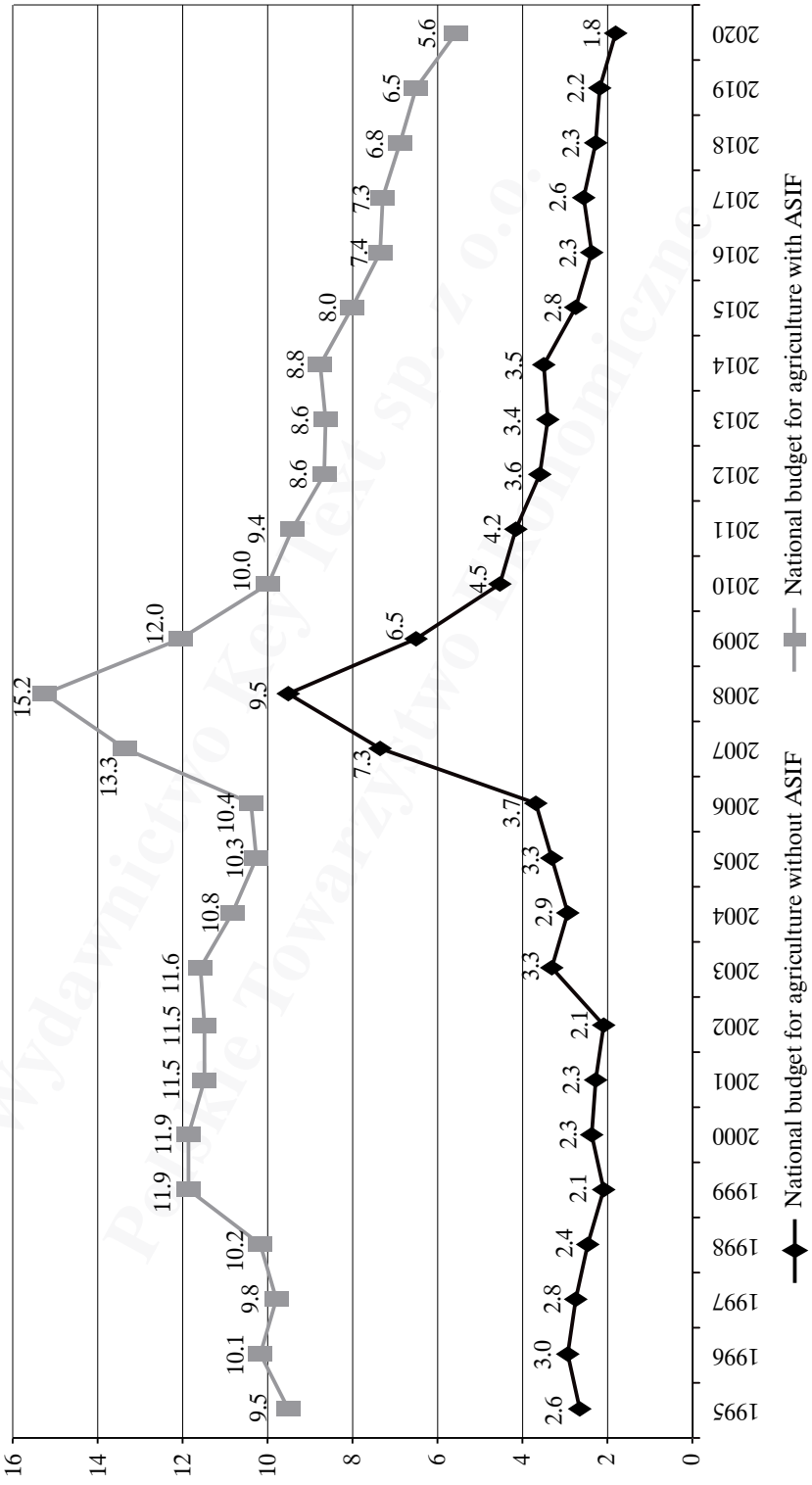
Figure 1
Total agricultural budget expenditure (with ASIF and European funds) relative to the state budget and GDP at current prices between 1995 and 2020 (in %)



Source: as in Table 1 and CSO data: https://stat.gov.pl/wskazniki-makroekonomiczne/ (accessed 07.07.2021).

Figure 2

Share of agricultural expenditure from domestic funds in state budget expenditure from 1995 to 2020 (in %)



Source: as in Table 1.

trend (from 9.5% in 1995 to 11.6% in 2003). Since 2004, we observe a clear increase in the share of agricultural budget expenditure in the state budget expenditure, from 13.5% in 2004, up to 20.6% in 2008. The following year saw a decrease in this ratio and its relative stabilisation at the average of 16.5% between 2009 and 2014 (Figure 1). Since 2015, however, there has been a steady trend towards a decrease in this ratio, from 16.7% in 2015 to 9.8% in 2020. Such a trend means that agriculture is losing its importance in the allocation and redistribution of public funds through the budgetary mechanism.

This discrimination of agriculture in the state fiscal policy is even more evident when we consider domestic spending on agriculture, agricultural markets and rural areas, i.e. without European funds (Figure 2).

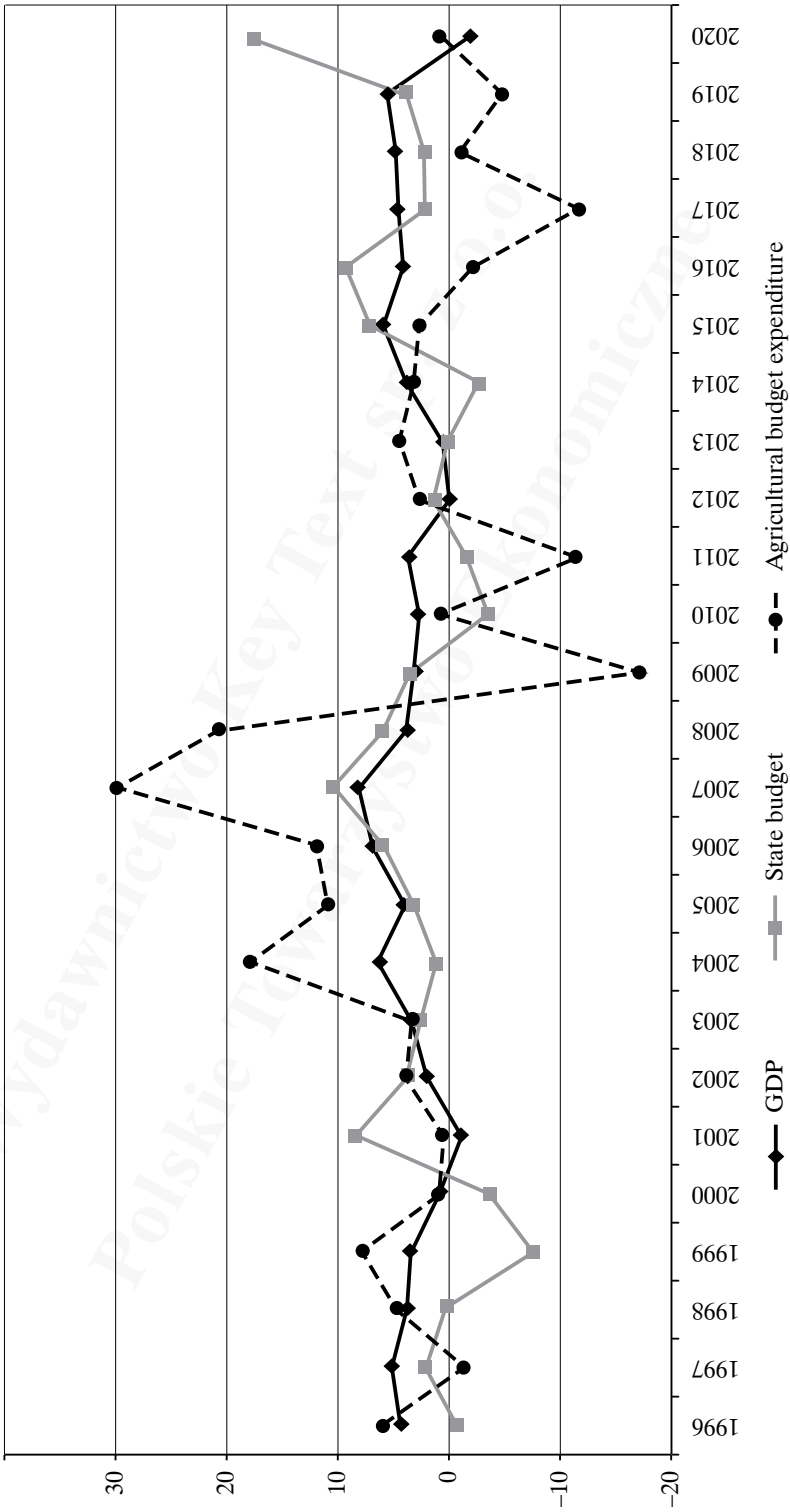
The share of domestic expenditure on agriculture (including ASIF) in the total state budget expenditure in the pre-accession period, as mentioned above, was 10.9% on average, while without ASIF it was 2.6%. In the first years of EU membership (2004–2008), the average share of agricultural expenditure in the state budget increased to 12% and 5.4% respectively, showing a clear upward trend (Figure 2). In 2008, this share reached the highest level in the entire period under study, i.e. 15.2% and 9.5%, respectively. In the following years, however, we can see a clear downward trend in these figures to the level of only 5.6% (expenditure with ASIF) and 1.8% (without ASIF). Between 2009 and 2020, the average share of domestic spending on agriculture in the state budget was 8.3% including ASIF, while without ASIF it was 3.3%.

In the national budget spending on agriculture, the subsidy to ASIF, which fulfils the objectives of the redistributive fiscal policy, is of essential importance. In the pre-accession period, its share in this budget amounted to 76.2% on average. After Poland's accession to the EU and inclusion of agriculture in the CAP support, ASIF's share in the national budget expenditure decreased to an average of 55.8% in 2004–2012, which resulted from allocating more funds as a national contribution under direct payments and other CAP instruments. This reduction in the share of ASIF in the national agricultural budget also marked a qualitative shift towards greater importance of allocative and stabilising objectives of agricultural policy relative to redistributive (income-social) objectives (Czyżewski, Kata, Matuszczak 2019). Since 2013, we observe a renewed increase in the share of ASIF subsidies in the national agricultural budget from 60% (2013) to even 68.5% (2016). On average, between 2013 and 2020, this share was 65%.

4. Variability of the agricultural budget expenditure of Poland in 1995–2020 against the background of GDP dynamics and state budget expenditure

Data on the annual rate of change of total agricultural budget expenditure against the rate of change of GDP and state budget expenditure indicate that gross domestic product was the relatively most stable quantity in 1996–2020 (Figure 3).

Figure 3
Annual rate of change (in %) of GDP, state budget expenditure and total agricultural budget expenditure in 1996–2020 in constant prices



Source: Based on CSO data, Ministry of Agriculture and Rural Development (MRiRW) and Information on the draft state budget and budget of European funds in the field of agriculture, rural development and agricultural markets, materials for the Sejm Committee on Agriculture and Rural Development, 1998–2020.

Table 3

Dynamics and growth rate (in %) of GDP, state budget expenditure and agricultural budget expenditure in current prices and constant prices in 1996–2020

Description	GDP	State budget	Agricultural budget expenditure		
			Total	without ASIF	without ASIF and EU funds
1. Dynamics at current prices, 1995 = 100	673.5	553.7	571.1	1272.2	387.2
2. Dynamics at constant prices, 1995 = 100	239.4	196.9	203.0	452.3	137.7
3. Average year-on-year growth rate (in %), at constant prices, 1996–2020	3.8	2.2	3.0	6.5	1.4
of which:					
(a) 1996–2003	2.7	0.4	3.1	1.1	–2.7
(b) 2004–2020	4.3	2.9	2.9	8.8	3.2
4. Average year-on-year rate of change (%), absolute values, constant prices	3.8	4.4	7.3	17.6	18.9
– standard deviation	2.1	4.0	7.5	15.6	24.6
– coefficient of variation V (in %)	53.7	90.1	102.9	88.6	129.8
5. Years of higher growth rate (with chain index higher than the average rate of change for the whole period)	1996–1998 2004–2008 2011 2014–2019	1997 2001–2003 2005–2009 2015–2016 2018–2020	1996 1998 –1999 2002– 2008 2013– 2014	1996 2000 2002–2008	1996 2000–2001 2003 2005–2008 2017, 2019

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6. Years of lower rate of change (with chain index lower than the average rate of change for the whole period)	1999–2003 2009–2010 2012–2013 2020	1996 1998–2000 2004 2010–2014 2017	1997 2000–2001 2009– 2012 2015– 2020	1997–1999 2001 2009–2020	1997–1999 2002 2004 2009–2016 2018, 2020
7. Periods of higher growth than GDP growth	–	2001–2002 2007–2008 2012 2014–2015 2020	1996 1998–2002 2004–2008 2012– 2013 2020	1996 2000 2002–2008 2010 2012–2014 2020	1996 2000–2001 2003 2005–2008 2017 2020
Number of years	–	8	14	14	10
8. Periods of higher growth in agricultural budget expenditure than in government budget spending	–	–	1996 1998–2000 2002–2008 2010 2012– 2014	1996 2000 2002–2008 2010 2012–2014	1996 2000, 2003 2005–2008 2014 2017
Number of years	–	–	15	13	9
9. Trend function parameters (constant prices, in PLN million)	$y = 55899x + 814\,819$	$y = 8327.7x + 211\,089$	$y = 1475.4x + 24\,989$	$y = 1565.4x + 4027.6$	–*
Coefficient of fit R^2	0.971	0.864	0.621	0.625	–

* The linear trend function for the national agricultural budget (excluding ASIF and EU funds) is inadequate due to the lack of statistical significance and low fit index R^2.

Source: MRiRW data (as in Figure 3) and CSO data: https://stat.gov.pl/wskazniki-makroekonomiczne/ (accessed 07.07.2021).

When expressing all quantities in current prices, uninterrupted year-on-year GDP growth is observed throughout the period covered by the analysis. However, in 2020 GDP grew only in current prices (1.3%), whereas it fell by 2.7% in real terms.[6] Compared with positive GDP growth, state budget expenditure also showed an upward trend, but were subject to much higher year-to-year variability. In the period under review, there were years (1999, 2010 and 2014) when, despite the growth of GDP in current prices, state budget expenditure declined in both nominal and real terms. The real decrease in state budget expenditure relative to the previous year occurred in six years in the period under review (apart from the previously mentioned years: 1996, 2000 and 2011).

In comparison with real expenditure of the whole state budget, agricultural budget spending in Poland showed much greater variability (Figure 3). Usually, the direction of change in agricultural budget expenditure was similar. However, in five years of the studied period, an increase in state budget spending was accompanied by a decrease in agricultural budget spending. These were the years 2009, 2011, 2016–2017 and 2019. On the other hand, the opposite situation, i.e. an increase in real spending of the agricultural budget with a decrease in state budget spending, occurred in 2010 and 2014.

Taking into account the real (2020 prices) rate of change in absolute terms, the average annual change in state budget expenditure was 4.4% in the period under study, while the average change in total agricultural budget expenditure (including ASIF and European funds) was 7.3% (Table 3).

Compared to the 1995 level, GDP between 1996 and 2020 increased nominally (in current prices) by 573.5%, while in constant prices, it rose by 139.4% (deflator – CPI index). During this period, state budget expenditure grew nominally by 453.7%, while in real terms by 96.9%. These figures indicate that the secondary distribution (redistribution) of GDP through the budget mechanism decreased, as the economy was growing faster than state budget spending.

The agricultural sector remains an important target for budget financing. During the 25-year period covered by the study, in 15 years the growth rate of agricultural spending exceeded the growth rate of state budget spending (Table 3). However, these higher increases occurred mainly in the pre-accession period and the first years of EU membership. Compared to 1995, total real spending on agriculture grew at a very similar rate to the state budget (103% vs. 96.9%). Thus, despite fairly noticeable deviations in the annual rate of change of agricultural expenditure and state budget expenditure, one should consider that the growth rate of these two quantities was relatively balanced.

The average annual GDP growth rate in constant prices between 1996 and 2020 was 3.8%, whereas in the pre-accession period (1996–2003) it was 2.7% on average, and after Poland's accession to the EU, it averaged 4.3%. This proves that Poland's accession to the EU, and thus access to the common market and European funds, was an important pro-growth and pro-development impulse for

[6] CSO, Annual macroeconomic indicators – part III, https://stat.gov.pl/wskazniki-makroekonomiczne/.

the Polish economy. On the other hand, the average annual growth rate of state budget expenditure expressed in constant prices amounted to 2.2% over the entire quarter of the century under review, with pre-accession and post-accession periods of respectively 0.4% and 2.9% (year-on-year). Compared with these figures, the total agricultural budget grew faster in the period under study, because the average growth rate of this expenditure was 3.0% (year-on-year).

Interestingly, the average growth rate of the total agricultural budget was slightly higher in the pre-accession period (3.1%) than between 2004 and 2020 (2.9%). However, this results from a very high increase in the agricultural budget spending in the first years after Poland's accession to the EU (the average annual growth rate between 2004 and 2008 was as high as 18.1%), and then their steady decline in subsequent years. However, if we relate the real level of budget expenditure on agriculture to 1995, then in the pre-accession period (1996–2003) it was higher by 15.9% on average, while in the post-accession period (2004–2020) it was higher by 121.1% on average. For comparison, the corresponding figures for state budget expenditure are –0.6% in the pre-accession period and 40.3% in the post-accession period. Thus, accession to the EU had a positive impact on the amount of state budget expenditure, but the impact of this event on the growth of the total agricultural budget was much stronger.

The estimated linear trend function for real values of agricultural budget expenditure (in total, and also without ASIF) confirms that this expenditure, similarly to GDP and state budget spending, showed an increasing tendency in 1996–2020 (Table 3). However, the values of the R^2 coefficient for the defined trend equations prove that budget spending on agriculture was characterized by much greater deviations from the trend line in relation to GDP and state budget expenditure. This indicates that this spending was less stabile in comparison to these macroeconomic values. The estimated linear trend function for real value of agricultural budget spending (in total, and also without ASIF) confirms that this spending, similarly to GDP and state budget expenditure, showed an increasing tendency in 1996–2020 (Table 3). However, the values of the R^2 coefficient for the defined trend equations prove that budget expenditure on agriculture was characterized by much greater deviations from the trend line in relation to GDP and state budget expenditure. This indicates its lower stability in comparison to these macroeconomic values.

Data on the dynamics of agricultural expenditure in the pre-accession and post-accession period should be viewed from the perspective of the volume of funds allocated to this sector. It is true that in several years in the pre-accession period the growth rate of total agricultural budget was higher than that of GDP and the state budget, but this was caused by the low level of this expenditure in the years preceding Poland's membership in the EU. The growth rate of agricultural spending in 14 out of the 25 years covered by the study (1996–2020) was higher (sometimes slightly) than the GDP growth rate. This was true for both the pre-accession and post-accession period, but in the latter case – as was shown – the volume of funds allocated to agriculture was much higher.

However, there were years when the growth of GDP was clearly higher than the increase in spending on agriculture (this was particularly the case from 2015 to 2019). As a consequence, in the balance for the entire period under study, real GDP growth was higher than the growth of total agricultural budget expenditure (the cumulative growth rate was higher by 36.4 p.p.). Thus, the hypothesis that agriculture was fed from public funds in a relatively balanced way relative to GDP is not defensible. This disproportion in the dynamics of GDP and the total agricultural budget to the detriment of the latter partly stems from the halt of the trend for rapid growth in agricultural spending since 2009 (after it reached a high level due to the implementation of CAP instruments). On the other hand, the stabilisation and even a real decrease in the amount of the agricultural budget (from 2016 to 2019) was accompanied by relatively high GDP growth.

The trend of decreasing spending on agriculture in relation to GDP should be considered in the context of the economic development of the country, where usually agriculture shrinks in terms of its contribution to GDP, but also as a result of the flow of land and labour resources from agriculture to other sectors of the economy. Therefore, it is difficult to expect that with relatively high GDP growth and economic development implying structural changes in the economy, agriculture is the sector benefiting more than average in the process of budgetary redistribution of national income relative to other sectors of the economy. On the other hand, however, due to the frailty of the market mechanism in the reproduction and allocation of resources in the agricultural sector, which depreciates agriculture for many reasons that have already been mentioned, the budget mechanism needs to retransfer the economic surplus which "leaks" from agriculture to the other sectors.[7] There is also still the unresolved problem of income disparity of farmers and the deepening income inequalities within the agricultural sector (Kata 2020). Budgetary spending on agriculture may, therefore, have a lower growth rate than GDP, but this should not happen at the expense of achieving the objectives of the agricultural policy for this sector.

Maintaining about 16.5% share of total public spending on agriculture (national and EU) relative to the state budget in 2009–2015 was due to European

[7] The research by B. Czyżewski and Mrówczyńska-Kamińska (2011) showed that in the long term there is a drainage of the surplus generated in the agricultural sector through the price formation mechanism of goods sold and purchased by farmers (the so-called price scissors). During the economic downturn, agriculture suffers losses that are disproportionate to the real changes in its productivity, and in the period of economic recovery, the received rents do not fully compensate for previously incurred losses. It is estimated that as a result of these phenomena, in a hypothetical business cycle lasting 10 years, an annual average of 7–8% of the real global production of agriculture in Poland is subject to drainage. This "drainage of surplus" from agriculture is particularly noticeable in the countries of Central and Eastern Europe, including Poland. It was felt especially in the initial period of economic transformation, but also earlier, when the industrialization of the economy took place, and later, after integration with the EU, which diversifies agricultural income also between EU countries (Runowski 2018).

funds, since national funds had been declining since 2009 in nominal and real terms. In turn, the decrease in the ratio of the agricultural budget to state budget expenditure from 2016 to 2020 (from 14.9% to 9.8%) was due to some stagnation and even a nominal decline in agricultural expenditure (from domestic and EU funds). On the other hand, the fairly rapid increase in state budget expenditure during this period was caused by the launch of new social programmes (e.g. "500+" and others) and an increase in investment outlays financed from the state budget.

5. Conclusions

The data presented in this article and the analyses conducted on their basis indicate that:

1. For many years, budget expenditure allocated to the agricultural sector in Poland was an outcome of a compromise between what was necessary and what was possible. At the same time, it cannot be said that this sector of the economy was somehow favoured, which would increase its competitiveness compared to other branches. However, it is justified to claim that until 2003 the level of this spending was stable, but very low, which did not allow the adopted priorities of the state economic policy, restructuring the agricultural sector, to be achieved.[8]
2. Since 2004, after the integration with the EU, the situation has changed significantly, both quantitatively and qualitatively. The analysis of budgets proves that it is mainly thanks to the co-financing of EU funds and programmes, as well as supplementary financing of area subsidies (direct, including RDP from the 2nd pillar) by the national budget, that expenditure on the agricultural sector has increased in real terms, stabilising at about 2.5 times higher level than in the pre-accession period. In this state of affairs, it became possible to implement pro-development, restructuring objectives in the national agricultural policy.
3. Pro-development objectives in Poland's budgets were clearly undervalued before the EU integration, which probably occurred because the social objectives competed for funding (ASIF). After EU integration, the situation changed significantly. The earlier trend of socialisation of budget spending was halted in favour of the increase of expenditure on structural changes in agriculture and rural areas (incidentally financed mainly from EU funds). The analysis of budget acts indicates that the share of ASIF expenditure in total projected expenditure of the state budget declined by almost half since 2002, to increase

[8] It was about, for example, allocating funds for structural pensions, afforestation of land, as well as outlays for the implementation of tasks in the field of biological progress, subsidies for milk in the extra class, construction of the IACS system (integrated administration and control system), as well as for the continuation of the tasks of the Agricultural Chambers.

significantly again in recent years. Unfortunately, this causes an imbalance between both objectives, as the social objectives is overvalued (the level of expenditure on ASIF is characterized by a minimal upward tendency, with the number of beneficiaries stabilising), while the pro-development objectives are depreciated, due to the shrinking EU funds, and thus the total amount of expenditure on the agricultural budget decreases. It is also worth noting that expenses on ASIF had a somewhat classic stabilising function. Their modelling role consisted in the fact that they largely generated agricultural income through social transfers in the pre-integration period, thus compensating for shortages resulting from the neglected reproduction processes.

4. Since the beginning of integration, flows of funds between the EU and Poland for agriculture, rural development and agricultural markets have had net effects on Poland, by producing restructuring and pro-development effects, although their rate has been systematically decreasing for several years (since 2017). It should be added that the total amount of funds transferred to Poland by the EU in successive years was many times higher than the contribution paid by Poland, which further supports the idea that agriculture and the rural areas in Poland are the main net beneficiary of Poland's EU integration process.[9]
5. Agriculture, if we measure the benefits for this sector through budget expenditure transferred to farmers, agricultural markets and rural areas, benefited from the fruits of economic growth in the past quarter of the century in a disproportionate degree, as the growth rate of the agricultural budget lagged behind the growth of GDP. This also applies to the post-accession period. This leads us to reject hypothesis H1. However, if we "purge" agricultural expenditure from expenditure on ASIF, then the trend is different, pointing to above-average benefits for agriculture, but this concerns the post-accession period, where the average annual growth rate of agricultural expenditure was twice as high (8.8%) as the average growth rate of GDP at constant prices (4.3%).
6. The average growth rate of total agricultural budget expenditure (including domestic and EU funds), was slightly higher than the growth rate of state budget expenditure. However, such a trend is due to the large transfer of CAP funds to agriculture. It was the inflow of EU funds since 2004 that stopped the gradual discrimination of agriculture in terms of support from public funds, expressed by a successive real decline in spending on agriculture, agricultural markets and rural areas in the national budget. However, in the last years

[9] For example, in 2010–2019, Poland's contribution to the EU budget ranged from PLN 14.8 billion (2010) to PLN 21.7 billion (2019), while expenditure financed from the EU budget (under the WB) ranged from PLN 48.1 billion to PLN 70.9 billion. The share of agriculture in expenditure financed from the budget of European funds in this period ranged from 45.6% (2016) to 28.2% (2019,) and constituted the largest item (on average about 1/3) in the sectoral structure of state budget expenditure including the EEB (NIK 2012; NIK 2017; NIK 2020).

of the period under study (2015–2020), a relatively sustained trend of faster growth of state budget expenditure compared to the total agricultural budget can be observed. The difference in the growth rate of expenditure against agriculture ranges annually from 3.2 p.p. to 14.1 p.p. Therefore, these results do not provide a basis for acceptance of hypothesis H2, which assumes that Poland's agricultural budget spending in the whole post-accession period shows higher growth than general government spending. A trend over recent years (from 2014) indicates a gradual decline in the importance of agriculture in budget expenditure in favour of other sectors and spheres, such as, among others, municipal economy and environmental protection, health care, national defence, public security, education, higher education and science, social policy and family (NIK 2017; NIK 2020).

7. The importance of agriculture in the economy should be considered in the context of its position and role in the entire food complex, which is one of the most important complexes in the Polish economy, given the employment of workers, value of production and positive trade balance with foreign countries. Moreover, agriculture and rural areas are crucial for sustainable economic development of the country. In the context of economic, social, environmental and climate/energy challenges, agriculture, like several other sectors in the economy, requires a long-term, sustainable economic policy, within which budgetary spending is essential. Agriculture faces further challenges in terms of technology, energy transition, social issues (depopulation of many rural areas), climate and others. The pro-development reduction of budget spending on agriculture, supporting further structural transformations and adjustment processes of agriculture to contemporary challenges, observed in recent years, must trigger warranted concerns. This leads us to further consider budget expenditure on agriculture. It seems that in order to meet the above-mentioned challenges, public spending on agriculture should not decrease, and should be shifted towards instruments supporting sustainable development of agriculture, including in particular innovativeness and processes of adjustment to climate and energy challenges, and more broadly to environmental (natural) and social challenges.

Received: 25 September 2021
(revised version: 2 December 2021)

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EXPENDITURE OF POLAND'S AGRICULTURAL BUDGETS IN THE CONTEXT OF SELECTED MACROECONOMIC RELATIONS

Summary

The article analyses the dynamics and structure of agricultural expenditure in Polish state budgets in 1995–2020, which is the basis for considerations on the relationship between budget expenditure on agriculture and the dynamics of GDP and the dynamics of the state budget. The analysis concerned both nominal values and values adjusted by the CPI inflation index. In the pre-accession period (1995–2003) real spending on agriculture, excluding subsidies to ASIF, showed a downward trend. The situation changed after Poland's accession to the European Union. In 2004–2009, there was a rapid increase in the total agricultural budget (including national and EU funds) and a change in its structure towards pro-development goals. At the same time, agricultural budget expenditure became largely dependent on European funds. Since 2009, a stabilisation of real spending on agriculture can be observed, and between 2015 and 2019 even a slight downward trend, with a renewed increase in redistributive objectives in the spending on agriculture and rural areas. The Polish agriculture benefited unevenly from the effects of economic growth recorded between 1995 and 2020. However, taking into account only development expenditure on agriculture (excluding social expenditure, or ASIF), above-average benefits of the analysed sector are observed. Moreover, the average growth rate of total

agricultural budget expenditure (including domestic and EU funds), was slightly higher than the growth rate of state budget expenditure.

Keywords: budget expenditures, GDP, agriculture, CAP, GDP, ASIF

JEL: E62, H60, Q18

WYDATKI BUDŻETÓW ROLNYCH POLSKI W KONTEKŚCIE WYBRANYCH RELACJI MAKROEKONOMICZNYCH

Streszczenie

W artykule dokonano analizy dynamiki i struktury wydatków na rolnictwo w budżetach Polski w latach 1995–2020, co jest podstawą rozważań na temat relacji między wydatkami budżetowymi na rolnictwo a dynamiką PKB i dynamiką budżetu państwa ogółem. Analizie poddano zarówno wielkości nominalne, jak i urealnione o wskaźnik inflacji CPI. W okresie przedakcesyjnym (1995–2003) realne wydatki na rolnictwo, z pominięciem dotacji do KRUS, wykazywały tendencję spadkową. Sytuacja uległa zmianie po przystąpieniu Polski do Unii Europejskiej. W latach 2004–2009 nastąpił skokowy wzrost budżetu rolnego ogółem (obejmującego środki krajowe i środki UE) oraz zmiana jego struktury w kierunku celów prorozwojowych. Jednocześnie wydatki budżetu rolnego w znacznym stopniu zostały uzależnione od funduszy europejskich. Od 2009 r. można obserwować stabilizację realnych wydatków na rolnictwo, a w latach 2015–2019 nawet nieznaczną tendencję spadkową, przy ponownym wzroście celów redystrybucyjnych w strukturze wydatków na rolnictwo i obszary wiejskie. Rolnictwo w nierównym stopniu korzystało z efektów wzrostu gospodarczego notowanego w latach 1995–2020. Jednakże biorąc pod uwagę tylko wydatki rozwojowe na rolnictwo (bez wydatków socjalnych – KRUS), obserwuje się ponadprzeciętne korzyści analizowanego sektora. Ponadto średnie tempo wzrostu wydatków budżetu rolnego ogółem (obejmującego środki krajowe i środki UE) było nieco wyższe od tempa przyrostu wydatków budżetu państwa.

Słowa kluczowe: wydatki budżetowe, PKB, rolnictwo, WPR, KRUS

JEL: E62, H60, Q18

РАСХОДЫ СЕЛЬСКОХОЗЯЙСТВЕННОГО БЮДЖЕТА ПОЛЬШИ В КОНТЕКСТЕ ОТДЕЛЬНЫХ МАКРОЭКОНОМИЧЕСКИХ ОТНОШЕНИЙ

Резюме

В статье произведен анализ динамики и структуры расходов на аграрный сектор в бюджете Польши в 1995–2020 годах. Данные анализа послужили основанием для изучения взаимосвязи между расходами бюджета на сельское хозяйство с одной стороны и динамикой ВВП а также динамикой госбюджета в целом, с другой. Были проанализированы как номинальные величины, так и величины, скорректированные на показатель инфляции CPI. В период подготовки к вступлению в ЕС (1995–2003), реальные расходы на сельское хозяйство, без учета субсидий в КРУС (Касса сельскохозяйственного страхования), имели тенденцию к снижению. Ситуация изменилась после вступления Польши в Европейский союз. В 2004–2009 годах произошло резкое увеличение общего сельско-

хозяйственного бюджета (включающего отечественные и европейские фонды) и изменение его структуры в сторону целей развития. При этом расходы сельскохозяйственного бюджета в значительной степени стали зависеть от европейских денег. С 2009 года наблюдается стабилизация реальных расходов на сельское хозяйство, а в 2015–2019 годах фиксируется даже незначительная падающая тенденция наряду с ростом целей перераспределения в структуре расходов на сельское хозяйство и сельские районы. Сельское хозяйство в различной степени воспользовалось эффектами экономического роста 2015–2020 годов. Учитывая только расходы на развитие (без социальных расходов – КРУС), можно констатировать, что благоприобретения анализируемого сектора находились на уровне выше среднего. Кроме того, средний темп роста расходов сельскохозяйственного бюджета (включающего национальные и европейские фонды) был немного выше, чем темп роста расходов всего госбюджета.

Ключевые слова: бюджетные расходы, ВВП, сельское хозяйство, Общая аграрная политика, КРУС

JEL: E62, H60, Q18