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THE STATE FINANCIAL SUPPORT OF AGRICULTURAL PRODUCERS IN UKRAINE

Introduction

Under actual regulation of agriculture the necessary support is provided to agricultural enterprises with rather significant limitations as a result of market failures, that is situations in which self-financing business entities are not able or have no stimuli to produce an optimal amount of output due to external effects, incomplete information etc. Under such conditions governmental interference can be regarded as one of the methods of regulation to redistribute of financial resources, provided that financial support of agricultural production prevents financial losses and ensures efficiency of the branch financing.

Objectives, Materials and Method

Specific character of agriculture in Ukraine and creation of stimuli for development of food market in this economic sector form national standards of financing that are not always optimal and adequate to the international level. These standards are the result of the tools chosen to regulate government support for agricultural production. Nevertheless, there is no general consensus on the level of financial support for agriculture considering production factor in the system of the branch support. The purpose of research is the conduct an international analysis of the state policy of financial support for agricultural producers and its impact on the productivity of agriculture.

Governmental support for agriculture

In scientific publications governmental support for agriculture is defined as a specific component of government regulation of agrarian policy, its institutions and structures. The level of substantiation of any economic, in this case agrarian policy is directly related to its compliance with laws for food

markets, with attitude of different social strata of society, with interests of business entities that participate in reproductive manufacturing process[1].

Protection of domestic market against external expansion can also be considered to be an important factor for support of domestic agricultural producers. Anyhow, government support can't be equated to government regulation as the latter can be aimed not only at stimulation of economic processes implementation, but also at their restriction. Some programs introduced in the countries of the European Union and the USA. Government support is an essential element of government regulation of agrarian policy, a complex of legislative enactments, financial and institutional arrangements of the state having a stimulating effect on development of agricultural production[2].

The world-wide most common tool used to support agriculture is granting subsidies. In accordance with the System of National Accounts Methodology accepted by Organization for Economic Cooperation and Development a subsidy is defined as «a financial aid extended to state or private enterprises from government, being in payments, additional to sales return, received by commodity and service producers». The abovementioned financial aid is not a constituent part of market value of an item, though it compensates production costs[3].

Special norms for granting subsidy to agrarian sector are regulated by the Agreement on agriculture AMS. To create a fair and market-oriented system for agricultural produce trading three basic spheres have been determined in the Agreement for the Members AMS to assume certain obligations: access to the market, that is regulations for customs inspection to control import; domestic support, provided by government to national producers; export subsidies, aid extended from government to encourage export of goods[4].

Government regulation of pricing policy focuses on stabilization prices for agricultural produce due to restriction of their dynamics in relatively narrow range, providing agricultural enterprises with a possibility to implement extended reproduction, control the amounts and structure of production and also to maintain stability of food market. Thus, price support of agriculture in the EU gets up to 91% of all the budgetary financing, in the USA this percentage is

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[1] P. T., Sabluk, O. H., Shpykuliak, L/ I., Kurylo, *Innovatsiyna diyal'nist' v ahrarniy sferi i instytutsional'nyy aspekt* [Innovation activities in agriculture and institutional aspect], NNC IAE, Kyiv, 2010.

[2] A. Neshchadyn, *Experience of state regulation and support of agriculture abroad*, *Daily agricultural education*, 2009. Retrieved from: http://agroobzor.ru/econ/a-125.html

[3] B. Spinua, K., Shkurupii, *Sil's'kohospodars'ki subsydiyi: analiz isnuyuchoho zakonodavstva Ukrayiny na vidpovidnist' uhodam SOT* [Agricultural subsidies: an analysis of the current legislation of Ukraine in compliance with AMS agreements], Ukrainian-European consultation center Legal UEPLAC,Kyiv 2014.

[4] S. H., Osyka, V. T., Piatnytskyi, *Svitova orhanizatsiya torhivli* [World Trade Organization], K.I.S., Kyiv, 2010.

48%, while in Canada it is 53% [5]. In the Western countries a significant share of a farmer's income is formed at the expense of governmental resources: 38% in the countries of the European Union (EU), 72% in Finland, 72% in Japan and in the USA it ranges from 27% to 40% [6]. The government in Ukraine supports agriculture through a variety of budgetary appropriations and also through special tax regimes and mechanisms.

As shown in Fig. 1 the aggregate amount of government financial support for agriculture in Ukraine over a period from 2002 to 2015 has increased 10.2 times. Its share in the Gross Domestic Product (GDP) of agriculture was 8.2% in 2015. At the same time the rates of increase in gross production of agriculture were twice as large as the rates of government financial support for agriculture, being an evidence of insufficient impact of government support for agriculture on enhancement of agricultural enterprise development.

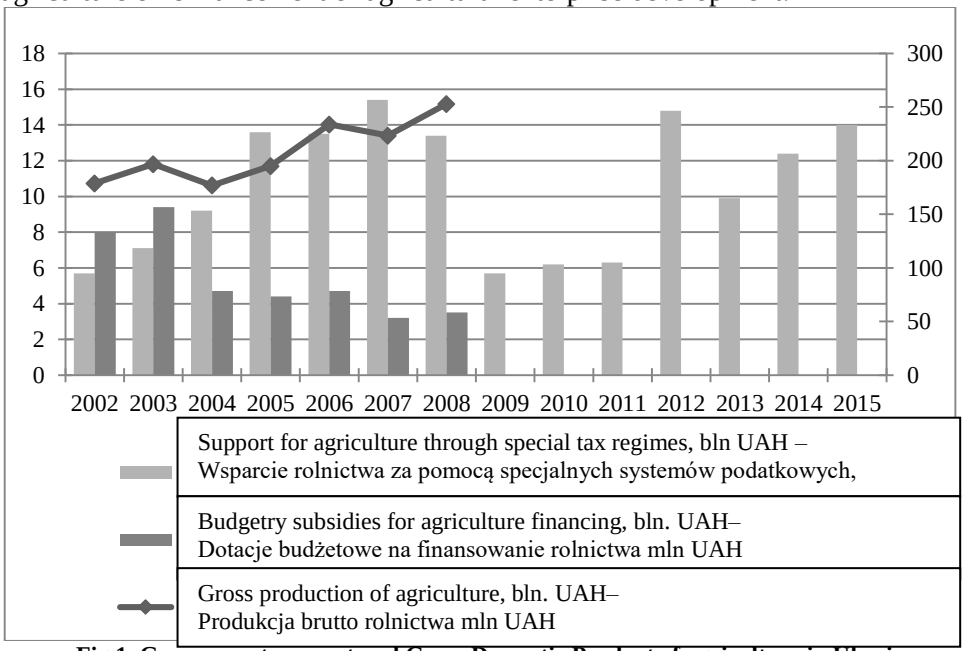

Fig.1. Government support and Gross Domestic Product of agriculture in Ukraine during 2002-2015

Rys. 1. Wsparcie rządowe i Produkt Krajowy Brutto rolnictwa na Ukrainie w latach 2002-2015

Source: developed by author according to the data [7], [8][10; 11]

[5] H. M., Kaletnyk, N. V.. Pryshliak, *State financial support to agricultural producers*, Ekonomika APK, No. 8, pp. 52-55.

[6] V. F., Zenyn, *Improving* the mechanism of support to agricultural producers, Economics of agricultural and processing enterprises, 2011, No. 8, pp. 7-9

[7] Statistical publication "Agriculture in Ukraine for 2006", State Statistics Service of Ukraine, Kyiv 2007.

Źródło: opracowania autora na podstawie danych [9], [10][10; 11]

As to the structure of government financial support, the direct support was prevailing during 2002-2008. After the financial crisis that greatly affected the level of budgetary appropriations the share of the latter was reduced down to 33,7%, and became even less in the further period – 12,2% in 2015.

It is necessary to mention, that nowadays indirect government support by way of special tax regimes for agricultural enterprises is quite reliable and perhaps the only one source of financing while the amounts of government support at the expense of the money, received from General Fund of the state budget, are being reduced every year due to limited access to bank loans and inflated prices for agricultural inventory. In various countries of the world Producer Support Estimate (PSE) indicators created by Organization for Economic Cooperation and Development (OECD) are used to evaluate and compare the agrarian policy measures to be considered in estimating support for producers and total support for agriculture.

The most popular one is Producer Support Estimate (PSE) evaluating the annual monetary value of gross transfers to agriculture from consumers and taxpayers for supporting agricultural enterprises, these transfers are measured at the farm gate and arise from economic policies that support agriculture, regardless of their nature, objectives or their impacts on agricultural production and income. PSE is calculated as an aggregate of market price support and the value of budgetary financial resources (aim) for producers. In its turn, market price support (MPS) on the national level is determined by extrapolation of the market price support for certain commodity groups. Positive MPS is an indicator of support to domestic agricultural enterprises, while negative MPS witnesses to absence or insufficiency of such support [11],[12].

Publishing of comparable international value of Producer Support Estimate enhances the transparency of agrarian policy in the countries of Organization for Economic Cooperation and Development (OECD). Apart from indicators for the total OECD area and individual OECD countries, PSE is

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[8] Statistical publication "Agriculture in Ukraine for 2014", State Statistics Service of Ukraine, Kyiv, 2015.

[9] Statistical publication "Agriculture in Ukraine for 2006", State Statistics Service of Ukraine, Kyiv, 2007.

[10] Statistical publication "Agriculture in Ukraine for 2014", State Statistics Service of Ukraine, Kyiv, 2015.

[11] M. Ia., Demianenko, P. T., Sabluk, V. M., Skupyi, *Derzhavna polityka finansovoyi pidtrymky rozvytku ahrarnoho sektora APK* [The state policy of financial support for the agricultural sector AIC], NNC IAE, Kyiv, 2011.

[12] OECD's producer support estimate and related indicators of agricultural support. Concepts, Calculations, Interpretation and Use (The PSE Manual) [2015]: Retrieved from: http://oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm

calculated for individual countries with developing economy, such as Brazil, China, Russia, South Africa and Ukraine. The concept of PSE is a contribution to creation of the base for international related obligations concerning internal measures to support via Aggregate Measure of Support (AMS) according to the results of The Uruguay Round of multilateral trade negotiations under the administrative direction of World Trade Organization (WTO). The aggregate indicator is a relative value of PSE showing the share of support for agricultural enterprises in the commodity gross receipt of the latter. This indicator is often referred to in international discussions on agrarian policy, it is used as a criterion of miscarriage policy, that is unfair competition with agricultural enterprises in the countries in which subsidies are not provided [13].

Usage of the Percentage Producer Support Estimate (% PSE) for international comparison is as follows: PSE 20% means that 20% is the arisen from producer support policies share of financial support (aid) in the gross revenue of agricultural enterprises; PSE 0% means that the total financial transfers from consumers and taxpayers to producers amount to zero. The Percentage Producer Support Estimate cannot exceed 100%, as even 100% means that all the income of an agricultural enterprise are due to financial support (aid) arisen from support policies and there is no market return [14].

Comparison of the PSE percentage in Ukraine and the EU during 2002-2015 (Fig. 2) enables to come to three main conclusions. Firstly, government financial support (aid) for agricultural enterprises in Ukraine was in average relatively lower than government financial support (aid) from consumers and taxpayers for agricultural enterprises in EU. Secondly, PSE percentage in Ukraine is gradually becoming equal to that one in the EU due to progressive reduction in the level of government support for agriculture in the countries of the European Union, especially after the Union expansion. Third, high level of % PSE changeability in Ukraine during the period under study is an evidence of unsystematic government support for agriculture and absence of stability in agrarian policy of Ukraine.

[13] D. Blandford, R. Brunstad, I. Gaassland, E. Vardal, *Optimal agricultural policy and PSE measurement: an assessment and application to Norway,* The 82nd Annual Conference of the Agricultural Economics Society Royal Agricultural College, 24st March to 3nd April 2010.

[14] OECD's producer support estimate and related indicators of agricultural support. Concepts, Calculations, Interpretation and Use (The PSE Manual) [2015]: Retrieved from: http://oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm

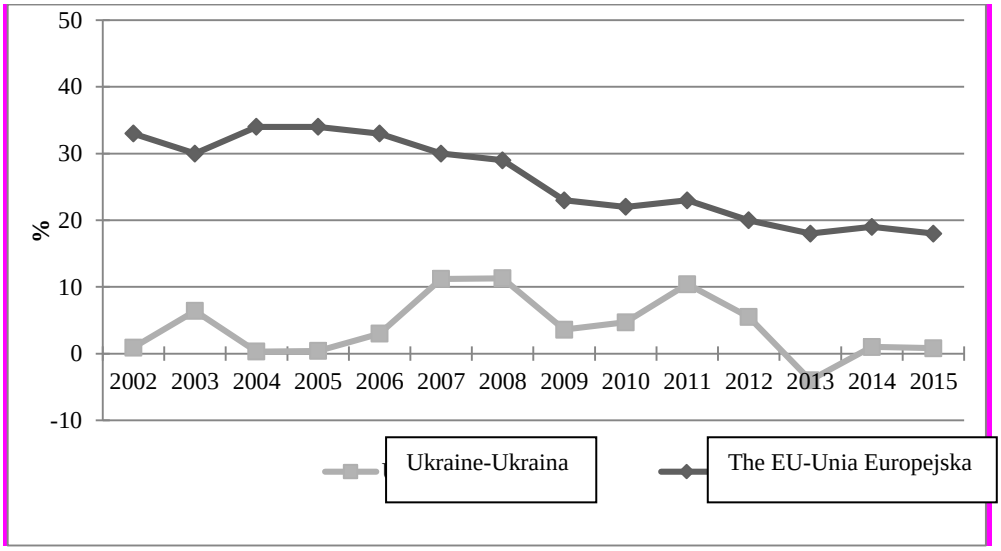

Fig.2. Relative PSE index in Ukraine and EU, %
Rys. 2 Indeks PSE na Ukrainie i w UE
Source: developed by the author according to the data [15][16].
Źródło: opracowania autora na podstawie danych[16][16].

Domestic prices were considerably lower than world ones in some periods (2004-2005, 2009-2010 and 2013-2015), causing significant reduction in total producer support. In 2013 the gap between domestic and world prices was enormous, while the value of budgetary financial aid was severely reduced, that eventually resulted in negative total financial support to agricultural producers, revealing that it was agriculture that subsidized the state. Thus, we can conclude that unsatisfactory state of financial support for agriculture in Ukraine was conditioned primarily by inability of the state to provide market price support, and not by the amounts and structure of direct financial support (budgetary payments to producers).

As a rule, the main objectives underlain by implementation of government financial support for agriculture are increase in productivity of production factors, used in agriculture, especially stabilization of agricultural markets; assured supplying with agricultural produce; guarantee of agricultural produce at

[15] OECD's producer support estimate and related indicators of agricultural support. Concepts, Calculations, Interpretation and Use (The PSE Manual) [2015]: Retrieved from: http://oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm
[16] OECD's producer support estimate and related indicators of agricultural support. Concepts, Calculations, Interpretation and Use (The PSE Manual) [2015]: Retrieved from: http://oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm

affordable prices for consumers [3]. To meet these challenges the EU has created and implemented the common agricultural policy (CAP), particularly, in accordance with the Article 39 of the Treaty of Rome, signed on 25 March 1957 [17].

Every year countries of the world appropriate a significant amount of financial resources from the budget for agriculture financing. Thus, expenditures for CAP represented approximately 49% of the total planned budget of the European Union in 2009-2014 [16]. The EU is implementing the following support programs stipulated by CAP: direct support, development of rural territories, market organization, government aid. The essential component of direct support in the EU is SAPS (Single Area Payment Scheme). For example, during 2004-2008 Poland received 9 bln. EUR from EU common agricultural program, among them 3,6 milliard EUR as direct additional payments for the land, while payments within the program for rural territory development were even greater – 4,7 bln. EUR. Since 2010 Poland gets 2 bln. EUR from the EU planned budget for development of agriculture [18].

To study the influence of government financial support on productivity of agriculture we have developed a statistical model, in which gross added value of agriculture per employee is taken as a resulting figure. The research covers the period from 2002 to 2015 in eight countries of the world, such as Ukraine, Russia, Australia, Japan, Switzerland, Canada and Turkey. The chosen countries are characterized by different level of agriculture support. The influence of government support have been studied on the basis of indicators, measured by Organization for Economic Co-operation and Development (OECD), namely Producer Support Estimate (PSE) and Consumer Nominal Protection Coefficient (Consumer NPC) [19].

To explore the dependencies between the productivity of agriculture and governmental financial support we have used a regression analysis, conducted on the basis of statistics and analytics software. The developed linear regression model enables to assess the dependence of agriculture productivity on governmental financial support. Thus, in our case the variables under study are in regression relationship:

$$PA_{it} = B_0 + B_1 PSE_{it} + B_2 PC_{it} + e_{it}\,,$$

(1)

[17] J. Miller, Corey, Keith H. Coble, *An International Comparison of the Effects of Government Agricultural Support on Food Budget Shares*, Journal of Agricultural and Applied Economic, Vol. 40, No 2, 2008.

[18] Agricultural Policy Monitoring and Evaluation 2015: OECD Countries and Emerging Economies" [2015]: OECD Publishing. Retrieved from: http://dx.doi.org/ 10.1787/agr_pol-2015-en.

[19] OECD's producer support estimate and related indicators of agricultural support. Concepts, Calculations, Interpretation and Use (The PSE Manual) [2015]: Retrieved from: http://oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm

where

for each country i (i=1,2, …, 10) for each year t (t=2002, 2003, …, 2015); PA_{it} is gross added value of agriculture per employee; PSE_{it} is Producer Support Estimate expressed as percentage of the total amount of budgetary financing for producers; PC_{it} is Consumer Nominal Protection Coefficient; B_0, B_1, B_2 are unknown constants; e_{it} is unobservable random variables.

For the whole sample of countries the regression equation can be modified:

$$PA_{it} = 22.5 + 0.43PSE_{it} - 9.83PC_{it}$$

The model results can be interpreted as follows: productivity of agriculture will increase with incensement of financial support of producers and decrease if consumer nominal protection coefficient grows.

According to the results of the conducted analysis (covering the period of 2002-2015) we have selected the countries with medium level of financial support whose PSE ranges from 30% to 50%. While PSE of Japan, Switzerland, Turkey (their share represents 26.3% of the sample) exceeds 50%, they were classified as countries with high level of financial support. The countries with PSE less than 30%, Ukraine and Australia among them, constituted a group of countries with low level of financial support (their share represents 18.4% of the sample). All other countries, particularly Russia, the USA and Canada, formed the group with medium level of financial support.

The coefficient of determination, r^2 for countries with high level of financial support is 64.8%. That dependency of agriculture productivity on government financial support is measured with almost 65% of the variation. Coefficients of regression also prove the reliability of the developed regression model – significance level of B_1 and B_2 according to t criterion turned to be less than 0.06. In general, the developed model with certain assumptions can be used for taking decision, prediction and forecasting.

Verification of regression models for countries with medium and low levels of financial support has revealed their negligible share (the significance level was 0.67 and 0.09 correspondently). Besides, all the regression coefficients in the equation for countries with medium level of financial support and almost all the coefficients (except for Consumer Nominal Protection Coefficient) for countries with low level of financial support have fairly minor influence. Coefficient of determination in regression model for countries with medium level of financial support is 6%, while its value for countries with low level of financial support is 15%. This means that only 6% of agriculture productivity depends on government financial support in countries with medium level of financial support and this percentage is only 15% for countries with low level of financial support.

Conclusions

Thus, on the basis of parametric regression model, showing the dependence of agriculture productivity on government financial support, it has been determined that the higher is the share of financial resources (aid) from consumers and tax-payers to agricultural producers in the gross receipt of the latter (Producer Support Estimate), the higher is the productivity of agriculture. At the same time, increase in ratio of the average price on domestic market, paid by consumers, to the price on world markets (Consumer Nominal Protection Coefficient) results in loss of agriculture productivity. In the countries with high level of financial support agricultural manufacturer the parameters of agriculture productivity significantly dependent on the state policy. Meanwhile, in countries with low and medium levels of governmental financial support its influence on productivity of agriculture has unsatisfactory tendencies.

State policy of financial support for agricultural producers should cause diminution in resonance effect between the consequences of financial globalization and inner crisis processes in the country. Besides, it is necessary to take into account that impact of state policy on agriculture development is rather significant and it demands adequate reaction to minimize negative consequences.

To solve the problems concerning budgetary financing of agriculture and improvement of research quality in forecasting and predictive analytics is one of the most important ways to reach the goals of regulation of state policy in the sphere of agriculture support. To meet these challenges it is necessary to create fundamentally new approaches to harmonization of levels and tools supporting the development of agrarian economy, to formation of long-term national course of agrarian policy, its comparison with alternative variants of agricultural production financing, implemented in the world. These are the essential conditions for increase in productivity of domestic agriculture and defining the perspectives of budgetary re-distribution of financial subsidies (aid) to support agricultural producers with accent being put on governmental support of investment and innovative processes in the agrarian sector of economy.

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15. Statistical publication "Agriculture in Ukraine for 2014", [2015]: State Statistics Service of Ukraine, Kyiv.
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POMOC RZĄDOWA PRODUCENTOM ROLNYM NA UKRAINIE

Streszczenie

W artykule rozważano konieczność wspierania producentów rolnych Ukrainy w celu efektywnego funkcjonowania rynku rolnego i wykorzystania środków finansowych. Metody statystyki matematycznej i analizy regresji zostały wykorzystane podczas uzasadnienia szacunków wsparcia producenta i współczynnika ochrony nominalnego konsumentów. Ustalono, że wsparcie dla produkcji rolnej na poziomie państwa może być uznane za jedną z regulacji sposobów redystrybucji środków finansowych, pozwalając, aby zapobiegać stratom finansowym i zapewnić efektywność finansowania placówek. Zostało udowodnione, że całkowicie nowe podejście do tworzenia długotrwałego przebiegu krajowej polityki rolnej i jej porównanie z alternatywnych wariantów finansowania produkcji rolnej, realizowanych na świecie, musi brać pod uwagę zmiany w otoczeniu zewnętrznym i przyspieszenie procesów globalizacyjnych, co pozwala zminimalizować negatywne konsekwencje.

Słowa kluczowe: stan polityki, wsparcie finansowe, zasoby finansowe, rolnictwo, produktywność, finansowanie budżetowe, szacunkowe wsparcie dla producentów, wsparcie ceny rynkowej.

Summary

In the article we have considered the necessity to support agriculture producers of Ukraine on terms of agrarian market functioning and efficient use of financial resources. Methods of mathematical statistics and regression analysis have been used during the justification for producer support estimate and consumer nominal protection coefficient. Established that support for agricultural production on the state level can be regarded as one of the ways regulation to redistribute of financial resources, enabling to prevent financial losses and ensure efficiency of the branch financing. It has been proved that fundamentally new approaches to forming of long-term national course of agrarian policy and its comparison with alternative variants of agricultural production financing, implemented in the world, must take into consideration changes in external environment and acceleration of globalization processes, which demand adequate reaction, enabling to minimize negative consequences.

Keywords: state policy, financial support, financial resources, agriculture, productivity, budgetary financing, producer support estimate, market price support.

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