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Article

Future Direct Payments in Ukraine

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Abstract: At the time of accession, Ukraine will be covered by the full CAP instrumentarium, the system of direct payments included. Due to the size of the country, including agricultural land, the total amount of payments to Ukraine may reach the amount of EUR 96.5 billion (over 7 years) according to some estimates. The purpose of the article is to try to verify this amount. This will be done by reviewing the latest analyses, made in EU countries, on the estimates of future direct payments in Ukraine. At the same time, author's own account of the amount of payments to agricultural producers in this country shall be presented. Unlike other studies, the calculation takes into account two elements that significantly reduce the amount of subsidies. Firstly, after accession, Ukrainian farmers will probably receive only part of the payments, which will be gradually increased (phasing-in mechanism), as was the case with Poland and other countries joining the European Union in 2004. Secondly, the calculation attempts to count the effects of the so-called capping, i.e. a ceiling for the amount of direct payments, which will probably also be applied. The result shows a smaller amount of future payments than the other studies.

Keywords: Ukraine; Agriculture; European Union; Common Agricultural Policy; Direct payments

Introduction

The main research problem is what will be value of basic financial envelope for agricultural producers in Ukraine in the year of accession and in the next years.

The aim of the paper is to review the recent estimations of the cost of subsidizing Ukrainian agriculture, including future direct payments. Since Ukraine is basically a cereal country, it would be interesting to see, what could be the direct payments for agricultural producers.

The category of direct payments can be derived from the factors of production theory and the theory of income distribution [1]. It can also be brought from the theory of agricultural income parity [2].

In this paper both document analysis [3] and comparative methods are employed. Document analysis involves skimming (superficial examination), reading (thorough examination), and interpretation. Literature review as a research methodology [4] was also used when examining history of direct payments. Another method was also employed, i.e. applying keywords to analyze different reports on future costs of incorporation Ukraine into EU structures.

Ukraine obtained candidate status in June 2022. In November 2023 European Council President Charles Michel suggested 2030 as the membership date for Ukraine and Moldova [5]. Accession negotiations with Ukraine were opened in December 2023.

Ukraine as a future EU Member shall be covered by EU Common policies, i.a. the Common Agricultural Policy. The applicant has to adopt "acquis communautaire", build relevant institutions, but also as a full member reap some benefits. First of all Ukrainian agriculture shall be subject to direct payments.

Future Financial Support to Ukraine

The research question is what might be the volume of this support? The answers vary a lot. An internal European Council study [6] says that the cost of Ukraine's membership may amount

to €96.5 billion (CAP payments) over seven years. According to other reports [7,8], this amount is considerable, but it really means a 10% increase in the current EU budget which still fits in EU's resource ceiling. Another point – those €96.5 billion were calculated without ceilings. In the meantime the Agricultural Commissioner was calling for wide application of capping in the case of Ukraine [9]. Another point, to which we shall come back later, is a most certain 10 year phasing-in period for direct payments, like in the case of the previous candidate countries, back in 2004.

In another calculus, Estonia's International Centre for Defence and Security (ICDS) in its report stated that Ukraine's participation in CAP may amount to €10.4 billion per year. This study doesn't cover capping as well [8]. The French also prepared a report. The Jacques Delors Centre estimated (no capping, no phasing-in) €7.6 billion per year for CAP support [7]. The German Economic Institute (IW), utilized the Estonian model (ICDS) and came with an in-between solution of **€70 billion to €90 billion** during the Financial perspective

[10]. Similar numbers were shown by Bruegel's think tank. The payments amounted to **€85 billion** [11].

All those figures are very interesting, but none of the quoted reports show the "cuisine", i. e. how the amounts of support were calculated.

Materials and Methods

Another Attempt to Calculate Direct Payments for Farmers in Ukraine

The research is based both on EU documents and Ukrainian statistics.

Besides the methods described above the classic European Commission method of calculating direct payments was employed (comparative, document analysis, literature review). Capping/degressivity of payments was also used, as well as phasing-in approach.

In the system currently called historical, classic or standard, the formula for calculating payments is as follows: base area • payment rate/t • yield = so-called grain envelope [12] (p. 33).

The payment rate per 1 ha will result from dividing the envelope by the base area.

Therefore, we have to consider the formation of two values: the "EU" payment rate and the size of the yield.

The payment rates were gradually increased since 1992, and then changed by the 1997 package of reforms (the so-called Agenda 2000). For example a "non crop specific area payment" is established at 66 ECU/ton (multiplied by the regional cereals reference yields of the 1992 reform [12] (p. 33)

Reference Yield

The second value included in the direct payments account is the size of yields. In the first years of the Mc Sharry reform, for calculations, the average yield of cereals in the European Union was used. After a few years, however, it was found that higher production efficiency should be rewarded and – in accordance with Council Regulations 1251/99 and 2316/99 – the European Union began to take into account national yields from the years 1986/87 – 1990/91, i.e. the so-called reference period, hence the name of the yield [13]. The reference yields in the EU countries varied considerably: e.g. in Spain 2.69 t/ha, and in the Netherlands 6.66 t/ha.

Phasing-in Payment Rates for the New Entrants

Again a bit of history. Throughout the previous accession negotiations, the European Commission opposed the payment of full EU direct aid rates to farmers from the new Member States applying to the EU in 2004. It was argued that in light of the large discrepancy between GDP levels in the East and the West, a sharp influx of high aid payments would disrupt the rural economy in Central and Eastern Europe and cause inflation to rise. In the Commission's view, the payment of full rates of direct payments in the 10 new Member States would also be a heavy burden on the EU budget [14].

A compromise agreement was finally reached, providing for a 10-year transitional period, during which the rates in the new Member States were to be gradually increased until the full level

applicable in the old Member States was reached (starting at 25% of the full rate in the first year, i.e. 2004). However, it was also agreed that the new member states would be able to grant their farmers a top-up payment of 30% of the full EU rate. This meant that farmers could in fact receive up to 55% of the full rate of EU aid in the first year. National top-up payments fell to 20% in 2011 and to 10% in 2012, when the EU contribution reached 80% and 90% respectively.

Probably after twenty years the European Commission will use the same arguments. Hence, there will probably also be a gradual increase in payment rates for Ukraine.

Capping/Degressivity

Capping is a mechanism for reducing payments for large farms. Between 2015 and 2022, the use of capping was, in principle, mandatory for EU Member States. From 2023, it is a voluntary instrument. Degressivity means reduction of direct payments for individual farms [15].

For further considerations let us quote provisions of Proposal COM/2018/392 final [16], Article 17, which were later repeated in Regulation 2021/2115:

1. Member States may cap the amount of the basic income support for sustainability to be granted to a farmer for a given calendar year. Member States that choose to introduce capping shall reduce by 100 % the amount exceeding EUR 100 000.

2. Member States may reduce the amount of the basic income support for sustainability to be granted to a farmer for a given calendar year exceeding EUR 60 000 by up to 85 %.

Member States may set additional tranches above EUR 60 000, and specify the percentages of reduction for those additional tranches. They shall ensure that the reduction for each tranche is equal to or higher than for the previous tranche.

In Amendment 77 to the Proposal Article 15 – paragraph 1it is suggested [17] (p. 662):

1. Member States shall reduce the amount of direct payments to be granted to a farmer pursuant to this Chapter for a given calendar year exceeding EUR 60 000 as follows:(a) by at least 25 % for the tranche between EUR 60 000 and EUR 75 000; (b) by at least 50 % for the tranche between EUR 75 000 and EUR 90 000; (c) by at least 75 % for the tranche between EUR 90 000 and EUR 100 000.

Area and Structure of Agricultural Land in Ukraine

In 2019-2021, the area of agricultural land in Ukraine amounted to approx. **41.3** million hectares. Because of the war, about **22%** of the agricultural land area is excluded [18] from production (e.g. land degradation, mine-infested areas). Despite the exclusion of a significant part of agricultural land from production, Ukraine still has a large potential for crop production.

The structure of agricultural land in Ukraine is characteristic for most countries of Central and Eastern Europe. The largest share in the structure of Ukrainian agricultural land is arable land (79.7%). This percentage is significantly higher than in the EU-27 (60.5%). Ukrainian agriculture has a relatively small share of permanent grassland and permanent crops in the structure of agricultural land, which amounts to 18.2% and 2.1%, respectively. The structure and very good quality of agricultural land determine the potential and production specialization of Ukrainian agriculture, which focus on the production of plant raw materials. The small share of permanent crops (2.1%) compared to EU agriculture (7.3%) is a consequence of different agroclimatic conditions and different structure of farms.

Area and Ownership Structure of Farms

In the long-term process of ownership transformations, which has been carried out with numerous legal and organizational problems, a characteristic structure of Ukrainian agriculture has been developed, in which family farms play a minor role. It is estimated that family farms used only about 25% of the agricultural area.

In individual regions of Ukraine, the share of family farms in the area of agricultural land varies. The western regions of the country, where collectivization was carried out only after World War II is characterized by the largest number of family farms and their most fragmented structure.

The dominant form of farms in Ukraine are agricultural enterprises, which are based on leased land and are characterized by various legal forms and scale of production. The largest group are "farmers' farms", which constitute approx. 72% of the discussed group of entities, and the average area of land in these enterprises is approx. 132 ha. However, most "farm farms" lease more than 500 hectares of agricultural land, which should be considered a large scale of production compared to agriculture in Central and Western Europe. The other two groups are private large-scale agricultural enterprises and companies, whose share in the analyzed group of enterprises is 8 and 17%, respectively. Companies conducting business activity in the agricultural sector take various legal and ownership forms (e.g. limited liability, joint-stock companies), and the largest of them adopt a structure of holdings (so-called agro-holdings) in order to optimize their operations. In 2019, there were 22 agricultural holdings operating in Ukrainian agriculture, which leased more than 50 thousand hectares of agricultural land, and 10 entities operated on an area exceeding 100 thousand hectares. The total area of agricultural land cultivated in the structures of agricultural holdings is estimated at around 3.4 million hectares, which represents 8.2% of Ukraine's agricultural land.

The high concentration of the entity structure in Ukrainian agriculture is confirmed by the data of the Ukrainian Statistical Office, which showed that in 2020, only 36.3 thousand farms (enterprises) conducted business activity on an area of 20.3 million hectares. In the discussed group, 184 entities owned more than 10 thousand hectares of agricultural land, and the total area of land in this group was 4.3 million hectares. Another group of very large enterprises consists of 395 entities with an agricultural area of 5-10 thousand hectares, and their total cultivated area is 2.6 million hectares. The number of agricultural enterprises with an agricultural area of 1-5 thousand hectares is 4159, and their total area of agricultural land is 8.7 million hectares. Farms with a small scale of production up to 50 ha of agricultural land were relatively numerous (approx. 16.3 thousand), but their total area of land amounted to only approx. 422 thousand ha, including approx. 69 thousand ha owned by entities with an area of up to 20 ha [19].

Agricultural Production of Ukraine and Its Structure

In Ukraine, the structure of agricultural production is dominated by plant products. Its share in 2019-2021 steadily increased from 75.6 to 82.2%, and animal products decreased from 24.4 to 17.8%. Cereals and protein crops (35.0-40.0%) and industrial crops (e.g. oilseeds) (23.0-29.4%) have a large share in the production structure of Ukrainian agriculture.

Results of the Calculus

The results of the calculus (estimates) should be treated with caution (Table 2). Often there is no accurate data, and final figures shall depend on the solutions adopted for Ukraine.

There is a problem with setting the reference yield. If we take years 1986/87 – 1990/9, as was done in the past, in the case of Ukraine this time span can be divided into two parts - before gaining independence in 1990, and after. There are also huge differences in the production volume. For instance in 1985 production of wheat in Ukraine was 50% smaller than in 1990 [19].

Let us assume that the reference yield is 3 tons/ha, which might be the case because of heavy harvest losses that occur every couple of years because (before the war) of climatic reasons. In this case the cereal envelope shall amount to 66 Euro/ton x 3 tons/ hectare = 198 Euro/hectare. Of course if we take another reference yield the result shall be different

Table 1. Structure of agricultural production in Ukraine (in %).

Farm products	Ukraine		
	2019	2020	2021
Crop production	75,6	76,7	82,2

Cereals and protein crops	35,0	35,4	40,3
Industrial Crops	23,0	24,0	29,4
Potatoes, vegetables and cucurbits	7,7	7,0	4,6
Fruit	5,5	5,6	4,5
Fodder Crops	3,0	3,1	2,2
Other plant products	1,4	1,6	1,2
Animal production	24,4	23,3	17,8
Livestock production	13,1	12,6	9,6
Milka	8,0	7,6	5,6
Eggs	2,6	2,5	2,1
Other animal products	0,7	0,6	0,5

Source: Based on Statistical Yearbook of Ukraine 2020 (2021), Kyiv.

We assume that all farms in Ukraine shall get basic direct payments, so we can use the data from State Statistics Service of Ukraine (Table 2). The mean farm area was taken from each range and multiplied by the assumed basic area payment per HA (198 euro). Then this value was multiplied by the number of farms. The total is quite big – 3.7 billion Euro per Year. And here comes the capping. We can assume as in Proposal(COM/2018/392 final), that we cap at 100 000 Euro per farm, which results in the payment of 73750 Euro. If we repeat our calculations and come with the amount of 1.1 billion Euro. We can adjust this amount by another 22%, due to the land losses because of the war, which gives 858 million Euro. Of course if we try different ways of Capping/modulation, we come with different figures.

Most probably Ukrainian system of direct payments shall be subject to 10 year phasing-in scheme like in (Table 3) (for the 2004 entrants). In this scenario, in 2030, the EU direct payment shall amount to 214.5 million Euro, and the national compensatory payments may amount to 257.4 million Euro. Only, from 2036 the basic direct payments for Ukraine shall reach the full rate.

Conclusions

In this article an attempt to calculate basic direct payments in Ukraine was being made. The reckoning is based on many assumptions and unknown factors. We do not know if on the day of accession the system of direct payments shall be still in place. There are opinions that the system should be changed. We do not know what will be in Ukraine's "negotiation position". How the reference yield shall be calculated, and negotiated? Will there be transition periods, and in what areas? Most probably, if the system is still in place, due to the country's farm structure, mandatory capping shall be applied. To what extend?

Table 2. Estimated future direct payments in Ukraine without and with capping .

Farms		Without capping		With capping	
Range	Number of farms	Av. Payment per farm in €	Payments in a given range in million €	Av. Payment per farm in € with capping	Payments in all farms with capping million €
a	b	c	b x c	e	e x b
< 5	1975	495	1.0	495	1.0
5-10 ha	1877	1485	2.8	1485	2.8

10-20 ha	3061	2970	9.1	2970	9.1
20-50 ha	9395	6930	65.1	6930	65.1
50-100 ha	4626	14850	68.7	14850	68.7
100-500 ha	7889	59400	468.6	59400	468.6
500-1000 ha	2716	148500	403.3	73750	200,3
1000-2000 ha	2409	297000	715.5	73750	177,7
2000-3000 ha	1030	495000	509.9	73750	76,0
3000-4000 ha	473	693000	327.8	73750	34,9
4000-5000 ha	247	891000	220.1	73750	18,2
5000-7000 ha	263	1188000	312.4	73750	19,4
7000-10000 ha	132	1683000	222.2	73750	9,7
> 10000	184	1980000	364.3	73750	13,6
Total	36277		3690.8		1165.1

Source: Author's own calculations based on Proposal(COM/2018/392 final), Statistical Yearbook of Ukraine 2020, Kyiv 2021. (If we apply procedure from the Proposal, payments up to EUR 100 000, may finally amount to EUR 73750, which is in the table).

All negotiated solutions shall modify the calculus. Still the value of payments about one million Euros is much smaller in comparison to figures in other reports.

Also, the presented calculus can be improved, but it needs further search for accurate data. For instance in order to refine the basic rate of direct payments one may include supposed support for protein and industrial plants, beef, sheep and some other products. However, looking at the importance of cereal production in Ukrainian agriculture the figures shall not change significantly.

Table 3. Direct payment rates in the new Member States (% of the full EU rate):

Year	EU rate	National complementary payments	Maximum total payment
2030	25	30	55
2031	30	30	60
2032	35	30	65
2033	40	30	70
2034	50	30	80
2035	60	30	90
2036	70	30	100
2037	80	20	100
2038	90	10	100
2039	100	0	100

Source: Agenda 2000, 1997.

References

1. Sadłowski, A. Płatności bezpośrednie dla rolników - transfery, subsydia czy wydatki na dobra i usługi publiczne? Direct Payments for Farmers - Transfers, Subsidies or Expenditure on Public Goods and Services? ; *Research Papers of Wrocław University of Economics* 2022, Nr 3 (66) pp. 119-127.
2. Baer-Nawrocka A. Farmer's Direct Payments Issue in the evolution of the Common Agricultural Policy; *Prace naukowe Uniwersytetu Ekonomicznego we Wrocławiu* 2011, Nr

166; Available online: <https://eu.boell.org/en/2020/10/02/will-cap-post-2020-be-fairer-and-what-does-mean> (<https://eu.boell.org/en/2020/10/02/will-cap-post-2020-be-fairer-and-what-does-mean>) (accessed on July 1 2024).

3. Bowen, G.A. ("Document Analysis as a Qualitative Research Method"; *Qualitative Research Journal* 2009, Vol. 9, pp. 27 – 40; Available online: <http://dx.doi.org/10.3316/QRJ0902027> (<http://dx.doi.org/10.3316/QRJ0902027>) (accessed on July 3 2024).
4. Snyder, H. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research* 2019, Volume 104, pp. 333-339; Available online: <https://www.sciencedirect.com/science/article/pii/S0148296319304564> (<https://www.sciencedirect.com/science/article/pii/S0148296319304564>) (accessed on July 3 2024).
5. Remarks by President Charles Michel following his meeting with President of Ukraine Volodymyr Zelenskyy and President of Moldova Maia Sandu. 2023; Available online: <https://www.consilium.europa.eu/en/press/press-releases/2023/11/21/remarks-by-president-charles-michel-following-his-meeting-with-president-of-ukraine-volodymyr-zelenskyy-and-president-of-moldova-maia-sandu/> (<https://www.consilium.europa.eu/en/press/press-releases/2023/11/21/remarks-by-president-charles-michel-following-his-meeting-with-president-of-ukraine-volodymyr-zelenskyy-and-president-of-moldova-maia-sandu/>) (accessed on July 5 2024).
6. EU Estimates Ukraine entitled to Euro 186 bln after accession. 2023, Available online: <https://www.ft.com/content/a8834254-b8f9-4385-b043-04c2a7cd54c8> (<https://www.ft.com/content/a8834254-b8f9-4385-b043-04c2a7cd54c8>) (accessed on July 5 2024).
7. Lindner J., Nguyen T., Hansum R. What does it cost? Financial implications of the next enlargement. *Jacques Delors Centre* 2023; Available online: https://www.delorscentre.eu/fileadmin/2_Research/1_About_our_research/2_Research_centres/6_Jacques_Delors_Centre/Publications/20231213_LindnerNguyenHansum_Enlargement.pdf (https://www.delorscentre.eu/fileadmin/2_Research/1_About_our_research/2_Research_centres/6_Jacques_Delors_Centre/Publications/20231213_LindnerNguyenHansum_Enlargement.pdf) (accessed on July 6 2024).
8. The Potential Impact of Ukrainian Accession on the EU's Budget – and the Importance of Control Valves. *International Centre for Defence and Security* 2023; Available online: <https://icds.ee/en/the-potential-impact-of-ukrainian-accession-on-the-eus-budget-and-the-importance-of-control-valves/> (<https://icds.ee/en/the-potential-impact-of-ukrainian-accession-on-the-eus-budget-and-the-importance-of-control-valves/>) (accessed on July 6 2024).
9. Agri commissioner calls for ceiling on CAP payments to large farms). *Agrifood* 2013; Available online: <https://www.euractiv.com/section/agriculture-food/news/agri-commissioner-calls-for-ceiling-on-cap-payments-to-large-farms/> (<https://www.euractiv.com/section/agriculture-food/news/agri-commissioner-calls-for-ceiling-on-cap-payments-to-large-farms/>) (accessed on July 6 2024).
10. Busch B., Sultan. S.. Fiskalische Aspekte einer EU-Erweiterung. Folgen eines EU-Beitritts der Ukraine für den Haushalt und die Kohäsionspolitik, *IW-Report* 2023, Nr. 63; Available online: <https://www.iwkoeln.de/en/studies/berthold-busch-samina-sultan-consequences-of-ukraines-accession-to-the-eu-for-the-budget-and-cohesion-policy.html>. (<https://www.iwkoeln.de/en/studies/berthold-busch-samina-sultan-consequences-of-ukraines-accession-to-the-eu-for-the-budget-and-cohesion-policy.html>) (accessed on July 6 2024).
11. Darvas Z., Dabrowski M., Grabbe H., Moffat L.L. , Sapir A., Zachmann G.Ukraine's path to European Union membership and its long-term implications, *Bruegel* 2024; Available online: <https://www.bruegel.org/policy-brief/ukraines-path-european-union-membership-and-its-long-term-implications> (<https://www.bruegel.org/policy-brief/ukraines-path-european-union-membership-and-its-long-term-implications>) (accessed on July 6 2024).
12. Agenda 2000 - Volume I - Communication : FOR A STRONGER AND WIDER UNION 1997; Available online: https://ec.europa.eu/commission/presscorner/api/files/document/print/en/doc_97_6/DOC_97_6_EN.pdf (https://ec.europa.eu/commission/presscorner/api/files/document/print/en/doc_97_6/DOC_97_6_EN.pdf) (accessed on July 6 2024).
13. Kowalski A., Rowinski J., Wigier M. Kwoty produkcyjne, powierzchnie bazowe i plony referencyjne – Analiza różnych wariantów negocjacyjnych. (*Production quotas, base areas and reference yields*); UKIE: Warszawa, Poland, 2001.
14. Krzyżanowski, J.T. Wspólna polityka rolna Unii Europejskiej – wybrane zagadnienia (*Common Agricultural Policy of the European Union – selected problems*); SGGW: Warszawa, Poland, 2009.
15. CAP Reform – an explanation of the main elements; *European Commission Memo* 2013, Available online: https://ec.europa.eu/commission/presscorner/detail/en/memo_13_937 (https://ec.europa.eu/commission/presscorner/detail/en/memo_13_937) (Accessed on July 8 2024).

16. Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing rules on support for strategic plans to be drawn up by Member States under the Common agricultural policy (CAP Strategic Plans) and financed by the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) and repealing Regulation (EU) No 1305/2013 of the European Parliament and of the Council and Regulation (EU) No 1307/2013 of the European Parliament and of the Council 2018; Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A392%3AFIN> (<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A392%3AFIN>) (accessed on July 6 2024).
17. Herranz García E. *Report*, (COM(2018)0392 – C8-0248/2018 – 2018/0216(COD) 2019; Available online: https://www.europarl.europa.eu/doceo/document/A-8-2019-0200_EN.pdf. (https://www.europarl.europa.eu/doceo/document/A-8-2019-0200_EN.pdf.) (accessed on July 7 2024).
18. Bułkowska M., Bazhenova H. Direct and Indirect Consequences of the War in Ukraine for Polish Trade In Agri-Food Products, *Zagadnienia Ekonomiki Rolnej / Problems of Agricultural Economics* 2023, 376(3),66–90, DOI:<https://doi.org/10.30858/zer/170892>. Available online: <http://www.zer.waw.pl/BEZPOSREDNIE-I-POSREDNIE-KONSEKWENCJE-WOJNY-W-UKRAINIE-DLA-POLSKIEGO-HANDLU-PRODUKTAMI,170892,0,2.html> (<http://www.zer.waw.pl/BEZPOSREDNIE-I-POSREDNIE-KONSEKWENCJE-WOJNY-W-UKRAINIE-DLA-POLSKIEGO-HANDLU-PRODUKTAMI,170892,0,2.html>) (accessed on July 7 2024).
19. Statistical Yearbook of Ukraine 2020, Kyiv 2021

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