The Common Agricultural Policy of the European Union – the present and the future

EU Member States point of view

INSTITUTE OF AGRICULTURAL
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The Common Agricultural Policy of the European Union – the present and the future

EU Member States point of view

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8. Effects of direct payments on agricultural development in Bulgaria

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Abstract

The CAP policy in Bulgaria during these 10 years reveals difficulties in handling the current national problems in agriculture in terms of market, production and structure. A strongly adaptive behaviour is observed among producers in making their management and production decisions stuck and oriented to the policy and the financial support. During the last years the gross agricultural production in Bulgaria amounts to threefold lower compared to the average level in the EU-27. These low values reveal the big issue in Bulgarian agriculture and raise the question about the efficiency of the policy and the benefits for the society. The goal of the paper is to analyse some of direct payments effects on agricultural output, value added, production costs, land structure and rent. It turns out that the CAP is the policy adjusted better to the old Member States, which can be explained by the historical development approach. The direct payments, based on area, distort the allocation of resources and do not generate adequate growth entailing higher productivity, bigger employment and labour remuneration, better market stability and competitiveness.

Keywords: CAP, agriculture, direct payments, gross agricultural output, farm incomes

JEL codes: Q18, C01, E23

8.1. Introduction

Agriculture, as part of the country's economy, contributes to the general economic development and benefits from the latter. Until the beginning of the new millennium it formed more than 10% of Gross Value Added and GDP of the country. GDP has grown in real terms, amounting to BGN 88 billion (about EUR 45 billion) in 2015 and exceeding 3% in 2016. The growth of GDP after 2009 fluctuates within 2% and the reasons for that lie in both the domestic economic environment and the slowly recovering European economy. Agriculture has started to gradually lose its positions in the total value added after 2000. The share of the agricultural sector after 2007 has dropped down to 5%. According to Bachev et al. [2017], the minor increase in the GVA of the Bulgarian agriculture

and the small rate of investment growth affects its long-term economic sustainability negatively. This drop is not due to the absolute decrease in production and value added of the sector, but due to more rapid economic growth in the economy, mostly in the tertiary sector – services, which forms 65% of GAV of the country.

The state of the gross output and GAV in agriculture is a direct function of the production structure, which during the observed period has changed considerably with the share of crop production growing substantially at the expense of livestock breeding. In 2016 crop production accounts for 70% of GAV in agriculture, and livestock breeding for 25%, the remaining 5% being formed by agricultural services. For the sake of comparison, at the beginning of the century, livestock breeding was responsible for 50%, and crop production for ca. 45% of GAV. The situation is rapidly changing and a major role is played by the implementation of the Common Agricultural Policy, whereby the financial support is based on area. Thus, the increase in the size of the area with field crops – cereals, oilseeds – is affected the most by the subsidies received [Sokolova et al., 2015]. The most significant decrease in GAV of the agricultural sector is observed for vegetables the share of which has dropped from 12% in 2007 to 4% in 2016, and this production has suffered the greatest losses as a result of changes in the policy. Regardless of the fact that vegetable production uses land as an immediate production factor due to production specifics, market uncertainty, organizational problems and last, but not least, the high demand for land for the development of consolidated grain production, this sector shrinks constantly. According to Sokolova et al. [2015], reduction in the areas occupied by intensive type of production (vegetables and permanent crops) are influenced less by the subsidies and although they have some sustaining affect, the role of market and price fluctuations is stronger.

Table 1. Distribution of direct payments

DP Topic/Schemes	**2007-2013**	**2014-2020**
Total 1st pillar envelop (EUR billion)	EUR 2.5	EUR 5.3
SAPS / BP	97%	45%
Top-ups support / National transitional support (EUR billion)	EUR 0.6	EUR 0.3
Greening	No	30%
VCS	3%	15% (13% + 2%)
YFS	No	0.5%
SFS	No	Yes (EUR 500 per ha)
Redistributive payment	No	7,9% (EUR76/ha)

Source: Payment Agency.

The direct payments in Bulgaria have been implemented since 2007, as due to the accession provisions, Bulgaria similar to other New Member States started as of 25% out of the national financial package set up for 2016 by a progressive rate of annual increase. At the EU level, the direct payments constitute 72% of the CAP budget, while in Bulgaria during the first programing period (2007-2013), their share accounted for about 50%. Direct payments are granted to farmers in the form of a basic income support based on the number of hectares farmed. In Bulgaria as the other NMS, the direct payments are allocated as Single Area Payment Scheme (SAPS), which is different from the old Member States, where the Single Payment Scheme (SPS) is implemented. Because of the lack of historical data, the payments per area in Bulgaria are equal regardless of the type of production, whereas in the old Member States, the entitlements have different payments based on historical support received by beneficiaries. It makes the differences between the SAPS and SPS, which in Bulgarian conditions leads to a unfavourable structural distortion giving advantages to low-cost productions contrarily to high-cost but higher added value sectors.

According to Ivanov et al. [2017], it turns out that the direct payments improve the situation for grain producers, with subsidies covering 20-30% of production expenses, and minimize the possible losses in case of adverse events – low average yields (production risk), low prices (price risk), marketing difficulties (market risk). At the same time, the SAPS offers merely 3-5% of the production costs incurred in the intensive vegetable and fruit sectors, which inevitably sends signals and engenders advantages to those productions, where the level of subsidies in the costs is higher compared with all others. The increase in area with field crops is strongly affected by the subsidies, and the producers have more incentives to engage in such a production compared to stimulus found in the intensive agricultural cropping [Ivanov et al., 2017].

Along with the effects of direct payments on the agricultural production pattern, the direct payments have an impact on the development of the farm structure. The farm structure is also important, affecting the economic accounts in agriculture. From an economic point of view, the successful run of the grain and oilseed farming demands relatively huge land sizes to achieve economy of scale, which brings about consolidation and concentration of land in large agricultural farms.

Thus, the decoupled payments create advantages for the field crops mainly grain and oilseeds which leads to concentration of land in large holdings driven by economic reasons eventuating in disproportion in subsidy allocation. The disparities in the distribution of these financial resources proved to be a serious issue during the past ten years – a great number of farms receive direct payments of small total value. It is identified that 83% of the beneficiaries receive 12% of

the direct payments per area. This group usually includes farms of small size or such engaged in the intensive sectors of agriculture – vegetable production and animal breeding. The number of farms receiving more than EUR 100 000, is small – 0.2% in 2008, and 1.3% – in 2015. The beneficiaries belonging to this group received 16.8% of the payments per area in 2008, and in 2015 this percentage increased considerably up to 44.2% of all decoupled payments.

Since the direct payments are based on areas owned by agricultural holders it can be argued that a great part of the farms falling into the category of agricultural holdings receiving up to EUR 5000 EUR are exactly small size farms. The payments thought to support the incomes of farmers, i.e. to support predominantly those farmers who need funding to stand in agriculture get actually less and the major part of subsidies are granted to farms, which have the capacity to maintain their activities and to generate incomes without so generous public aid.

In the new programimg period 2014-2020 an attempt was made to address the disparity problems by introducing mechanisms directed to a fairer distribution of direct payments, such as the Redistributive Payment Scheme (RPS) and capping of payments above EUR 300 000 per beneficiary. These measures yield certain results. Regardless of that the effect of RPS is smaller than expected and it cannot eliminate the differentiation in the support, which is due to the decoupled payment support and the equal payment per area.

8.2. Methodology

The goal of the paper is to analyse direct payment effects on agricultural output, value added, production costs, agricultural industry patterns and to make comparative scenarios. Every time, we are at the stage of a new programing period, the analysts, experts, researchers consider what will be the effects on production, farmers' incomes and prices if the subsidies are stopped. There is a lot of criticism on the agricultural subsidizing, particularly outside the EU, from the developed countries and other transnational organizations, such as: FAO, OECD, World Bank, etc. [Milner and Morgan, 2004; Matthews, 2015]. At the beginning of the current CAP, the European Commission [2011] rolled out an assessment scenario report, where in compared 4 scenarios of future policy, one which was called refocus scenario representing a variant where the direct payments are abolished and thoroughly transferred to the 2nd pillar, demonstrated that farmers' incomes, labour remuneration, net value added would be the most affected.

In this study, two scenarios were explored and run – status quo scenario, where the elaborated model was simulated, the main goal of this procedure was to adjust the model to the least error exposure and to elicit the adjustments. The active scenario is a scenario without direct payments, which means all SAPS payments,

top-up payments are not allocated to Bulgarian agriculture after the accession to the EU. The scenario without direct payments is projected as in the model without direct payments, those payments are excluded from the gross return but other circumstances are envisaged as the status quo scenario. It means that the EU membership is a fact, the EU has and implements direct payments, the 2nd pillar exists, the investments and fixed capital formation is not changed due to direct payments.

The model projects the productivity in the crop and livestock farming, and the area and herd size, as those variables are driven by the economic results and profitability, assuming equal state of disposable fixed assets in either scenarios. The major industries in crop and livestock are modelled separately along with the major cost groups. The results from the analysis are bound to calculate the Gross Agricultural Output (GAO), Gross Value Added (GVA) and Intermediate Costs (IC), as the items consisting in these macro-economic indicators are modelled by the gross return. The model is formed based on the historical data for 1998-2016, as the goal is to reveal changes in the scenario without direct payments in the period covering the EU membership 2007-2016.

As regards the study objectives and the data available, the model works with the reference average to 2000-2006. On the other hand, the elasticity is derived endogenously through iterations, as those elasticity coefficients are selected, where the model residuals fit the least error. There are various ways to calculate the elasticity, as because of the goal to compare the results from both scenarios and the importance to minimize the error, the elasticity coefficients are tuned to the lowest residuals occurred in the status quo scenario. Along with the elasticity, the adjustment factors are another crucial element of the model setup. The adjustments in the non-direct payment scenario are transplanted from the status quo scenario. It is considered relevant because this scenario is the control one and when the same adjustments are arrayed in the active scenario it makes sure the bias of the results is precluded.

The model is set up by a system of 2 groups of equations. The first group is the production output equations, where in both scenarios the main agricultural industries in Bulgaria are modelled: in crop farming (5 sectors), and in livestock (6 sectors). The basic equation that is used is:

$$El_{PO} = f(Trend; \frac{TR}{IC}) \quad (1)$$

where El_{PO} are the elements of the production output – production area, livestock herds and the yields. The production output itself is an estimation of:

$$PO = Area(Herds) * Yield \quad (2)$$

where the previously modelled elements of production output make up the latter. The TR represents the total revenues from the particular industry, which is composed of the production output and the direct payment received. Thus, the direct payments added to the TR make the difference between status quo and non-DP scenario in the study. In the different models, which estimate the development of agriculture under various scenarios the direct payments are assumed as an underlying factor for production decision-making, where the marginal principles are the primary criteria for equilibrium. According to Binfield et al. [2004], in the model where the Single Farm Payments (SFPs), which are counterpart of the SAPS, are assumed to be partially decoupled – one EUR of SFP is assumed to have the same impact on production as EUR 0.3 of coupled payments. It shows the different approach in judging the impact from decoupled payments, while in this paper, all direct payments are tallied up by their real amount.

The second group of equations is founded to model the intermediate costs. Those costs represent the variable (production) costs, which are incurred directly in the production process. The assumption in modelling the production costs is that direct payments entail their increase. It is substantiated by the theory that the direct payments foster up the demand for production input causing an increase in the costs. Thus, the difference between both scenarios is that intermediate costs in the non-direct payment scenario would be less than the status quo one. The calculation of the considered less production costs in the non direct payment scenario are determined using the dispersion method [Solnik et al., 1996], which is modified and adjusted by CAPA [Ivanov et al., 2017].

$$CD = \sum_{i=1}^{n} \left[\frac{SU_I / SU_{AV}}{IN_I / IN_{AV}} \right] / N \tag{3}$$

The above equation is designated to calculate the coefficient of determination (CD) among the two variables – subsidies and inputs. The estimation calculatesthe dispersion between internal dispersion of the annual direct payments per hectare (SUI) to the average payments within the period (SUAV) and internal dispersion of the annual input indexes to the average input index over the covered period (INAV). The sum of the coefficients of determination (CD) is divided to all years in the sample (N). The *CD* is braced in the range of 0-1, as high, it is so the changes in the dispersion of both variables are connected and synchronized.

$$CD_{AD} = \frac{CD}{1 + \frac{\sum_{k=1}^{n} k*(N_k - 1)}{N_k}} \tag{4}$$

where the CD_{AD} is the adjusted coefficient of determination, which is deemed to cope with the multicollinearity and overfitting of the results. In the dispersion

analysis the dependency of the input price indexes by the direct payments and the commodity price indexes are used and both of these variables influence the changes in the input price indexes. The *k* represents the inter-dispersion coefficients (CD) among all variables comprised in the analysis, as in this research the above-mentioned 2 variables are selected.

$$El_{IC} = RV_{IC}^{EL} - \Delta RV_{IC}^{EL} * PI_{IN} * CD_{AD} \quad (5)$$

The above equation is used to estimate the amount of intermediate costs' elements (ElIC) increased by the effect of direct payment introduction, which are subtracted from the non-direct payment scenario. In the equation (5) the input price indexes (PIIN) and the CD_{AD} are taken into account , as the amount of the intermediate costs may increase over time but only increment ascribed to the input price enhancement is considered.

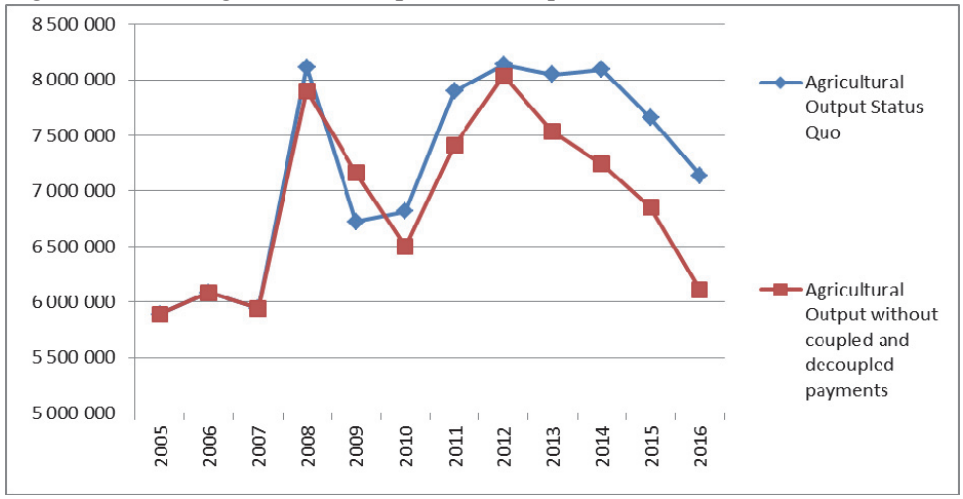
8.3. Results

The analysis of the effects from both scenarios starts with the comparisons of the Gross Agricultural Outputs. Until 2012, the comparison of the evolution of the GAO in both scenarios does not show distinctive differences, as both lines in Figure 1 move in the same direction and stick closely. The direct payments are allocated to farmers as of 2007, but during the first 5-6 years, the contribution of the subsidies is not significant. Moreover, in the years when the GAO drops down in 2009, this indicator in non-DP scenario stands higher than in the status quo one. It is explicated by the restructuring the Bulgarian agriculture, which in the last 20 years loses its production diversification, acquires prevalently a monoculture production pattern, resulting in a declining added value chain.

Besides, regarding the Accession Treaty, the SAPS in Bulgaria is determined to phase in from the level of 25% out of the average financial package and gradually increase to 2016 when it shall attain the average payment per hectare. Thus, the level of support in agriculture in the first few years was relatively low and brought about a limited impact on the dynamic of the agricultural output. It is also deemed that the changes in the policy do not have immediate effect on the production pattern due to the lag effect in the farmers' reaction.

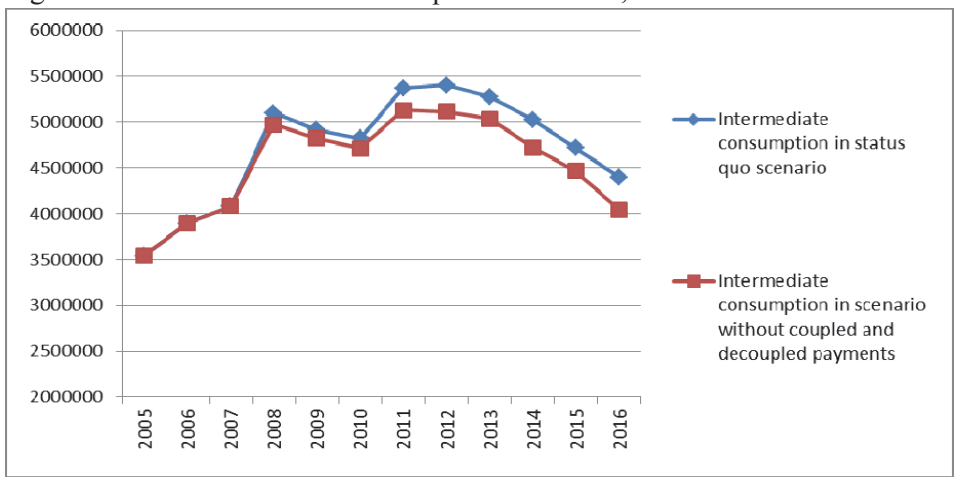
As regards the production costs, it is found that after 2006, those costs soars up significantly, which is attributed to the increased incomes of farmers boosted by direct payment aids. The analysis of the input price index in the agriculture shows that in 2000-2006, the costs index rose up by 31%, while in 2007-2013, it climbed up by 38%.

Figure 1. Gross Agricultural Output – status quo and non-DP, BGN thousad



Source: CAPA, NSI data.

Figure 2. Production costs – status quo and non-DP, 000 BGN



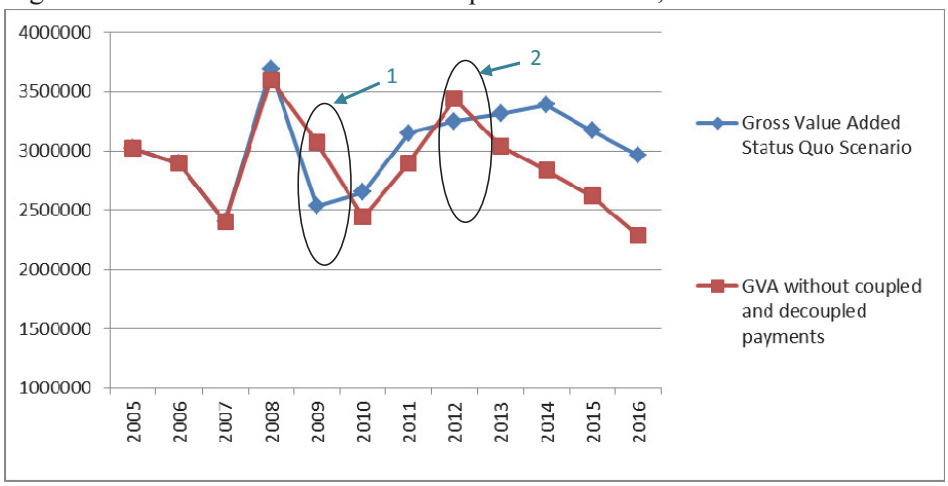
Source: CAPA, NSI data.

In addition, the national GDP during the first period was in average about 7.5%, while in the second one merely 2%. It is well-known fact that high GDP growth projects high cost index, because the growth in the economy is linked with a stronger demand and gears up the prices. The scenario analysis shows that intermediate costs at the non-direct payment variant exceeds the level of the same costs in the status quo one by an average of 4% in the period from 2007 to 2016. There is a clear difference between both scenarios concerning intermediate costs which gradually increase from the beginning of the period and reach their peak

value in 2016. The gap between the scenarios slowly diverges after 2011, which coincides with the notable reduction in the production costs in the last 5 years of the period. The intermediate costs in both scenarios decline, which is attributed to the shrug of the GAO propelled by the agricultural commodity slump after 2013.

The widening divergence of the intermediate costs in the last couple of years in both scenarios goes together with the sharp fall in the agricultural output in the non-DP scenario. Thus, the substantial cut of the input price index in those years, which is due to the oil price drop rolling down the prices of connected inputs contributes to the cost slump in the status quo scenario, whereas the cost differences are explained mostly by the physical reduction in the production rather than the input prices driven up by subsidy effect.

Figure 3. Gross Value Added – status quo and non-DP, BGN thousand

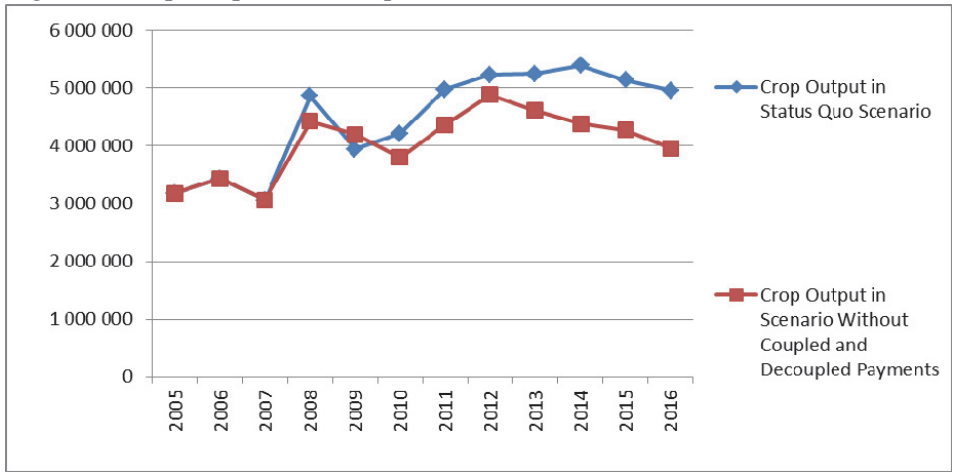


Source: CAPA, NSI data.

The results concerning the GVA in both scenarios manifest a similar movement in 2007-2012, when the differences caused by the DP effects are not identified. Moreover, in 2009 and 2012, the GVA in the non-direct payment scenario outmatches the results from the status quo scenario. In 2009, the gross output from agriculture in non-DP scenario is higher than that in the status quo one, which is explained by low market prices, especially in the crop production, which significantly benefited from the direct payments in the development prospective. In 2012, the prevalence of the non-DP scenario over the status quo one is ascribed to the strengthened prices in the livestock industries (milk and meat), which reinforces the results in the alternative scenario. The relative parity of the GVA at the beginning of the period between the observed scenarios testifies to the subtle effects of subsidies on the added value, productivity and the agricultural growth.

The performance of crop and livestock industries under both scenarios is rather divergent. The crop agriculture benefits from the direct payment and SAPS, and through the whole 10 years' period the status quo scenario demonstrates a higher output value compared to the non-DP scenario. The crop output under non-DP scenario scores a tangible downward after 2012, as the likely reason for it is the abstinence from physical expansion of the crop area, which is seen in the real scenario. The crop production in the status quo scenario develops up, which is driven by the enhanced interest of farmers in this production, where the public support amounts up to 25-30% of the area production costs.

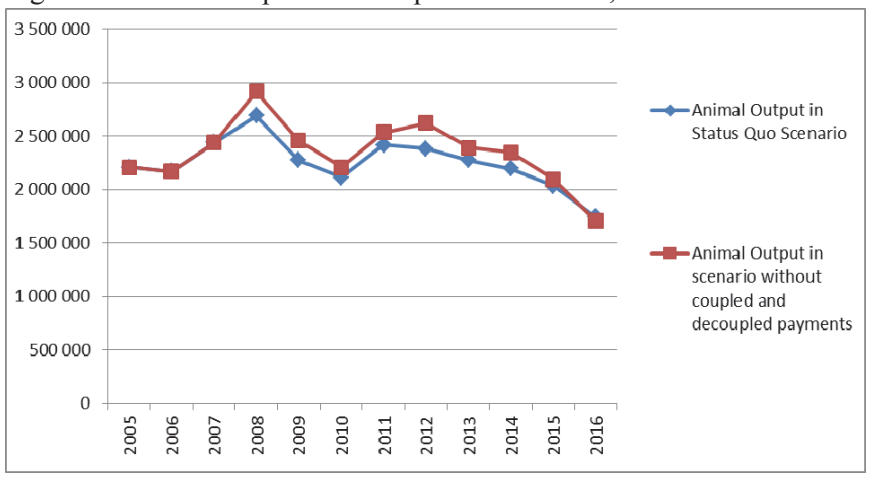
Figure 4. Crop Output – status quo and Non-DP, BGN thousand



Source: CAPA, NSI data.

Regarding the animal output, in contrast to the crop production, it turns out to be affected by the SAPS model of agricultural support. In the previous programing period of 2007-2013, the coupled payments, which are assumed as the main instrument to support the vulnerable sectors, as the dairy and livestock meat sector, was allowed up to 3.5%. The meat sectors, which predominantly run the business without possessing agricultural land, did not have an opportunity to obtain direct payments. In comparison to both scenarios, the animal output in the non-DP maintains constantly higher level of output than the real scenario, which is explicated by the impact of direct payments, which drives up the input price index in the agriculture as well as draws the production interest into sectors where the guaranteed public support is bigger in the cost structure.

Figure 5. Animal Output – status quo and Non-DP, BGN thousand



Source: CAPA, NSI data.

The livestock sector is affected by the established system of decouple support, which rewards farmers based on their acreage not on the value added and risk taken. The livestock sector is subject to increased production costs caused by direct payments and subsides, as the dispersion analysis reveals that about 27% of the price enhancement in the feeding in 2007-2015 period is driven by direct payments. It is said to explain the higher livestock output in the non-DP scenario compared to the status quo one, which at the end of the surveyed period – almost equalized. Of course, the direct payments have an incentive effect on the agricultural development, boosting the demand and interest in the industry and just placing the producers in an environment where others receive subsidies, while a minor part does not get them which will lead in the future to an irreversible reaction. Generally, the animal output in both scenarios converges in the last 2 years of the period, as they converge in a decreasing trend of the output, which again confirms the direct payments and the decoupled form of the aid do not create enough positioning for growth and value chain development.

8.4. Summary and conclusions

The CAP is the dominant policy adjusted better to the old Member States which can be explained by the historical development approach. The CAP policy in Bulgaria during these 10 years reveals difficulties in handling the current national problems in agriculture in terms of market, production and structure. The support under 1st pillar is fruitful for producers, but the effectiveness of the achieved results needs to be enhanced and the negative effects related to the in-

terference with the management and production decisions made by the farmers. The comparative analysis of the elaborated scenarios shows the non-DP and status quo scenarios have similar evolution but different magnitude on the agricultural macro indicators. In the non-DP scenario – the GAO and GAV would have higher levels in the first years but afterwards, they would dropped.

The crop sectors show higher outcomes from the DP implementation compared to livestock. It is substantiated that SAPS gives advantages to land--based farms because regardless of the production costs per hectare on different sectros, the direct payments go to all farmers doing land-generated farming based on a flat-rate. Contrarily to it, the livestock farming – pig and poultry sectors are posed to rising input prices, which is accompanied by no direct support due to decoupled payments based on area and those industries have a shrinking trend. The livestock industries are part of the value chain and play important economic role in utilizing the commodities produced in crop sectors and the unsatisfied situation in the livestock one causes lingering level of added value and the output of crop production, especially in grain and oilseed sectors cannot remain in the domestic economy and must be exported.

The problem of low agricultural added value stemmed at the low value added per unit of agricultural and arable land. In recent years, Gross Agricultural Output in Bulgaria is estimated at around 3 times lower than the EU-27 average. Those numbers and findings reveal the crucial challenge in Bulgarian agriculture and explain why the low levels of added value are due to weaknesses of the sector, rather than the faster and more surpassing development of secondary and tertiary industries of the economy. The direct payments are income stability instrument but demonstrate little effect on creating added value, which is considered as a significant disadvantage. The added value is thought as an ultimate goal needed to achieve in Bulgarian agriculture, because it is the most robust instrument to create jobs, lift up incomes, generate revenues, improve competitiveness and provide resilience of the agriculture.

However, it is noticed that there is an adaptive behaviour of producers to support policy rather than the market signals. It is illustrated by the depressed development in the livestock sector and the moderate level of the GAV, as due to equal payment per hectare, producers are bound to crop production where the subsides account for higher share in the intermediate costs. It is also found that the introduction of higher coupled support after 2014 as a result of policy changes backs up intensive sectors and fits even better from added value point of view. In the status quo scenario, the GAO and GAV in the last 3 years decline due to market price drop but this slump is less compared to alternative non-DP scenario. It can be concluded that decoupled support is not efficient enough apart from income contribu-

tion. It cannot create the growth and the productivity, which is crucial for the competitiveness of Bulgarian agriculture. Therefore for the future, it is thought that decoupled payment system and SAPS should be re-considered in the CAP post-2020 to adjust to the need and to overhaul the weaknesses of the current policy. The last communication of the European Commission [2017] "The Future of Food and Farming" envisages a new delivery system and simpler CAP, where the Member States will set up strategic plans, which will bring more flexibility of the policy framework, hence facilitating the national interest and needs in the agriculture.

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