Comparison of Operating Subsidies in Agriculture in EU Countries

Jaroslav Svoboda, Jana Lososová, Radek Zdeněk

Abstract: The Operational subsidies are the basis of CAP, which is financed from the EU budget. Although its share in the budget has decreased lately to approx. 40%, it still represents the key EU policy. The aim of the article is the analysis of the policy of subsidies in the field of operational subsidies in the EU countries in years 2004 to 2012, which represents its comparison based on selected economic indicators. The objective was to find suitable connections and links among these indicators and operational subsidies. The article deals with comparison of agricultural subsidies in the member states of the EU in the period 2004-2012 based on the database FADN. The linkage of paid out operational subsidies related to area value of utilised agricultural area is obvious – the so called decoupling occurs (i.e. breaking away of subsidies from output). The subsidy range has a dropping trend over time and the values of minimum and maximum draw near each other during the monitored period.

Key words: Agriculture · CAP · Operational subsidies · Outputs · Inputs

JEL Classification: Q14 · Q18

1 Introduction

The support of agricultural production in some form occurs in all world states. The reasons for this are the particularities in agricultural production which form externalities not appreciated by the market. The common agricultural policy (CAP) belongs to the most elaborated policies of the European Community. The common agricultural policy has three dimensions: market support, income support and rural development. These three dimensions are mutually connected and total sustainability of policy depends precisely on how well they complement one another (European Commission, 2014). CAP represents approximately 40% of the EU budget. This implies that this policy is one of a few fields in which the common policy is financed predominantly by the EU. Therefore, it is necessary to put the CAP budget into connection with total public expenses in the EU. In this case the given budget seems to be small – it represents only 1% of all public expenses in the EU. In 2014 it amounted to 58 billion euros. Furthermore, we need to point out that the share of the CAP’s budget in the EU budget in the last 30 years has decreased considerably, from not quite 75% to approximately 40% (European Commission, 2014).

Problems regarding agricultural subsidies and predictions of their impacts on international markets and the EU are the topic of many studies, e.g. Fárek & Foltýn (2004), Donaldson et al. (1995), Beard & Swinbank (2001), Benjamin et al. (2006), Latruffe & Davidova (2007). Most foreign studies are directed at the impacts caused by the enlargement of the EU (Ciaian et al. 2007). An analyses of the impacts of the CAP on the new member states was carried out by e.g. Pokrivčák, Svinnen & Gorter (2003). Impacts of the CAP on the results of management of agricultural enterprises together with the reference to disparity of results according to the types of companies, natural conditions of management and economic prosperity were studied by Szabo & Grznár (2002).

Svatoš (1999) defines subsidies as the evaluation of the public sector, influencing the prices of products and services and prices of factors of production. Bečvárůvá et al. (2008) defines subsidies as transfers reflecting changes in the division of income which are not connected with the flow of goods and services. Grega (2005) defines them as an interference into the allocation powers of the price mechanism. Subsidies evoke discussions whether to subsidize agriculture or not. According to the opponents of subsidies, the problems with the economic situation are caused by bad management and subsidies into the agrarian sector are very high from the point of view of a taxpayer. Van Beers & Van den Bergh (2001) say that subsidies are introduced to support certain aims, changing in the course of time, and the impacts of subsidies are unpredictable. Subsidies lead to prices that convey fundamentally incorrect information about real costs relating to production, extraction or resource scarcity. Subsidies run the risk of favouring less profitable...
over more profitable firms, where profitability includes social costs. Therefore, subsidies should never be structural, but merely serve to guide transition periods.

The defenders of subsidies stress the particularity of the agrarian sector and the formation of social, environmental, consumer and other negative impacts on the dissolution of a higher number of agricultural companies. To which extent the removal of direct payments could influence the dynamics of land exploitation in Europe including impacts on structural changes and environment is discussed by e.g. Uthes et al. (2011), Acs et al. (2010), Offermann et al. (2009).

Reforms of the CAP are rather complicated and emerge in historical and political contexts and in the interaction of several institutional mechanisms, thus their results are not fully predictable (Moyer & Josling, 2002; Garzon, 2006; Swinnen, 2010). Erjavec & Erjavec (2015) detected that in the process of CAP reform decision-making, European institutions justified the CAP with a transformation of key discourses (productivist, multi-functional and neo-liberal) by emphasising the hugely popular environmental element while, at the same time, employing a strong productivist discourse at the level of measures and the budgetary distribution between the EU member states and farmers’ groups. The prediction of impacts of changes in the CAP after 2013 is dealt with by Ciaian et al. (2014). They presume the strengthening of competition on the estate market and higher estate values, especially in the countries where subsidies will be balanced.

### 2 Material and Methods

In the article we use calculations based on the database of selective research; The Farm Accountancy Data Network (FADN) in the EU. Standard output FADN is a set of indicators—the results of agricultural companies published officially per particular company types within FADN systems. The purpose of EU methodology is to enable the evaluation and comparison of economic results of agricultural companies in individual EU countries according to a single methodology, which is not influenced by divergences of tax accounting records (http://ec.europa.eu/agriculture/ricaprod/).

From many recorded indicators we have chosen those which are relevant for the given points at issue and are linked to operational subsidies. The indicators were:

- Total Utilised Agricultural Area-ha (SE 025).
- Total output –c.u. (SE 131) – i.e. total output crop, livestock –c.u.
- Total Inputs (SE 270) –i.e. specific (direct) costs, overheads (e.g. energy, maintenance, repairs, fuel, etc.), depreciation –c.u. and external factors (wages, rent, interest).
- Operational subsidies (SE 605).

FADN EU methodology within operational subsidies contains more types of subsidies. More detailed structure of operational subsidies was determined at the level of following groups:

- Total subsidies on crops (Compensatory payments, Set aside premiums, Other crops subsidies)
- Total subsidies on livestock (Subsidies dairying, Subsidies other cattle, Subsidies sheep/goats, Other livestock subsidies)
- Environmental subsidies
- LFA subsidies
- Decoupled payment (Single Farm payment, Single Area payment, Additional aid)
- Others subsidies (Other RD subsidies, Subsidies on intermediate, consumption, Subsidies on external factors).

Considering the fact that the system of most paid out subsidies is directly dependent on the farm size, the indicators of total output, total costs and total operational subsidies were calculated per ha of Utilised agricultural area. Thus, the size of individual farms of given states is taken into consideration.

In another part, the links between defined indicators are described with the help of correlation and regressive analysis. Indicators related to utilized area value from FADN EU were further completed by relative indicators (total output/operational subsidies, Operational subsidies/total costs, total output/total costs).

### 3 Results and Discussion

*Comparison of Selected FADN EU Indicators in EU Countries*

On comparison of the division of EU countries in 2004 and in 2012 (tab. 1 and 2), according to the extent of operational subsidies per ha of Utilised agricultural area, the shift of the CR from the position where subsidies reached only 50% of EU average to subsidies 7% higher than the average, is apparent. The biggest increase of operational subsidies in the monitored period happened in Slovakia, the CR and Poland. These countries gained more than double the subsidies per
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ha of Utilised agricultural area in 2012 than in 2004, although neither Slovakia nor Poland have reached the EU average so far. In 2004 subsidies exceeded the EU average only in Slovenia (from the newly added countries). Contrary to 2004, a decrease of subsidies per ha occurred only in Malta, Austria and Great Britain.

**Table 1** Division of EU countries according to the extent of operational subsidy in €/ha in 2004

<table>
<thead>
<tr>
<th>Subsidy</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 200 €/ha</td>
<td>Estonia (95); Slovakia (98); Lithuania (117); Latvia (122); Poland (129); Czech Republic (154); Hungary (176);</td>
</tr>
<tr>
<td>200 - 400</td>
<td>Spain (209); Portugal (225); United Kingdom (281); <strong>EU (305)</strong>; Sweden (324); Netherlands (333); France (351); Italy (363); Denmark (367); Ireland (381); Germany (388); Belgium (396)</td>
</tr>
<tr>
<td>400 - 600</td>
<td>Slovenia (461); Luxembourg (504); Cyprus (514)</td>
</tr>
<tr>
<td>More than 600</td>
<td>Austria (610); Greece (658); Finland (889); Malta (2 289)</td>
</tr>
</tbody>
</table>

Source: FADN, own results

**Table 2** Division of EU countries according to the extent of operational subsidy in €/ha in 2012

<table>
<thead>
<tr>
<th>Subsidy</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 200 €/ha</td>
<td>Lithuania (183); Latvia (190); Bulgaria (191); Romania (194); Estonia (196)</td>
</tr>
<tr>
<td>200 – 400</td>
<td>Spain (244); United Kingdom (263); Slovakia (272); Portugal (281); Poland (299); Hungary (328); <strong>EU (341)</strong>; France (361); Czech Republic (364); Denmark (383); Sweden (385)</td>
</tr>
<tr>
<td>400 – 600</td>
<td>Germany (409); Italy (420); Ireland (427); Belgium (515); Cyprus (537); Austria (574); Netherlands (578)</td>
</tr>
<tr>
<td>More than 600</td>
<td>Luxembourg (613); Slovenia (626); Greece (710); Finland (921); Malta (1 102)</td>
</tr>
</tbody>
</table>

Source: FADN, own results

However, a substantial problem is also the structure of individual subsidies (tab. 3). Years 2004 and 2012 are presented here again to get a basic comparison. Unambiguously, this implies a diversion from the support of particular crops or animals (vegetable or animal production), whose share (in total operational subsidies) decreased in average from about 63% in 2004 to not quite 8% in 2012, to the so-called decoupling, where the proportion is in fact the opposite, i.e. from about 9% in 2004 to about 60% in 2012. The other types of subsidies can be considered as relatively stable – environmental subsidies 10.4% and 13%, LFA subsidies 10.5% with a slight drop to 8.8% and other subsidies 69% and 10%.

The starting amount of subsidies of vegetable and animal production were in the competence of given states with their political decisions respecting the particularities of their countries and determined priorities.

**Table 3** Structure of operational subsidies in EU countries (in %)

<table>
<thead>
<tr>
<th>State</th>
<th>Total subsidies on crops 2004</th>
<th>Total subsidies on livestock 2004</th>
<th>Environmental subsidies 2004</th>
<th>LFA subsidies 2004</th>
<th>Decoupled payments 2004</th>
<th>Other subsidies 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>27.5</td>
<td>51.5</td>
<td>4.7</td>
<td>1.8</td>
<td>63.7</td>
<td>14.5</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>-</td>
<td>7.5</td>
<td>-</td>
<td>5.3</td>
<td>-</td>
<td>65.6</td>
</tr>
<tr>
<td>Cyprus</td>
<td>54.6</td>
<td>32.7</td>
<td>0.0</td>
<td>22.1</td>
<td>0.0</td>
<td>12.7</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>21.4</td>
<td>8.1</td>
<td>6.8</td>
<td>14.5</td>
<td>35.5</td>
<td>13.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>74.3</td>
<td>18.8</td>
<td>3.9</td>
<td>2.1</td>
<td>0.1</td>
<td>90.3</td>
</tr>
<tr>
<td>Germany</td>
<td>56.2</td>
<td>18.8</td>
<td>10.6</td>
<td>9.1</td>
<td>5.4</td>
<td>77.1</td>
</tr>
<tr>
<td>Greece</td>
<td>72.1</td>
<td>18.2</td>
<td>0.1</td>
<td>1.5</td>
<td>7.9</td>
<td>73.6</td>
</tr>
<tr>
<td>Spain</td>
<td>65.5</td>
<td>27.0</td>
<td>1.3</td>
<td>5.7</td>
<td>2.8</td>
<td>73.3</td>
</tr>
<tr>
<td>Estonia</td>
<td>17.4</td>
<td>13.2</td>
<td>31.3</td>
<td>27.8</td>
<td>9.0</td>
<td>47.6</td>
</tr>
<tr>
<td>France</td>
<td>59.0</td>
<td>26.2</td>
<td>6.1</td>
<td>4.4</td>
<td>4.8</td>
<td>72.2</td>
</tr>
<tr>
<td>Hungary</td>
<td>32.8</td>
<td>9.2</td>
<td>0.1</td>
<td>17.2</td>
<td>0.2</td>
<td>62.3</td>
</tr>
<tr>
<td>Ireland</td>
<td>7.8</td>
<td>62.1</td>
<td>14.0</td>
<td>14.5</td>
<td>13.5</td>
<td>72.1</td>
</tr>
</tbody>
</table>

Source: FADN, own results
The starting extent of direct payments (subsidies on crops, subsidies on livestock, decoupled payments) for NMS was determined at 25% in 2004 with 5% growth up to 2007 (40%) and further 10% annual growth with the possibility of paying off from national resources right to 30%. Table 4 illustrates a gradual start of direct payments on the example of the CR and a real share of direct payments per ha of Utilised agricultural area towards the EU average (including NMS) and towards Germany’s average. Direct payments in NMS (except Malta and Cyprus) reached the EU average in the monitored period only in Slovenia.

Table 4 Conditions for gradual start of direct payments NMS

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of direct payments from the EU</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
<td>70%</td>
</tr>
<tr>
<td>Maximum top up from national resources (Top-up)</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Totally</td>
<td>55%</td>
<td>60%</td>
<td>65%</td>
<td>70%</td>
<td>80%</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>Real share of direct payments in the CR towards the EU average</td>
<td>41%</td>
<td>55%</td>
<td>63%</td>
<td>41%</td>
<td>53%</td>
<td>59%</td>
<td>69%</td>
</tr>
<tr>
<td>Real share of direct payments in the CR towards the DE average</td>
<td>34%</td>
<td>46%</td>
<td>49%</td>
<td>30%</td>
<td>38%</td>
<td>43%</td>
<td>52%</td>
</tr>
</tbody>
</table>

Source: FADN, own results

The Relationship of Operational Subsidies and Other Derived Indices

Table 5 contains correlation coefficients of the relation of operational subsidies and other derived indices. These indices are in the relation:

\[
\frac{{\text{Total outputs}}}{{\text{Operational subsidies}}} \times \frac{{\text{Operational subsidies}}}{{\text{Total inputs}}} = \frac{{\text{Total outputs}}}{{\text{Total inputs}}}
\]

Based on the results of the correlation matrix (tab. 5) the following conclusions can be drawn:

- neither the share of output on subsidies \((r = -0.004)\) nor cost productivity\((r = 0.06)\) d depend on the extent of operational subsidies
- higher subsidies per ha will occur only very slightly in a higher share of subsidized costs \((r = 0.17)\)
- the share of output on subsidies influences the cost productivity very slightly \((r = 0.24)\)
the share of subsidized costs is in a very slight correlation relation with the cost productivity \((r = -0.06)\)

- the share of output on subsidies is in a strong negative dependence on the share of subsidized costs \((r = -0.72)\)

**Table 5** Correlation matrix of monitored indices

<table>
<thead>
<tr>
<th>Variable</th>
<th>Operational subsidies</th>
<th>Total output/Operational subsidies</th>
<th>Operational subsidies / Total costs</th>
<th>Total output/Total costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational subsidies</td>
<td>1</td>
<td>-0.004</td>
<td>0.17</td>
<td>0.06</td>
</tr>
<tr>
<td>Total output / Operational subsidies</td>
<td>-0.004</td>
<td>1</td>
<td>-0.72</td>
<td>0.24</td>
</tr>
<tr>
<td>Operational subsidies / Total costs</td>
<td>0.17</td>
<td>-0.72</td>
<td>1</td>
<td>-0.06</td>
</tr>
<tr>
<td>Total output / Total costs</td>
<td>0.06</td>
<td>0.24</td>
<td>-0.06</td>
<td>1</td>
</tr>
</tbody>
</table>

* red marked correlations are significant at \(p < 0.05\), \(N=237\)

Source: FADN, own results

The relationship between the share of subsidized costs and output towards subsidies explains non-linear power function (fig. 1 and 2), where in 2012 the determination index was \(I^2 = 0.91\). The highest share of subsidized costs in 2012 shows Finland (0.38) and Greece (0.37), where the output of 2.08 EUR (Finland or 3.56 Greece) falls on 1 EUR of accepted operational subsidies. Another group is formed by states Spain, Slovakia, Poland, Portugal, Hungary, the UK, the CR and Baltic republics. Here the share of subsidized costs is lower and the output falling on subsidies higher, e.g. the CR’s subsidized costs make 22% and the share of output in subsidies makes 4.09. A lower share of subsidized costs with their higher effectivity is characteristic for states Belgium, Holland, Luxembourg, Cyprus, Austria, Slovenia, France, Sweden, Italy, Denmark, Germany and Ireland.

**Figure 1** The relationship between the share of subsidized costs and production in subsidy in 2004

\[
y = 1.0832x^{0.9983} \\
I^2 = 0.8867
\]
4 Conclusion

The aim of the article was to analyse operational subsidies in the EU countries. Together with investment subsidies and other possible measures, they are the basis of CAP, which is financed from the EU budget. Although its share in the budget has decreased lately to approx. 40%, it still represents the key EU policy. Using standard output of FADN EU figures in 2004 – 2012 enabled us to draw particular conclusions. The linkage of paid out operational subsidies related to area value of Utilised agricultural area is obvious – the so called decoupling occurs (i.e. breaking away of subsidies from output). It unambiguously implies the diversion from particular crop or animal support (vegetable or animal production), whose share in total operational subsidies dropped on average from about 63% in 2004 to not quite 8% in 2012, in fact the share is converse here, i.e. from about 9% in 2004 to about 60% in 2012.

Comparing the development from 2004, we can see that the area value of an average company increased by more than 10% in most original member states, in the Baltic countries and Poland (from NMS). A drop of area value of an average company happened in Slovakia, Cyprus, Hungary, Malta, and the CR, and Slovakia and the CR are countries with the biggest area value of an average farm and also with the biggest share of rented land.

The average extent of subsidy in the EU shifted from 305 €/ha in 2004 to 341 €/ha in 2012. The median shows an average growth rate of 1% annually and the variability of subsidies compared to production and costs is the lowest and proves a dropping trend. The subsidy range has a dropping trend over time and the values of minimum and maximum draw near each other during the monitored period. Naturally, in the first years of the EU enlargement new member states had a lower starting value, which caught up gradually. Among the least subsidized states both at the beginning and the end of monitoring we can rank Lithuania, Latvia, and Estonia. On the other hand, Malta, Finland, and Greece traditionally rank among the most subsidized states. The biggest growth of operational subsidies in the monitored period happened in Slovakia, the CR, and Poland, yet still neither Slovakia nor Poland reached the EU average. Contrary to 2004, there was a drop in subsidies per ha only in Malta, Austria and the UK.

The correlation analysis implies that neither the share of subsidies in production nor the productivity defined as the share of costs in production depends on the extent of operational subsidies. Increasing subsidies per ha of Utilised agricultural area will not occur in a higher productivity of costs and only very slightly it will occur in a higher share of subsidized costs. The share of output in subsidies influences the productivity of costs very slightly and the share of production in subsidies is in a strong negative dependence on the share of subsidized costs.
Acknowledgements
The authors thank the Ministry of Education of the Czech Republic for financial support, Research Program of the Department of Accounting and Finance (RVO160).

References


