

Comparison of selected indicators of farms in the EU member states

Srovnání vybraných ukazatelů zemědělských podniků v zemích EU

VÁCLAV BAŠEK, JOSEF KRAUS

Institute of Agricultural Economics and Information, Prague, Czech Republic

Abstract: The following international comparison of selected indicators of farms stems from the official results of investigations on holdings incorporated in the “Farm Accountancy Data Network” (FADN) and it is based on the standard outputs recalculated for the average agricultural holding in each Member State. The paper accepts the mandatory concept that defines the basic indicators serving to illustrate the creation and division of income from farming in the FADN system. The presentation of the results develops from the indicators assessing the overall agricultural production divided into its basic components. Production and cost indicators, operational subsidies, gross and net added value per one hectare of agricultural land, or per one AWU and other derived indicators are analysed.

Key words: international comparison 2004–2007, farms’ economic results, selected EU countries, the FADN system, effectiveness of agricultural holdings

Abstrakt: Následující mezinárodní srovnání vybraných ukazatelů zemědělských podniků vychází z oficiálních výsledků šetření podniků zahrnutých do „Zemědělské účetní datové sítě (FADN)“ a opírá se o tzv. standardní výstupy přepočtené na průměrný podnik v každém z členských států. Příspěvek přejímá závazný koncept, jímž jsou definovány základní ukazatele sloužící k zobrazení tvorby a rozdělení důchodu ze zemědělství v systému FADN. Prezentace výsledků se odvíjí od ukazatelů hodnocení celkové zemědělské produkce v členění na její základní složky. Analyzovány jsou produkční a nákladové ukazatele, provozní podpory, hrubá a čistá přidaná hodnota v přepočtu na hektar zemědělské půdy, resp. AWU a další odvozené indikátory.

Klíčová slova: mezinárodní komparace 2004–2007, hospodářské výsledky podniků, vybrané země EU, systém FADN, efektivnost zemědělských podniků

This paper aims to familiarise those interested with the position that Czech agriculture has taken within the EU in the period 2004–2007. An international comparison of indicators of the effectiveness of agricultural holdings stems from the official results of an investigation of holdings¹ incorporated into the “Farm Accountancy Data Network” (FADN) (European Commission 2004–2007) and it is based on the standard outputs calculated for the average holding in each Member State. It accepts the concept that defines the basic indicators at the holding level

serving to illustrate the creation and division of income from farming in the FADN system.

The presentation develops from the indicators assessing the overall agricultural production divided into its basic components. Operational subsidies are analysed independently and in a unified manner. This is followed by an international comparison of gross and farm net value added and selected natural indicators are taken to close the analysis. The indicators are analysed in conversion per 1ha of agricultural land (a.l.) or 1 AWU². To gain a better

¹Basic source in accordance with the European Commission, RICC, Standard Results (2004–2007) in the system of indicators SE 005-SE 530.

²In accordance with the standardised EU methods, work in the agricultural sector is expressed by the Annual Work Unit (AWU). One AWU corresponds to the actual hours worked in one full time working year at an agricultural holding (in the FADN system, 1 AWU= 2000 hours).

Total output			Balance current subsidies & taxes)	
Output crops & crop products)	Output livestock & livestock products)	Other output		
Intermediate consumption		Gross Farm Income		
Specific costs	Farming overheads			
		Depreciation	Farm Net Value Added	Balance subsidies & taxes on investment
		External factors		Family Farm Income
		Wages	Rent	

Figure 1. The concept of the basic indicators depicting the creation and division of income from farming in the system FADN CZ

Source: Farm Accountancy Data Network (1984)

overview, the international comparison was limited to 9 Member States and the average for the EU 25. By choosing countries from the EU 15, the results of Czech agriculture (Hanibal 2008) were intentionally confronted with a demanding and consolidated environment with the knowledge that our position in the European zone can only be strengthened by competition with efficient economies.

MATERIAL AND METHODS

The economic results for the average holding for each Member State are clearly influenced by their internal structure, i.e. the predominant production aims in the standard typology defined individually for each Member State.

The typology of agricultural holdings valid within the FADN classifies holdings depending on their production aims and the size of the holding based on the share each production section of the holding has in the creation of the standard gross margin (SGM). The SGM expresses the economic yield of a production unit for the individual sections of plant and animal production. Its value corresponds to the standard value of production from 1 ha of the given crop or one head of the given category of animals after deducting the variable (specific) costs for their production.

On the basis of calculating the amount of a holding's standard gross margin, the holding can be categorised into economic size classes. The economic size of a holding is expressed in the European size units (ESU). The value of a holding's SGM is converted to the Euro currency unit by using the following scheme for converting: 1 ESU = EUR 1200.

In accordance with the obligatory plan for selecting agricultural holdings into the network (for details see Bašek and Kraus) in 2007, Czech agriculture entered into the international comparison with 1 325 holdings (FADN data 2007). Nearly half of the holdings fall into the group characterised by field production and just under a third of holdings are mixed. More than 7% of holdings specialise in dairy production for the given definition in the selection group.

Indicators analysed from the obligatory Figure 1 prescribed by the "Farming Accountancy Data Network".

RESULTS AND DISCUSSION

The average standard size of an agricultural holding in ha

From the graphical expression of the average size of holdings included in the FADN investigation, it is clear (Figure 2) that Slovak agriculture is characterised by a diametrically different size structure with an average holding size of ca 550 ha. This is given by the fact that the restitution, restructuring and privatisation processes did not bring fundamental shifts beneficial to the holdings of natural persons (HNP).

If the average size of an agricultural holding within the FADN investigation is 33 ha for the EU 25 during the 2004/7 period, then France and Germany have more than twice the average size. As concerns size, then agriculture in the Netherlands and Austria is around the average values for the EU 25 (32 ha for a standardised holding).

Applying the weighting system means that Great Britain, at the average size of 155 ha of a.l., has a dif-

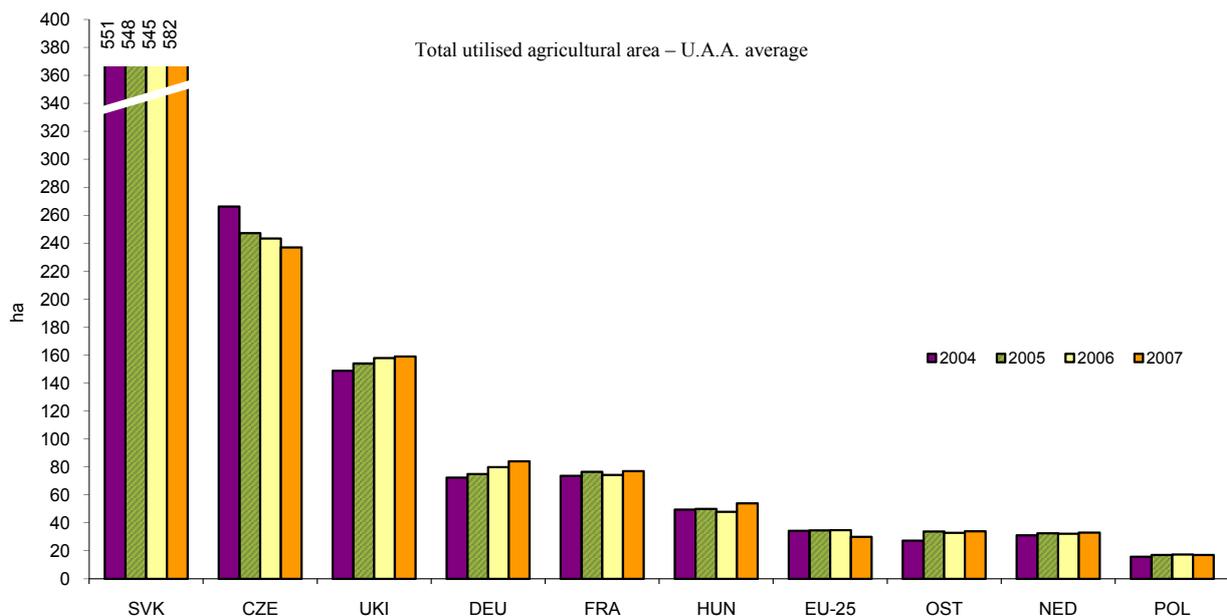


Figure 2. Average size of a standard holding in ha

ference of just 100 ha of a.l. in comparison with the average standard size of a Czech holding.

In contrast to Slovakia and the Czech Republic, the restructuring of the size structure in Hungary made a clear headway, leading to an average size of 50 ha of a.l. over the three years considered. Within the 9 monitored countries, the most fractionalised size structure is characterised by Polish agriculture, which retained the structure corresponding to the small-scale farming and in the Western part, the holdings have a far higher concentration of land tenure.

The hectares of agricultural land per AWU indicator

In the recalculation for the average agricultural holding of a Member State, construed in accordance with the FADN methodological principles, the indicator of the extent of agricultural land per 1 AWU is highly favourable for Great Britain, which far exceeds the other countries monitored (Figure 3). Compared to the EU 25 average, the indicator for the United Kingdom is more than three times favourable and it is without doubt an important notification that using this method, British agriculture achieves incomparably higher values of the measured productivity. In third and fourth place of the indirect indicator of productivity, there are France and Germany with roughly two thirds and a half respectively of the level obtained by British agriculture.

As concerns the size in ha for the monitored period, the average agricultural holding in Germany

has 78 ha of a.l. and France has 75 ha of a.l. It is worth noting that whilst Germany substantially increased the degree of concentration of land tenure in the process of unifying the two German states after 1989, France managed a roughly similar size structure in its agriculture without undergoing any unification process. Both countries are dominant as concerns the production in the Union and they lead in the indicator of the area of agricultural land per 1 AWU. It can also be stated that despite the obvious differences in the agriculture of both countries, they attained a similar size structure within the 50-year integration process and a common solution can be found to the existing problems. In this sense, both countries also have many standpoints for proposals to the reform the Common Agricultural Policy (CAP) that are close and operative for their adoption. In the commonest position since the founding of the EU, the formation of the French-German alliance can be seen in which France primarily supports Germany in its industrial policy and Germany helps to promote French interests in the agrarian sector.

However, in general the indirect indicator can only be assessed as an aid, as it does not encompass the whole host of other important circumstances associated with appraising the productivity of farming. It is influenced by the existing size structure including the fact how farming has been formed in the past, the production aims, natural conditions, the segmentation of the land, the technical advancement, the level of investments made and the intensity of production, the level of applying scientific/technical findings, etc.

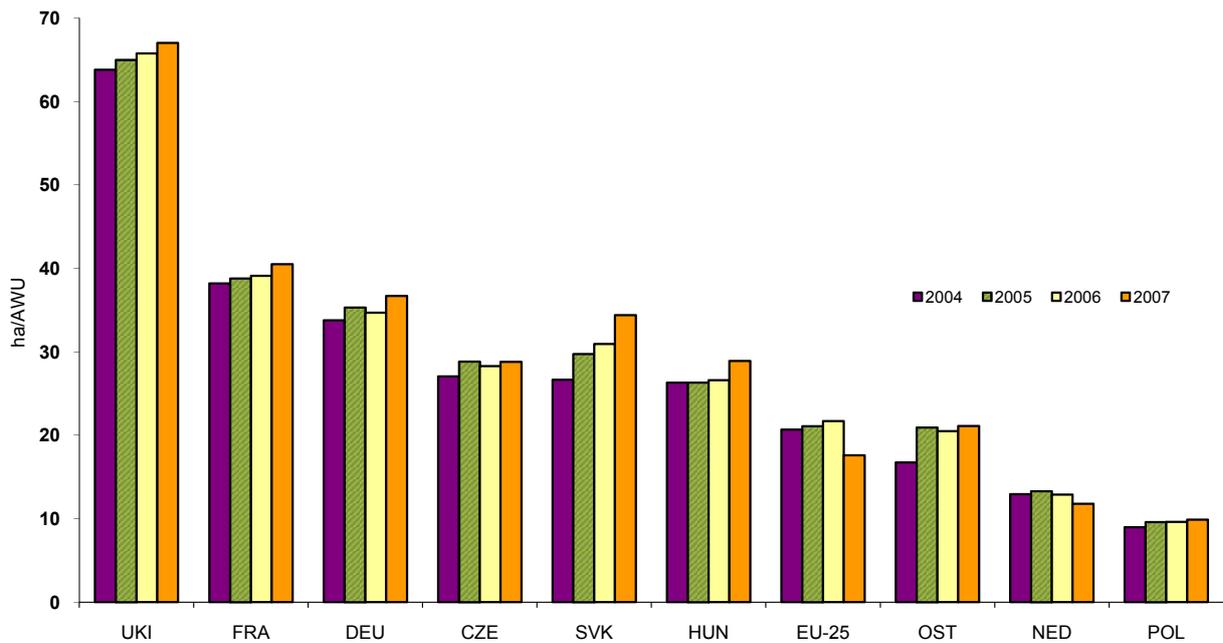


Figure 3. Utilised Agricultural Area/1 AWU

The indicator of the overall agricultural production per 1 ha of a.l. or 1 AWU

Figure 4 shows the Netherlands' dominant position compared to the other countries. Dutch agriculture exceeds the EU 25 average by more than five times whilst there is a notable stability in the indicator for the period 2004 to 2007. The production efficiency of Dutch agriculture is, among other things, clearly influenced by the exceptionally high numbers of farm animals where the indicator of LU/ha is more than 2.5 times greater than that in the Czech Republic. The

results are clearly influenced by the internal structure of production where, for instance, within plant production, the values are to the benefit of intensive sectors such as growing the decorative plants, fruit and vegetables or grapes.

Germany takes second place, which, at the current dimension of German agriculture, confirms its significant production position in the single market. If, for instance, in relation to Czech agriculture, the overall agricultural production of Germany per 1 hectare is twice as high, then the given indicator clearly testifies to the production efficiency of the factors expended

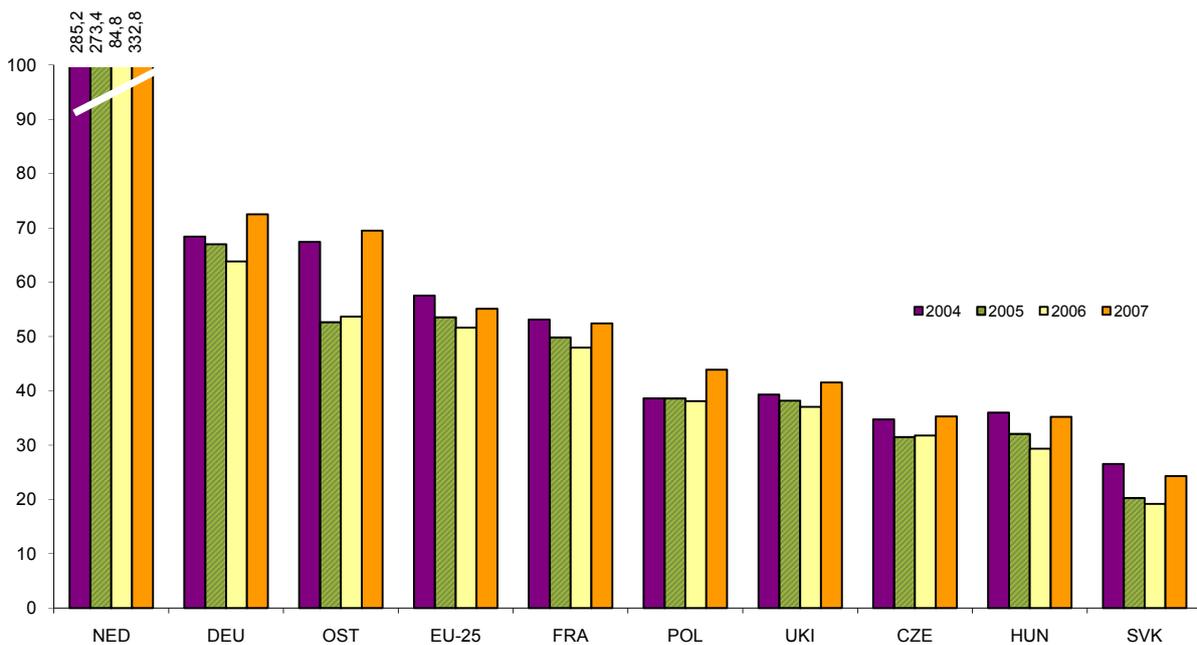


Figure 4. Total output/ha in thousands CZK

and the evidently more favourable competitiveness of German agriculture.

For emphasis, there is the production efficiency of Austrian agriculture in the current natural conditions roughly corresponding to the average values for the EU 25. From the analysis of the internal structure, it clearly follows that in Austria, similarly as in Germany, animal products take up more than half of the overall agricultural production. The numbers of farm animals are incomparably higher in both countries in comparison with all the new Member States.

The predominantly small-scale production structure of Polish agriculture places this agriculture in the same efficiency level as British agriculture whilst it has a diametrically different structure, especially the considerably higher numbers of farm animals in Poland.

From the development of the indicator of the value of the overall agricultural production per 1 AWU, a clear difference can be seen between the advanced European Member States and the Member States of Central and Eastern Europe, whilst the given indicator is, to a certain extent, an indirect expression of the differences in productivity. On the one hand, the industrially advanced Netherlands, with its incomparably higher production efficiency, exceeds the level of the Czech Republic in the given indicator by roughly four times in the monitored period, on the other hand, the Czech Republic exceeds the small-scale production organisation of Polish agriculture 2.5 times at the level of the total production per 1 AWU.

Compared with the EU 25 average, the Czech Republic lags in the given indicator by roughly more than one sixth; however, so far, in comparison with the group of the most advanced countries – the key agrarian producers – it is substantially more. In comparison with our agriculture, that of Germany and France is 2.5 and 2.0 times more efficient, respectively.

Second place for the given indicator in the group of 9 selected Member States is taken by the Great Britain with the level roughly 2.7 times higher than it is in the Czech Republic. Here, the fact that the Great Britain stands out considerably compared to the other compared countries in the indicator of the extent of agricultural land farmed per 1 AWU plays its role (Figure 3). In the given case, the British particularity is influenced by certain groups of the population owning large portions of the land. It is clear that the traditional aristocratic land with landlords plays and will play a significant role in this country. Thus, it does not concern the size structure that is fully comparable to our nearest Western neighbours formed primarily by family farms. The different size structure also ac-

counts for the different approach of British agrarian economists to the fundamentals of the CAP with its emphasis on the European model of farming. The competitive advantage of British farming is, in the given situation, indisputable, so an effort to support measures favouring the reduction of customs barriers and the volume of subsidies from the British side does not face so many barriers. This also applies generally for the proposals supporting measures benefiting the liberalisation of the global agrarian trade in connection with the WTO negotiations.

From the data, it is clear that Czech, Slovak and Hungarian and, at a considerable distance, even Polish agriculture tangibly lags behind the advanced European Member States. Despite the predominantly mountainous character of Austrian agriculture, it is above the Czech Republic in the given indicator. It must not be forgotten that the dynamics of the changes in the indicator “overall agricultural production per 1 AWU” is also dependent on the pace of the decline in the agricultural workforce.

The indicator of the volume of operational subsidies per 1 ha of a.l. or 1 AWU

In the FADN system, we have the opportunity to get to know the details in a structured form and, in the same definitional delimitation, to know the extent of agricultural subsidies invested into the individual Member States. Within the given network, there was a unified classification of subsidies that is mandatory for all Member States and it is the basic assumption for the international comparability of operational subsidies. The subsidies are categorised into the following groups and within their framework, into a number of other subgroups enabling various specifications of the subsidies to agriculture to be depicted. The standard output for the area of subsidies is defined by the items SE 600 to 640 (European Commission 2004–2007) and distinguishes between:

- overall subsidies for crops (SE 610)
- overall subsidies for animals (SE 615)
- other subsidies (SE 620), further categorised into
 - agri-environmental subsidy (SE 621),
 - LFA subsidies (SE 622) and into
 - other payments to support rural development (SE 623)
 - supports for intermediate consumption (SE 625)
 - subsidies for external factors (SE 626)
- decoupled payments (SE 630) structured according to the manner of paying the payment into single payments to a farm (SE 631, single farm payment = SFP) or per area (SE 632, single area payments scheme = SAPS).

The influence of the Union's highly subsidised CAP on the economic results of agricultural holdings in each Member State can be visualised by converting the volume of subsidies provided per 1 ha of agricultural land, where in Figure 6, the position of Austria clearly stands out. In average for the four years monitored, the average annual volume of operational subsidies per 1 ha of a.l. achieved 6400 CZK/ha in the Czech Republic and 6000 CZK/ha in Poland compared to 1700 CZK/ha in Austria, 12 800 CZK per ha in the Netherlands, 11 600 CZK/ha in Germany and 10 600 CZK/ha in France. In Slovakia, the given indicator is just 5000 CZK/ha.

From the available data, it ensues that over the four year period, the position of the new Member States gradually improved with the exception of Poland. In comparison with the Czech Republic, the operational subsidies in Austria, converted per 1 ha of a.l., were roughly 4.5 times higher, whilst in 2007; they were "just" 2.1 times higher. From Figure 5, it can be seen that, with the exception of the Netherlands, where the per hectare subsidies are growing, in all other old Member States presented, the absolute value of this indicator is falling slightly and the current difference compared to the new Member States is decreasing. Over the 4 year period, the operational subsidies per 1 ha grew in all of the presented NMS, that being by 2000 CZK/ha in Poland, 2000 CZK/ha in the Czech Republic, 3600 CZK/ha in Slovakia, but just 1000 CZK/ha in Hungary.

In the Netherlands, the volume of operational subsidies paid per hectare is continuing to grow dynamically, from CZK 9 600 000 in 2004 to CZK 14 400 000 in

2007. At the same time, there was seen a considerable growth in the number of livestock units/ha of a.l. in the Netherlands over the period (Figure 11).

The indicator of the volume of operational subsidies per 1 AWU is undisputedly influenced by the indirect indicator of productivity, expressed as the hectares of agricultural land per 1 AWU (Figure 3). The order of Member States according to the volume of operational subsidies per 1 AWU, i.e. United Kingdom, France and Germany, has not changed and it is the same as in the conversion per 1 ha with an insignificant shift in the absolute volume of operational subsidies for the period 2004–2007. In contrast, in the new Member States over the same period the extent of operational subsidies per 1 AWU clearly increased, which, with the exception of Poland, is undoubtedly influenced by the fall in the number of agricultural workers.

The volume of operational subsidies per 1 AWU in the Czech Republic is approaching the average for the EU 25, which is clearly faster than in the per hectare conversion. In 2004, the given indicator for the Czech agriculture was at two thirds of the EU 25 level, while in 2007, it exceeded the EU average by one third.

In comparison with the other new Member States regarding the given indicator, the Czech Republic is doing the best with the highest growth dynamic approaching the EU 25 average (93% in average for the period 2004/07). Within the monitored Member States, Polish agriculture remains in the last place in the indicator of operational subsidies per 1AWU and this position is fundamentally influenced by the permanently high number of workers active in Polish agriculture.

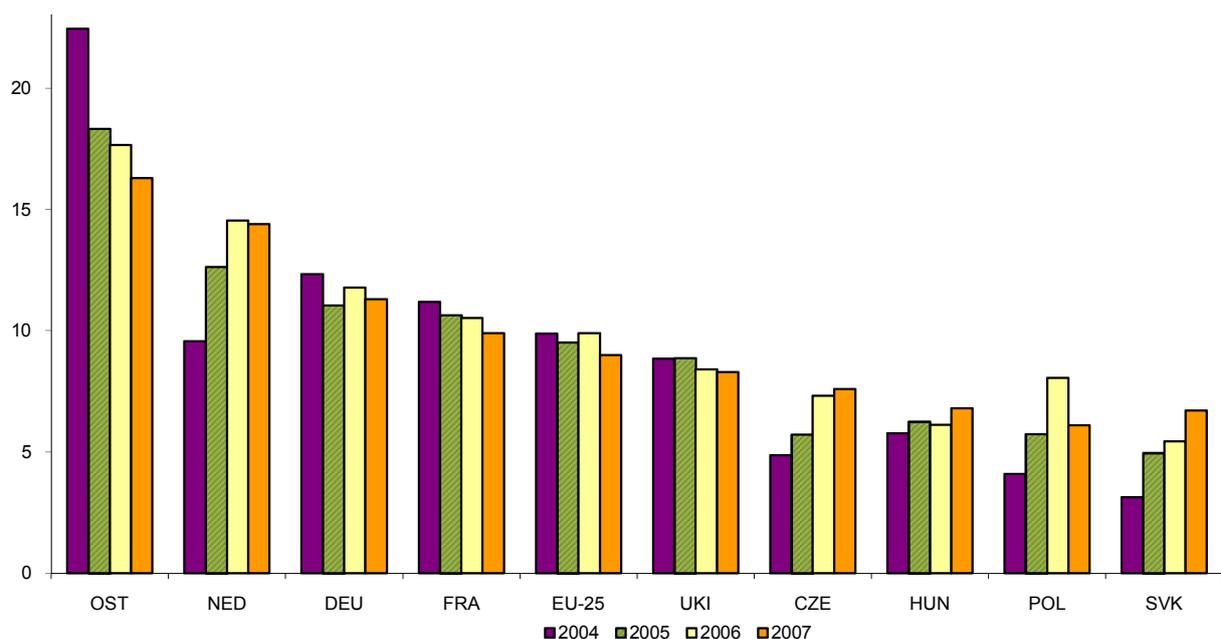


Figure 5. Current subsidies in thousands CZK/ha

As it has been stated, Dutch agriculture is practically independent on the volume of subsidies and the extent of the operational subsidy/AWU, and currently it does not attain the level of subsidies paid out in the Czech Republic and Hungary.

The indicator of the share of the overall costs in agricultural production

With the aid of the unified ascertainment methodology, both the absolute amount of the monitored cost items and their structure is presented in the FADN system.

In the given system, the indicators used are defined uniformly, which for the area of costs stems from the following conceptual definitions:

- total costs (SE 270) are the sum of the intermediate consumption (intermediate consumption), depreciation and external factors (i.e. costs of factors),
- intermediate consumption is given by the material costs, energy consumed, fuels, services and other overheads in all,
- cost factors (the total external factors) are the sum of the wage costs, rent and cost interest.

The following share indicator (see Figure 6) is an important orientation guide for appraising the competitive position of agricultural producers in the individual Member States, i.e. whether their entrepreneurial activities can cover their costs, create a profit and expand the production without state interventions.

Within the indicator for the share of the overall costs in production, all of the new Member States monitored, except for Poland and with the addition of the United Kingdom, are in the red numbers for practically the entire period of 2004–2007. The high loss is exceptionally dynamic in the case of Slovakia leading to the conclusion that, apart from Poland, without the payment of subsidies, agriculture in the new Member States would be ineffective and loss-making with the tendency of these trends deepening. The exceptionally favourable position of Poland over the four year period, which takes first place among all of the countries compared, requires explanation.

From the analysis, there is a clear dependence between the given indicator and the average size of the holding in ha. For the Member States with the most favourable margin between the production value and the overall costs, nominally for Poland, Austria and the Netherlands, a characteristic feature is the lowest average holding size (see Figure 2). This conclusion is clearly valid for the EU as a whole, because in the predominant majority of the other countries, it also concerns a HNP with an incomparably lower average holding size. Czech and Slovak agriculture, burdened by the relatively high costs for unskilled labour, remain in the last position for the entire period, while in the case of Slovakia, the situation worsened due to the setting of higher depreciation rates.

At present, it is difficult to imagine that an unskilled farm labourer would work with the intensity and

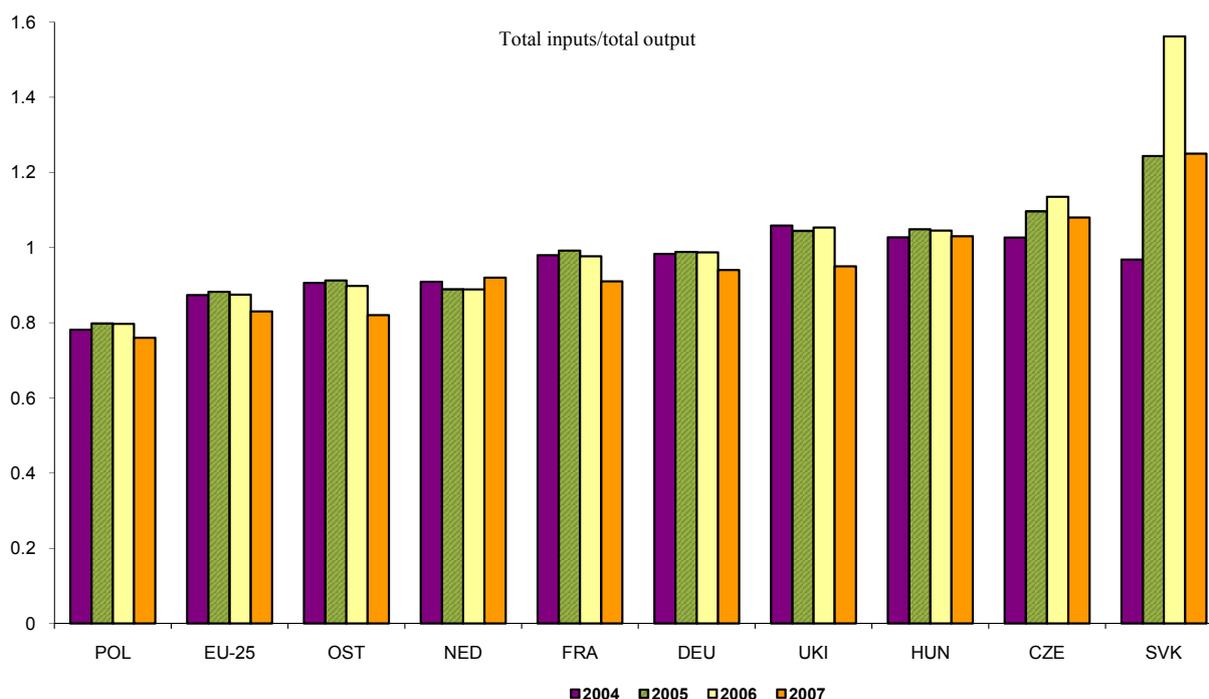


Figure 6. The share of the overall costs in production

responsibility of a Polish farmer who for existential reasons must cover his/her own needs and cannot enter the market with products that cost more to make than the selling price. The highly positive results of Polish foreign agrarian trade in particular (see Bašek and Kraus 2009b) are influenced by this fact, that being in connection with the fundamentally higher animal density recalculated per 1 farm

Apart from Poland, a relatively lower share of the overall costs in the value of agricultural production is also characteristic for Austria and the Netherlands as well as Germany and France, while agriculture in the United Kingdom remains loss-making. The structure of agriculture in this country is, in comparison with the other Western European countries, influenced by large land owners generally using unskilled labour and, with regard to their scale, these holdings also influence the average standard size of an agricultural holding in the United Kingdom.

Without a methodical elaboration of the manner of recording work, an unambiguously comparable answer cannot be drawn, but in principle, it can be said that under the given cost-yield relations, the Union's agriculture is not capable of the expanded reproduction unless it is supported by public resources.

The indicator of gross farm income, or farm net value added per 1 ha of a.l. or 1 AWU

In Figure 1, depicting the formation of income from agriculture in the FADN system, the indicators GFI or FNVA/ha belong to the top categories.

It is important to emphasise that the category of operational subsidies and taxes, or their rate, enter into the calculation.

The indicator of gross farm income (GFI) is thus the difference arising on the one hand between the value of the overall agricultural production estimated by the basic prices including a positive rate, if the operational supports are higher than taxes, or, conversely, by deducting the rate, if the taxes are higher than the subsidies and on the other hand, between the intermediate consumption.

Another category is the farm net value added (FNVA), which is the difference between the GFI and the depreciations. In principle, it characterises in the economic context, whether the business activities bring new values enabling the agricultural entrepreneurs to expand production. This synthetic indicator expresses the total influence of the overall level of production achieved, the effectiveness (efficiency) of inputs, including the consumption of fixed capital, and the operational subsidies. The FNVA indicator basic predictive value stems from its construction be it converted per 1 ha or 1 AWU. Crucially, a fall or rise in the indicator is determined by the changes in the value of the intermediate consumption and also by a higher or lower consumption of fixed capital (and thus the level of depreciations).

With regard to the fundamental economic relationships between the compared categories and their definitional delimitation, the indicator GFI per 1 ha of a.l. (Figure 7) testifies to the prime position of the Netherlands within the countries compared and, in

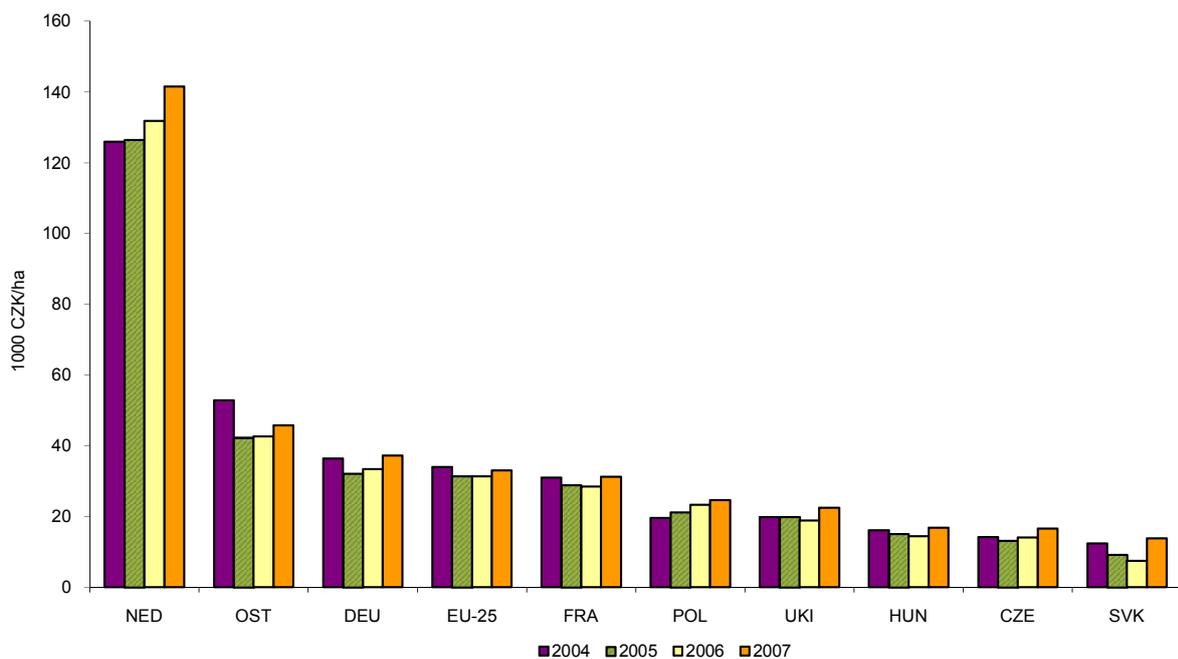


Figure 7. Gross farm income/ha in thousands CZK

general, to the more efficient agriculture in the old Member States compared to the new Member States. The new Member States are among the less efficient, because for the given indicator, Polish agriculture is the fifth one from the bottom, i.e. ahead of the United Kingdom, due to the effect of the low intermediate consumption. Czech and Slovak agriculture have the lowest values within the 9 countries in the comparison.

In average for the period 2004–2007, the Czech Republic has taken the second lowest position, above Slovakia, in the indicator GFI/ha. Efficiency in the given indicator is 3.2 times greater in Austria, 2.2 times greater in the EU 25 and 1.5 times greater in Poland compared to Czech agriculture.

Converting to GFI/AWU shows that the advantages stemming from the low intermediate consumption are evidently suppressed in the case of Polish agriculture. Thus, the economic type of developing Polish agriculture is lost in the balance of converting to the GFI per 1 worker, where Poland is the last. In contrast, converting to GFI/AWU places the United Kingdom in second position behind the Netherlands as a result of the high productivity of labour measured indirectly, e.g. by calculating the ha of a.l. per 1 AWU.

Further, the conversion to the GFI/AWU shows that, just as in the previous graphs, the old Member States not only have a greater performance, but the difference between them and the top position, the Netherlands, is lower with a clear lag in the new Member States.

On the basis of the available data, the weaker performance of the agrarian sectors in the new Member

States is clear and thus also the basic cause of the insufficient competitiveness. That the overall situation is not good for Czech agriculture and that of the other new Member States can be seen from the comparison with the average GFI for the EU. However, the position of Austria and also Germany and France, as two Union's main agrarian producers, also deserves attention as they appreciably affect the cost-price parameters in the single market. The position of the Czech Republic and the other NMS is, however, also influenced by the price differences and the subsidy payments that, when converted, are the lowest in Slovakia followed by Poland, Hungary and the Czech Republic.

From the previous data, it further stems that the significant competitors to Czech producers are the Polish farmers primarily managing small farms with a low level of labour productivity and a low use of investments, but under the conditions of the incomparably higher extent of Polish agriculture. Cost savings at the relatively high labour intensity on Polish family farms together with the offer of basic agricultural raw materials and food in bulk create the background for the expansion of production by Polish producers into the single market, especially into the Czech market, which is readily accessible by transport.

In the indicator GFI/AWU, the Czech Republic has moved up its position. However, in the Netherlands, v performance is four times better, 3.2 times better in the United Kingdom, roughly three times better in Germany and France, in Austria 2.3 times and for the EU 25 average, it is 1.6 times greater in comparison.

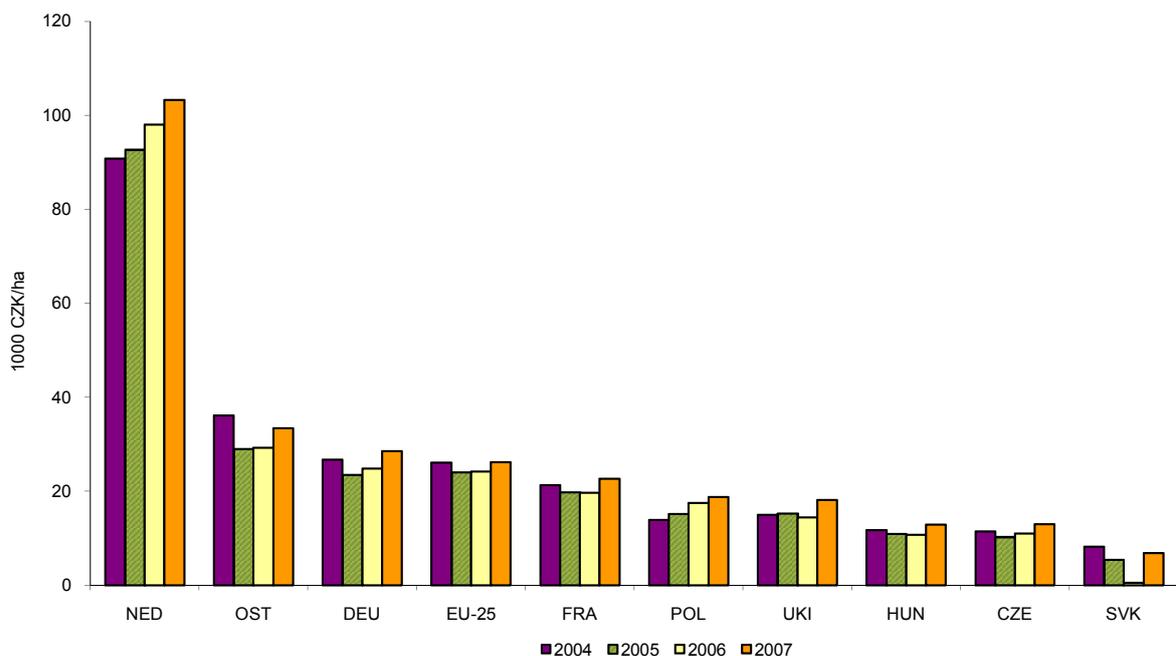


Figure 7. Farm net value added/ha of the utilised agricultural area in thousands CZK

From this data, the position Czech agriculture is found in the single market in the period 2004/2007 can be clearly derived. Only Slovakia has a lower performance (ca 80% of the level of the Czech Republic in the indicator GFI/AWU) and Poland at 52% of the level of the Czech Republic.

From the manner of calculating of the farm net value added (FNVA), it must emerge (Figure 8) that the order of the 9 countries compared does not change concerning the level of the FNVA/ha or AWU, because the level of depreciation has not changed. Despite the depreciation amounts being the highest in Austria (13 400 CZK/ha), France and Germany (9100 and 8600 CZK/ha respectively), these countries have retained their top positions among the states in the comparison. The lowest depreciations (3000 CZK/ha) are in the Czech Republic, but even so it is behind Slovakia in the second lowest position in the conversion to the FNVA per 1 ha and fourth position in the conversion to the FNVA per 1 AWU. The steep inter-annual increase in depreciation rates in Slovakia engulfed virtually the entire volume of the FNVA/ha in 2006.

As it has been stated, the calculation of the FNVA complicates the international comparability with regard to the very different depreciation rates used by each country. The example of Slovakia is illustrative. It can be assumed that the principle of determining the depreciation on the basis of the current amount of reproduction costs for procuring investments will be harmonised, so that there is no fundamental distortion of the final indicator.

Similarly as in the case of GFI/ha, Austria exceeds Czech agriculture in the indicator FNVA/ha 2.8 times and the performance of the EU 25 is 2.2 times greater in comparison with the Czech Republic (Figure 7). It is worth noting that in 2007, the majority of countries recorded a slight growth in the FNVA/ha. Besides the Netherlands, all of the NMS have shown a dynamic growth in FNVA except for Slovakia.

In the conversion of the FNVA/AWU, it is similar to the category GFI in that for the given indicator, the situation between the Member States is more balanced. In contrast to FNVA/ha, this indicator can be appreciably affected by the dynamics of the withdrawal of workers from agriculture.

From the international comparison of the key resulting categories characterising the economic performance of agriculture for the four years of membership in the Union, it emerges that the economic results of the new Member States with all of the above qualifications not only lag behind the economically advanced Member States, but, with the exception of Poland, their situation has not improved much over

the monitored period. The difference between the Netherlands and also the key European producers, i.e. Germany and France, and the new Member States are considerable.

Selected natural indicators

Wheat yields in t/ha

Even the limited choice of natural indicators to monitor confirms the dependence between the level of yields per 1 ha, i.e. the efficiency, and the overall value volume of agricultural production in the Member States analysed for the period 2004–2007. To a large degree, the high values of the selected natural indicators are also exhibited in the indicator of the overall agricultural production per 1 ha (Figure 4).

Using Figure 9, the impact weather on the level of wheat yields per 1 ha attained can be documented for the European region. While the weather in the United Kingdom and the Netherlands is mainly influenced by the milder coastal climate, in the central areas of Europe, all countries had a record wheat harvest in 2004 and subsequently, they all showed a fall in over the period per hectare yields in the following years. This phenomenon has its roots in the fact that the continental climate, with all of its seasonal fluctuations, has a considerably broad impact on the harvest. Put in another way, the clear dependence on the continuous course of the weather results in the period surplus or shortage of the given commodity for over the period whole number of Member States in the Central European area.

The top wheat yields per hectare in Great Britain and the Netherlands, primarily influenced by climatic conditions and the high investment into the land, show a relatively marked stability and exceed the average per hectare yield for the EU 25 in the period 2004–2007 by 2 t/ha and by 2.8 t/ha in relation to the CR. Despite the CR being the leader in yields amongst the new Member States, it lags behind the aforementioned leading countries in the declared amount and also as regards the key wheat growers in Europe, i.e. France and Germany, by roughly 2 t/ha. From this, it emerges that the competitive position of Czech wheat in the natural expression concerning the key European producer countries is not clear, as it has emerged from the indicators characterising the cost parameters. From Figure 8, it is also clear that the inter-annual fluctuations are greater in the NMS and deepen towards the countries with the lowest per hectare yields.

It remains to state that the highly profitable production of wheat in Czech conditions has its reserves.

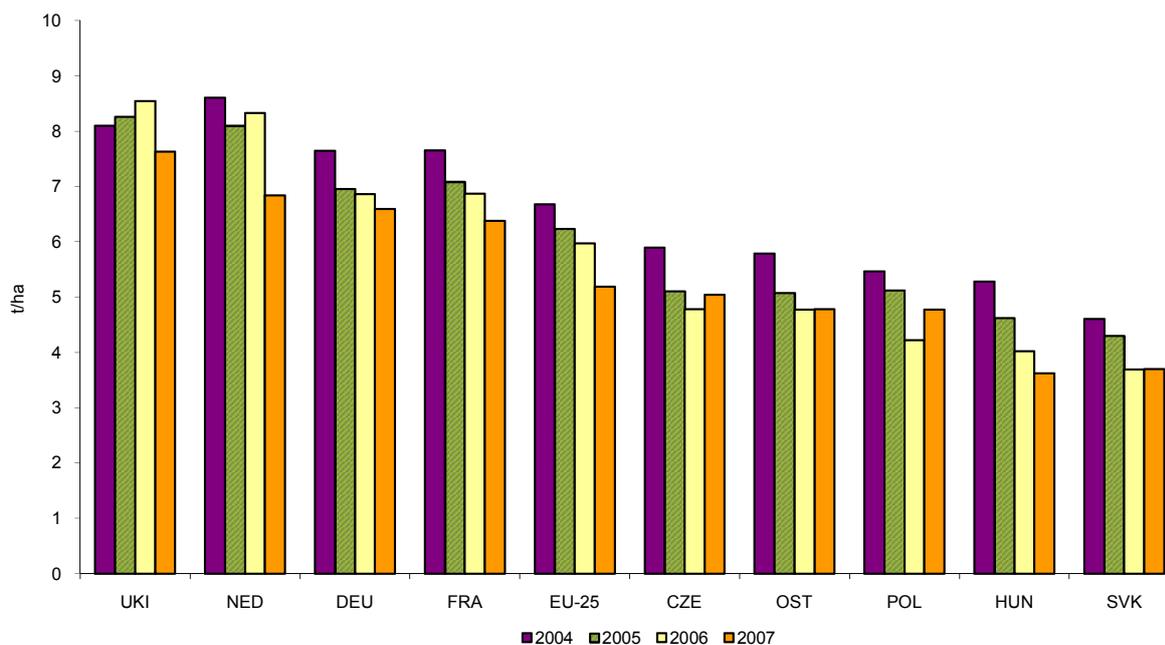


Figure 9. Per hectare yields of wheat

In per hectare yields, we are practically on the same level as our immediate neighbours, where Austria achieved a four-year average yield of 5.1 t/ha and Poland 4.9 t/ha.

Milk yields per 1 cow in kg/year

The Netherlands comes out in the top position (see Figure 10) in the efficiency of dairy cows. Over the monitored years, it continuously increased milk yields and it is the only Member State permanently exceeding 7000 kg of milk per year (7634 kg/year in average for 2004/2007).

For a basic orientation, it can be stated that in average for the period 2004–2007, the milk yields of cows in Czech agriculture were around 80% of that for the Netherlands, 88% of German and British and 96% of French milk yield. The French and Hungarian milk yields are virtually identical with the EU 25 average. Again, as regarding the previous commodities, the new Member States are lower down in the scale as concerns milk yields, though with less of a gap between them. The order is Hungary, the Czech Republic, Slovakia and Poland. Among these countries, Austria takes up third place.

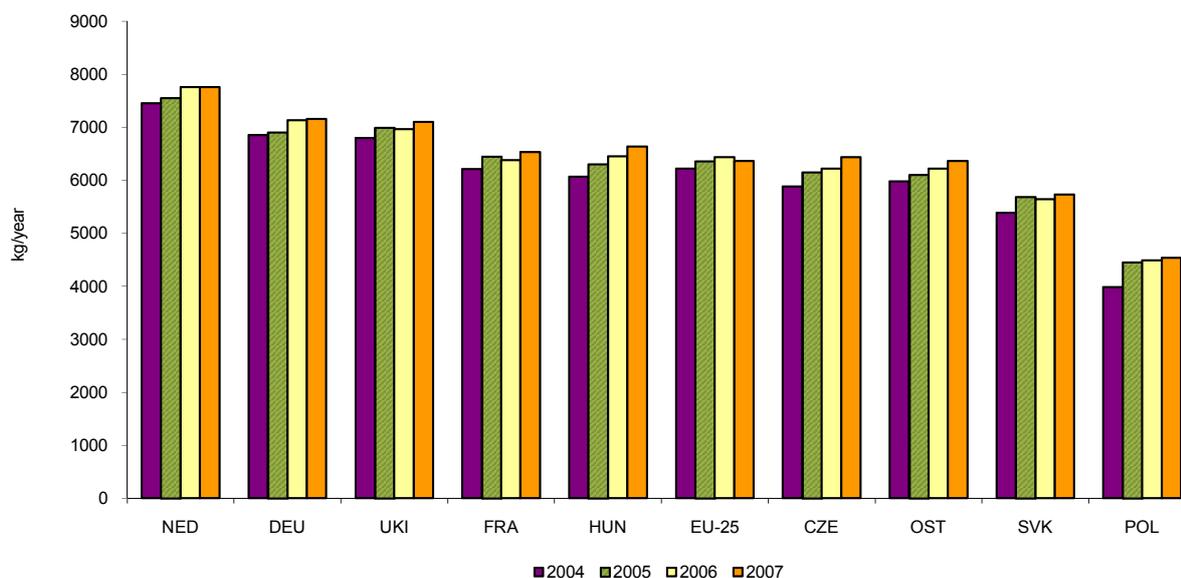


Figure 10. Milk yields in kg/year

While the old Member States (OMS) with the greatest efficiency in milk yields showed an increase by roughly 4.5%, 6.4% in Austria, in the NMS group, there was an increase of almost 14% in Poland and more than 9% in the Czech Republic and Hungary.

From Figure 10, it is also clear that over the period, the top cattle breeders in Europe, i.e. the Netherlands and Germany, exceeded the average annual milk yield by approx. 1288 kg and 655 kg, respectively.

The differences in efficiency are clearly these of the factors influencing the competitive position of Czech dairy cow breeders; for instance the difference between the Czech and Dutch dairy cow efficiency at a level of almost 1500 kg to our detriment is expressed in the final flat calculation. It is clear that in the new Member States, there is a dynamic growth in efficiency primarily influenced by the valid agrarian political measures regulating the single market in milk. The current quota system naturally leads to increasing milk production intensity by culling the less efficient dairy cows and keeping the more efficient ones.

Number of livestock units per 1 ha

For the given indicator (Figure 11), the new Member States, with the exception of Poland, fundamentally differ from the old Member States and the difference in the intensity of livestock production converted to area is exceptional. It can be clearly shown that the family form of farming in the OMS is linked to a greater animal density, which plays its role from the standpoint of the efficiency of agricultural business.

Polish farmers lag behind the other Member State in a number of parameters, but in the given indicator, they take the second place. However, despite the low density of animals per hectare, except for Hungary and the Czech Republic, it can be said that there is a further reduction in the density of animals in the new Member States. In contrast in the old Member States, the animal density per 1 ha of a.l. has hardly changed.

The Netherlands take the top ranking, where there are more than 2 LU per 1 ha in average, which means that in this country, the animal density is more than 2.5 times higher than in the Czech Republic. Similarly, in relation to Poland and Germany, our position is evidently different. Both countries exceed the Czech animal density indicator by roughly 1.7 times.

In relation to the number of animals reared in the average standard agricultural holding, the situation in Slovakia, the Czech Republic and Hungary is incomparable with the proportions in the countries with the predominance of family farms. The position of these countries is diametrically different from the standpoint of the burden from farm animals on every hectare of agricultural land. A substantially lower burden on the land by farm animals must negatively influence the overall level of production, though at the same time, the lower animal density in the new Member States has a bearing on the environment quality. The high levels of animal density, characteristic for the Netherlands, represent a far greater burden from the aspect of protecting environmental

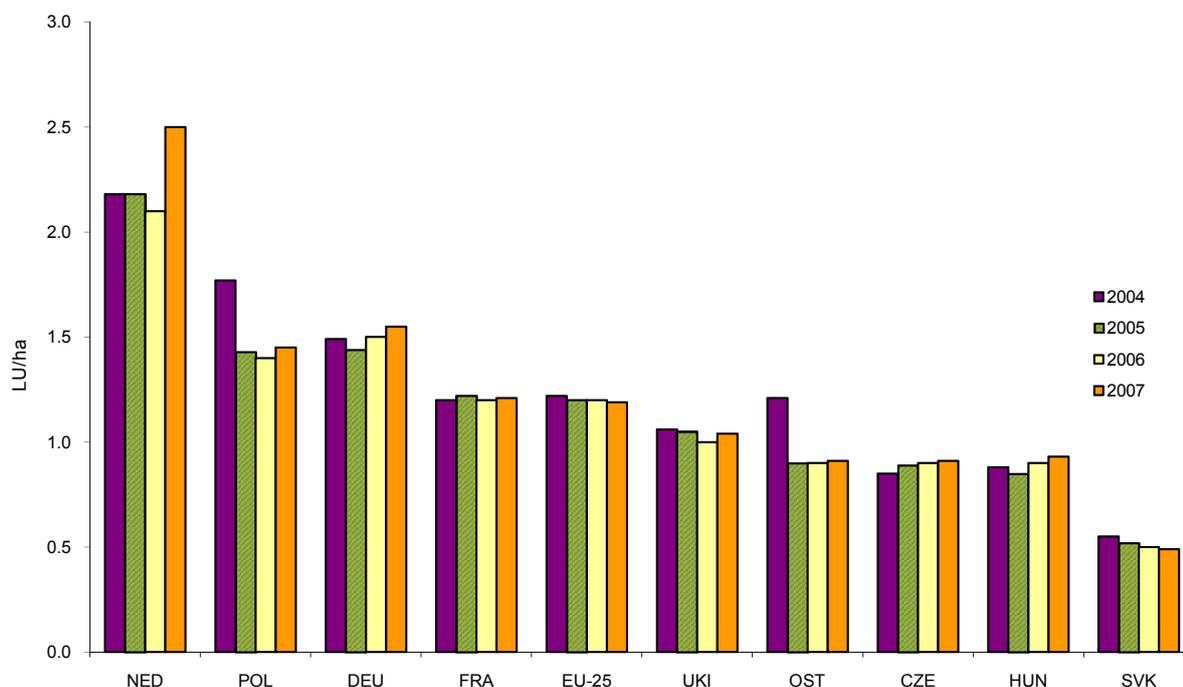


Figure 11. Stocking density

and, in particular, water quality, than is the case in the CR, which has the animal density per 1 ha that is less than one half. For instance, the point source pollution caused by agricultural activities must be more frequent in countries with a preponderance of family farms in comparison with the fundamentally greater HNP and usually with the higher animal concentrations.

CONCLUSION

- Despite the partial reservations to the data resulting from these comparisons, it can be stated that they are the topical testimonials to the position of the new Member States, including the Czech Republic, within the Union. The FADN data, which is obtained through the partial Union financing, has an official nature and as such it is also an objectified starting point for arguments concerning the EC when quantifying the income position of farmers in the individual Member States. All of the statements in the given presentation are based on the data verified by the EC and in the basic form published by the DG-AGRI. This is the first comparative analysis of the economic results published in such detailed structure and on the basis of the common method.
- Despite the objective difficulties with the EC decision to present the Member States' economic results by the means of the "standard holding", which have deepened yet more with the EU extension by the new Member States, the FADN data represent a fundamental basis for international comparisons. Determining the average size of the standard holding representing agriculture in the individual EU Member States falls under the competence of the DG-AGRI (Brussels). The diametrically different size structures in some of the new Member States, together with the fundamental prevalence of HNP, bring a number of problems to the comparisons. This is further complicated by the fact that these holdings primarily do accounts in the double-entry accounting system, while family farms generally use the simple accounting system. It is also necessary to know that in the selection plan of holdings ranked in the network, the legal form of the holding is not taken into account, so the comparable data for the EU 27 do not work with this structuring.
- It is necessary to emphasise that the conclusions from the paper, characterised by a number of appraised indicators, do not capture all of the basic associations of the phenomena analysed. The differences in natural conditions, in the differing

composition of the production factors (in the degree of substitution, in the use of capital, etc.), location, the distance from the key markets, the purchasing power level of the demand, wage levels, the outputs of the connected links in the production verticals and also the previous historical development all influence, to varying degrees, the parameters of the chosen indicators.

- Comparisons stemming from the FADN standard output data are accompanied by the methodological pitfalls that cannot be entirely excluded. The clear differences between the result of the old Member States and the new Member States are also influenced by the systematic difference of the assessment parameters entered, especially into the expression of the production value and the added value (differing agricultural production prices, subsidies, price of labour, price of land or rent). From the evidently different structure of production factors, including their price assessment, there also emerge differences in the land productivity and the labour productivity measured in the value of production per 1 AWU.
- Austrian agriculture takes a quite privileged position as concerns the amount of operational subsidies. In Austria, the subsidy payments cover more than one third of the value of production (in the Czech Republic 17%) and likewise the absolute values of these subsidies are significantly larger within the framework of the countries in the comparison. Regarding operational subsidies, the new Member States are in a much worse position, which, to a certain extent, is in relation to their economic level. Until this disproportion is balanced, they have objectively handicapped competitive conditions in the EU single market.
- Apart from Poland, the indicator of the share of the overall costs in the value of agricultural production is unfavourable for the new Member States, while for the entire period from 2004–2007, the economic result is in the red numbers, when the supports are not included. Within the monitored countries, the top three positions are taken up by Polish, Dutch and Austrian farmers. From the available data, the general conclusion emerges that, with the given exceptions, the Union's agriculture is not able to reproduce under the given cost-yield relations without support from public resources
- The gross farm income indicator or the net farm value added per 1 ha of a.l. testifies to the privileged position of the Netherlands within the countries in the comparison and in general, to the more intensive agriculture in the old Member States compared to the new Member States. In average, for the period 2004–2007, the Czech Republic is behind Slovakia

- taking up the second worst position in the indicator GFI/ha. It further emerges from the international comparison that the new Member States lag behind the economically developed states of the Union in the monitored indicators and, with the exception of Polish agriculture, their situation concerning the indicators GFI or NFAV did not change for the better.
- The majority of the monitored analytical indicators can be used to substantiate the falsity to the claim that if the CAP subsidies were no longer paid, it would not threaten the competitive position of Czech agriculture. Quite the opposite, the given measures would affect the other Member States to a far greater degree. The set of the monitored indicators leads to the conclusion that in the majority of the countries in the comparison, stopping subsidies would lead to a fall in economic results, i.e. a loss. Among the countries in the comparison, it is only the Netherlands where the weight of subsidies is less important.
 - If, in the conditions of Czech agriculture, it is valid to say that holdings with a higher LU/ha are less economically successful and profit from growing the field crops with lower labour demands and a greater intensity, then the situation in agricultural holdings in the EU 15 can be characterised differently. In these countries, as a consequence of the generally higher production values, be it of plant or animal origin, there are better results in the category of the key synthetic indicators such as GFI or NFAV or even converted to 1 AWU, where Czech agriculture's differences compared to the advanced countries from the EU 15 are less evident, just as when it is recalculated per 1 ha.
 - From the international comparison of indicators of overall production, gross and net added value per hectare, it can be concluded that the current marked difference in the basic economic indicators between Czech agriculture and countries with advanced agriculture is a confirmation of the imperative requirement to raise the efficiency of Czech agriculture. The process of accelerating the replacement of loss-making holdings with ones making a profit will fundamentally shift Czech agriculture to the higher levels of efficiency characterised by a higher ranking in the comparison indicators.
 - Despite the differences in comparing the value indicators being much lower between the CR and the advanced countries for the selected natural indicators, it is still valid to say that in the average yield of wheat, we lag behind the key European growers (France, Germany) by about 2 t/ha. The average milk yield of cows is around 80% of the most efficient from the Netherlands. Likewise, the lower numbers of farm animals in the new Member States, with the exception of Poland; negatively influence their economic result in comparison with the old Member States.
 - From the proven differences in the efficiency parameters of Czech agriculture in comparison with the advanced EU countries, the conclusion can be drawn that the results from the analysis are the confirmation of the reserves that currently exist in Czech agriculture. If the differences ascertained are gradually eliminated, they demarcate a space in the near future where the competitiveness of Czech agriculture can be increased, and that not just within the Union.

REFERENCES

- Bašek V., Kraus J. (2009a): Czech foreign agricultural trade after joining the European Union. *Agricultural Economics – Czech*, 55: 583–595.
- Bašek V., Kraus J. (2009b): Research study for international comparison of selected indicators of farms in the EU (in Czech). ÚZEI, Praha.
- European Commission (2004–2007): AGRI/G3, FADN, RICC 1453, 1484. Standard results. Available at <http://ec.europa.eu/agriculture/rica/>
- Hanibal J. et al. (2004): Research Study for Application of the Farm Accountancy Data Network in CR (in Czech). VÚZE, Praha.
- Hanibal J. (2008): Results of FADN survey 2007 (in Czech). ÚZEI, Kontaktní pracoviště FADN CZ, Praha.
- Report on the State of Agriculture 2007 (in Czech). MZe, Praha.

Arrived on 3rd March 2010

Contact addresses:

Václav Bašek, Josef Kraus, Institute of Agricultural Economics and Information, Mánesova 1453/75, 120 56 Prague 2, Czech Republic; e-mail: basek.vaclav@uzei.cz, kraus.josef@uzei.cz
