

The overview of methodology aspects in product economics in Slovak agriculture

Náčrt metodologických aspektov výrobkovej ekonomiky v slovenskom poľnohospodárstve

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Abstract: The accession to the European Union has brought a number of issues that the new member states have to deal with, namely to use the rules and procedures applicable in the EU. These include the transition from the enterprise towards the product-oriented economy in the agricultural production enterprises. The article describes the aspects of methodology regarding this issue within the framework of the Slovak agriculture. The article emphasizes that the product economics allows to define three levels of profit, namely: market, product and enterprise profit. This issue will be illustrated on the example of a Slovak agricultural enterprise, in terms of its planned calculated generation of profit.

Key words: methodology issues, product economy, enterprise economy, market profit, product profit, enterprise profit

Abstrakt: Vstup do Európskej únie (EÚ) prináša pre jej nové členské štáty problémy vo forme objasnenia zásad a postupov platných v EÚ. Jedným z nich je prechod od podnikovej k výrobkovej ekonomike podnikov poľnohospodárskej výroby. Príspevok načrtáva metodologické aspekty tohto problému v rámci slovenského poľnohospodárstva. Zdôrazňuje, že výrobková ekonomika umožňuje definovať tri úrovne zisku, a to: trhovú zisk, výrobkový a podnikový zisk. Celý problém je ilustrovaný na vybranom slovenskom poľnohospodárskom podniku vo forme jeho plánovanej kalkulácie tvorby zisku.

Kľúčové slová: metodologické problémy, výrobková ekonomika, podniková ekonomika, trhovú zisk, výrobkový zisk, zisk podniku

INTRODUCTION

In general, we can state that each integration process provides space for the subjects of integration to adapt themselves to the process. This unwritten rule is all the more important in reference to the EU enlargement.

The underlying reason is not only the scale of integration, but mainly the different development of the integration subjects. In May 2004, the original member states welcomed new countries that experienced an altogether different history of socialism.

Discussions are now being held, as to what of these two groups of countries has a relative advantage over the other. The divergent views have resulted in a natural compromise stating that the post-accession position of both groups of countries is balanced¹.

That said, the experts taking part in such discussions are inclined to believe that each of the new EU member state has its specific national features that must be taken into account in the common EU.

As regards the EU accession, agriculture has been probably the most discussed area of national economy in each accession country. To this end, the crucial point was the contents, rather than the extent and intensity of the discussions. In countries where the farmers' subsidies became the initial and final point of discussion, most experts are now saying that the issue is one of a far reaching and complex nature.

Already the preparation for the EU accession in the field of agriculture has shown that the former socialist countries will have to cope with two serious issues after the integration.

The first issue is one of definition of agriculture and its producers and the second one is defined as the transition from centralised towards product economy.

While Slovakia dealt with the first issue already in the pre-accession period², the second issue is a topical one.

It is for this reason that we want to describe in this article the methodology aspects of product economy in the Slovak agriculture.

¹ In terms of learning and application of the EU methodology rules, rather than in terms of economics.

² This includes the application of the "activity principle" in agriculture, where each activity is defined under the respective reference class, and a branch industry is defined as a group of entities that perform the activity of the same or similar nature. According to the

MATERIAL AND METHODS

The basis for solution of the product economics issue in the Slovak agriculture must be reviewed in the historical context of the development of the European agriculture after WWII.

Overall, we may define two trends in the EU after enlargement.

First – the European Economic Communities (EEC), later on, the EU – was characterised by private ownership, the Common Agricultural Policy and its objectives, instruments and principles. Second – socialist countries were characterised by collective ownership and centralised planning.

It is only natural that the two different development trends gave rise to different roles in the society.

At the time of accepting the Common Agricultural Policy (by 30 July 1962), it was too early to define the position of agriculture in the former EEC. A binding set of rules was passed in 1969 when the national farm concept was accepted to prevail in the agriculture. In economic terms, the agriculture was viewed as a national enterprise which provides the national economy with agricultural products. To that end, the agriculture was treated in terms of benefits it provided to the state. The European System of National Accounts (ESA 95) was revised in 1995. This gave rise to the activity-branch specific concept of agriculture. This concept also brought about the evaluation of business performance.

The role of agriculture in the socialist states was determined by the notion that the population must be provided with nutrition and that the agriculture has a positive effect on employment in rural areas, thus contributing to economic balance between the cities and the villages.

As regards the different social role of agriculture in the post-war Europe, we must emphasize a different structural development of the agriculture.

The characteristic feature of the market environment in the old EU member states was the historical structural form, namely the farm. This has been the symbol of independent nature of an agricultural producer³. This guarantees the effective expenditure and targeted nature of appreciation of the resources through the production of agricultural products and services.

The planned management of the new Member States⁴ was based on agricultural enterprises (cooperatives).

The nature and scope of production resulted in a complex internal structure of the agricultural enterprises. Given the need for planning, it is only natural that on few occasions, the enterprises were controlled by one-, and in most cases by the two-tier management structure: enterprise and local operation. In this context, the effective expenditure and the rate of appreciation of resources were assessed on the enterprise and local level.

Thus, a logical conclusion may be derived: the different social conditions of European agriculture in the post-war era generated a varied approach to the social role, as well as the two types of economies, namely product and enterprise economy.

After May 2004, it became obvious that the product economy has become the choice for EU and it must be also applied by the new member states.

The above statement could be justified by general rules and accounting standards in the EU: the European system of National Accounts (ESA 95) and its sub-accounts, i.e. branch-specific economic accounts, farm bookkeeping and the Common Agricultural Policy.⁵

RESULTS AND DISCUSSION

Even though in the methodology presented here we have defined the current need for transition of new member states to the product economy, we now have to emphasize that a fundamental system change must take place in the case of agricultural enterprises in Slovakia.

In general, the system change in the agricultural enterprises could be defined as the enhancement of their previous (mostly production) roles and addition of new aspects⁶ while maintaining the reproduction capability of the enterprise.

The process of self-reproduction in market economy consists of the generation of own resources (depreciation, profit) provided by sales of products and services (Vlachynský 1993). This is a strong aspect also for agricultural enterprises which they should take into account in their product economy. On the other hand, despite the specific features of agricultural production⁷, the agricultural enterprises continue to remain one of the key elements in the national and the EU market environment with all the consequences.

“General Classification of Economic Activities in the European Community” (NACE), the branch of agriculture is defined as a group of entities which provide: crop production, market, market horticulture, livestock production combined with livestock keeping, contract-based works in agriculture and commercial game hunting.

Another aspect of the activity principle is the definition of agricultural producers. Once accepted by the Statistical Office of the European Community (Eurostat), the agricultural producers in the Slovak Republic are the following businesses: agricultural enterprises, private farmers and producers which are not registered.

³ Especially in family farms.

⁴ Mostly in Hungary, Eastern Germany and in Czechoslovakia.

⁵ The underlying idea is that when using the branch-specific (activity) principle, the basic aggregation element for activities is formed by agricultural products defined in NACE. This also calls for „fine tuning“ of the Common Agricultural Policy to the product concept.

⁶ Environmental, normative, traditional – with heavy state and the EU support.

⁷ Quality of soil, effects of weather, combined production, agrarian policy, etc.

Therefore, the specific features of agricultural production in relation to market are the internal issue, rather than the priority of each agricultural producer⁸. This is a traditional relationship: environment -strategy; the synergic effect of which is the production program of an enterprise (Papula 1995).

In the market environment, the production program determines the business success (Režňáková 1995). The experience of the author of this article suggests that the Slovak agricultural sector does not pay much attention to this priority and the enterprises are happy with so-called business plans, which are a simple aggregation of various data, required by the bank or a state authority.

This deficit could be tackled by the methodical procedure presented here, which may also be termed “planned and resulting calculation of product economy” (Swoboda 1992).

The description of the method is given below.

The method presented here is used for planning and resulting calculation of product economy. It is based on the evaluation of the appreciation of resources being used, in terms of the product profit, which is calculated, by using the following formula (1):

$$Vz = Tz - Np + Pd \quad (1)$$

Where:

Vz = product profit

Tz = market profit;

Np = non-market production;

Pd = production.

The difference components in the formula (1) are defined as follows:

$$Tz = Pmfzc - Pmvc \quad (2)$$

Where:

$Pmfzc$ = sold quantity valued in basic prices⁹,

$Pmvc$ = sold quantity valued in intra-enterprise prices;

$$Np = O + kzSZ + kzRV \cdot V + (N \cdot V - Pm \cdot vvc) \quad (3)$$

Where:

O = seeds of current production used in future crops;

$kzSZ$ = positive change of stock in crop production,

$kzRV \cdot V$ = positive difference between the feeding stuffs produced in crop and consumption of feeding stuffs in the livestock production;

$N \cdot V$ = costs of livestock production;

$Pm \cdot vvc$ = sold quantity in livestock production valued in intra-enterprise prices.

In the methodology terms, the use of subsidies in market profit formula may seem inappropriate. In our view, this is a legitimate step for the reasons given below.

If we are to recognize the priority – the autonomous nature of the environment¹⁰, then we have to admit that the space for internal decisions taken by the enterprises is limited. The limitations are determined by the EU and state agrarian policy which in turn affects the production program of the enterprises; its structure and product economics. Herein lays the issue of subsidies, rather than in numerous would-be discussions often associated with twisted rhetoric and politics.

In our opinion, subsidies may be included in the market profit also for the following reasons: subsidies are subject to tax, they form part of the price and they are the compensation for the worsened conditions of production.

| | |
|---------------------------|--|
| Acreage/number of animals | |
| Crops/Yield | |
| Quantity | Acreage × crops Numbers × yield |
| Subsidies | |
| Farm prices | |
| Enterprise prices | |
| Market profit | (sold quantity x farm prices) – (sold quantity x intra-enterprise prices) + subsidies |
| Non-marketable production | Crop production: positive change in stock, positive difference between the feeding stuffs produced in crop production and consumed in livestock production. Livestock production: costs of livestock production – (sold quantity x intra-enterprise prices) |
| Product profit | Market profit – non-marketable production |

Figure 1. Production and economic vertical of profit generation for the agricultural products

⁸ This has been a widely discussed issue in new member states, because the opposite trend still prevails there.

⁹ Basic price = farm price – production taxes + production subsidies

¹⁰ These include: *social* (political, legislative, technical, economic, demographic, social and cultural effects), *interaction effects* (shareholders, creditors, government agencies, local governments, etc.), *effects of the competitive environment* (buyers, suppliers, competitors, etc.).

Table 1. Product economy in a selected enterprise in the agricultural sector in Slovakia

| | Acreage (hectares) | Crops (tons/hectares) | Usable quantity*) (tons) | Sales (tons) | Enterprise prices (SKK/t) | Basic prices (SKK/t) | Subsidies (SKK thous.) | Market profit (SKK thous.) | Non-marketable production (SKK thous.) | Product profit (SKK thous.) |
|---|-----------------------|---------------------------|-----------------------------|-----------------|------------------------------|-------------------------|---------------------------|-------------------------------|--|--------------------------------|
| Wheat | 400 | 5.50 | 3 154 | 1 108 | 3 698 | 4 500 | 1 523 | 2 533 | | 2 533 |
| Barley | 76 | 5.00 | 1 010 | 30 | 3 469 | 5 000 | 289 | 335 | | 335 |
| Grain corn | 150 | 6.00 | 1 250 | 548 | 3 851 | 4 200 | 570 | 761 | | 761 |
| Sunflower | 60 | 2.80 | 168 | 168 | 9 075 | 10 000 | 228 | 383 | | 383 |
| Onion | 3 | 30.00 | 90 | 90 | 2 618 | 4 000 | 11 | 136 | | 136 |
| Pepper | 5 | 30.00 | 150 | 150 | 6 685 | 10 500 | 19 | 591 | | 591 |
| Tomatoes | 50 | 35.00 | 1 750 | 1 750 | 2 312 | 2 750 | 190 | 957 | | 957 |
| Silage maize | 142 | 20.00 | 4 940 | | 1 275 | | 540 | 540 | | 540 |
| Multi annual feeding crops | 32 | 30.00 | 1 560 | | 400 | | 122 | 122 | | 122 |
| Permanent grass covers | 150 | 20.00 | 3 804 | | 413 | | 571 | 571 | | 571 |
| Crop production, total | 1 069 | x | x | x | x | x | 4 062 | 6 928 | | 6 928 |
| | Feeding days (KD) | Performance (kg, 1/KD) | Usable quantity*) (tons) | Sales (tons) | Enterprise prices (SKK/t) | Basic prices (SKK/t) | Subsidies (SKK thous.) | Market profit (SKK thous.) | Non-marketable production (SKK thous.) | Product profit (SKK thous.) |
| Dairy cows | 73 000 | 18.19 | 1 328 | 1 250.0 | 9 194 | 10 000 | | 1 089 | 709 | 380 |
| Calves up to 3rd month of age | 19 530 | 0.80 | 27 | | 29 858 | 50 000 | | | 816 | -816 |
| Calves up to 6th month of age | 32 475 | 0.63 | 51 | | 12 216 | 50 000 | | | 618 | -618 |
| Heifers up to first year of age | 22 570 | 0.70 | 65 | | 10 353 | 38 000 | | | 659 | -659 |
| Heifers up to second year of age | 27 010 | 0.70 | 91 | 10.0 | 12 457 | 32 000 | | 198 | 986 | -788 |
| Feeding of livestock | 29 200 | 0.80 | 67 | 30.0 | 17 638 | 45 000 | | 829 | 636 | 193 |
| Calves heifers | 7 390 | | | | | | | | 511 | -511 |
| Cows without market production of milk | 12 775 | | | | | | | | 1 241 | -1 241 |
| Suckers | 281 930 | 0.22 | 78 | 3.0 | 24 332 | 46 000 | | 59 | 1 860 | -1 801 |
| Young pigs | 113 150 | 0.65 | 113 | 60.0 | 21 195 | 66 000 | | 2 716 | 1 117 | 1 599 |
| Breeding boars | 5 110 | 0.16 | 2 | 1.0 | 36 782 | 150 000 | | 136 | 48 | 88 |
| Breeding sows | 35 400 | 0.32 | 51 | | 15 559 | | | | 789 | -789 |
| Pre-fattening of pigs | 310 250 | 0.40 | 193 | | 19 516 | | | | 3 745 | -3 745 |
| Fattening of pigs | 401 500 | 0.90 | 639 | 546 | 29 169 | 42 000 | | 7 116 | 2 698 | 4 418 |
| Sows | 70 810 | | | | | | | | 4 151 | -4 151 |
| Stud boars | 5 840 | | | | | | | | 199 | -199 |
| Livestock production, total | x | x | x | X | x | x | | 12 143 | 20 783 | -8 640 |
| Enterprise, total | x | x | x | X | x | x | 4 062 | 19 071 | 20 783 | -1 712 |

*) in crop production = initial stock + production throughout the year + purchase; in livestock production = initial stock + stud additions + growth additions + transfers from other categories + purchase.

Source: Production and economic plan of a selected enterprise for 2004

The planned resulting calculation of product profit according to our methodology has been defined in Scheme 1 titled as the production and economic vertical for profit generation from the agricultural products.

In contrast to the accountant's approach to the calculation of profit; income – cost, the production and economic vertical defines the profit generation on the basis of:

- production inputs; land acreage and number of animals
- performance; crops and gains
- physical volumes and method of their use; sales, own use, stocks
- system of subsidies
- level of basic and intra-enterprise prices.

Besides the fact that the product profit precisely defines the appreciation of resources in use by the composition of products, it also creates the key component of profit achieved in the agricultural production. According to the activity concept in agriculture, this profit could be calculated by using the formula (4):

$$Zpv = S Vz_{(1-n)} + SZpp + SZspp \quad (4)$$

Where:

- Zpv = profit achieved on agricultural production
- $Vz (1 - n)$ = profit on products 1 – n
- Zpp = profit on further processing of agricultural products
- $Zspp$ = profit on services provided to the prime agricultural production.

If the enterprise profit is a sum total of product profits (Novák et al. 1997), then, on the enterprise level, we can talk about the product economics. This is illustrated on an example of a selected Slovak agricultural enterprise, in Table 1¹¹.

Even though we discuss the calculation of profit generation, the data shown in Table 1 suggest that the selected enterprise has finished the year 2004 with a loss. This is an interesting phenomenon because the performance parameters are among the best in the sector of Slovak agriculture. However, one of the key problems in the enterprise is the non-market livestock production beyond the current capacity of the enterprise. Therefore, this indicator is rather an analytical function of the planned calculation of profit generation, with the aim to illustrate the need for changes in the production structure.

CONCLUSION

Our conclusion is a bit different from the conventional habit.

Based on the presented aspects of methodology in product economics in the Slovak agriculture, we want to point out a number of factors closely related to the product economics:

- rate of self-funding of enterprises in primary agricultural production in the new member states – factors and potential for optimizing,
- enterprise prices; methodology and topicality of the data throughout the year;
- intra-enterprise information system – internal bookkeeping; transition from the “enterprise or centralised” to “product” concept.

A broader discussion on the issues presented here is highly encouraged.

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¹¹ Without profit from further processing of agricultural products and profit from services provided to the primary agricultural production.