

## Collaboration in the Czech Dairy Chain

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### Anotace

V souvislosti s procesem deregulace byl sektor mléka v EU posílen o tzv. Mléčný balíček, který obsahuje sadu opatření směřovaných k organizacím zemědělských producentů s cílem povzbudit jejich účast na řízení výrobně-spotřebního řetězce mléka. Cílem článku je zodpovědět otázku, zda organizace producentů mléka v České republice vykazují znaky, aby mohly být článkem, který podporuje stabilitu řetězce a jaký potenciál pro ekonomiku farem představují. Jsou zjišťovány hlavní rysy vybraných organizací producentů a s využitím konceptu modelů mlékařských družstev je konfrontují s podnikatelským prostředím. Většina organizací producentů vykazovala v interní organizaci vestavěné transakční mechanismy, které by mohly být nositelem regulační funkce, ovšem organizace producentů namísto podpory řetězce jej narušují vyjednávacími strategiemi. V závěru jsou uvedeny argumenty pro změnu strategií zejména ve smyslu kapitálového zapojení do zpracování mléka. Racionální chování organizací producentů by mohlo zlepšit rentabilitu farem s produkcí mléka.

### Klíčová slova

Mléko, organizace producentů, strategie, vyjednávání, přidaná hodnota, vertikální integrace, rentabilita farem.

### Abstract

In the context of the market deregulation process the EU dairy sector has been reinforced by the Milk Package, comprising a series of measures addressed to producers' organizations to encourage them to participate in the dairy chain conduct. The aim of the paper is to explore if milk producers organizations in the Czech Republic dispose with characteristics to become supporting element of the sector's stability and what a potential for the farm economics they may have. The characteristics of a spectrum of organizations are examined and confronted with the business environment using the concept of dairy cooperative model. Most of organisations showed inbuilt transactions related mechanisms which might carry the regulative function, however instead of support they disrupt the chain by bargaining. It is argued for the change of their strategies with a focus on capital involvement in milk processing. Their rational functioning might improve dairy farms profitability.

### Key words

Milk, producers' organizations, strategies, bargaining, value added, vertical integration, farm profitability.

### Introduction

Dairy farmers in Europe are increasingly more pushed to make their own effort to assist the dairy market equilibrium and to support the sustainability of the chain. Having this aim in the focus, the European dairy sector has been reinforced by the Regulation (EU) N° 261/2012 of the European Parliament and of the Council of 14 March 2012, the so-called Milk Package, comprising a set of tools to make the dairy sector more stable

by the self-help of it's agents especially by producers organizations.

Czech milk producers in the context of the Milk Package are in the focus of the paper. In the Czech Republic almost 70 % of raw milk produced is negotiated by milk producers' organizations (MPOs), mostly with cooperative status. The objectives of the article is to investigate if the MPOs have characteristics, which will help them to reflect the market deregulation and to be

an element supporting the stability of the sector and what a potential for the economics of dairy farms they have. For this purpose the main characteristics of chosen MPOs are examined and confronted with the market environment. The article is divided into four parts. After a survey of the literature dealing with the response of the milk cooperatives to the market deregulation given in this part, in the second part the methodology, based on the cooperative models, considering the farm policy reforms, is explained. The results in the third part contain a short view to the milk sales distribution in the Czech Republic, the characteristics of external and internal structure of chosen MPOs together with their potential to improve the farm economics. In the same part the options are outlined how the market organization change can be reflected in the collaboration among the MPOs and milk processors in order to realize milk on the market effectively. Conclusions are made in the final part.

In the literature the ongoing role of dairy cooperatives under changing business environment is emphasized, however the need of a reflection in the cooperatives strategy and their internal structure is highlighted to stay a functional and a sustainable body. Van Bekkum (2001) refers to the close interlink between the agricultural policy and cooperative strategies. If access to commodity markets is easy, e.g. if exports are subsidized, large milk volumes, related to commodity kind of cooperatives, may be attractive. If policy measures favour domestic sales rather than international marketing, the coops are expected to move to value-added strategy as the products traded on domestic markets tend to be in the value added category. Moreover, Nilsson (1998) argues that the opening of market by a liberal policy makes downward pressure on prices (lowers the price towards the most competitive country) and favours to the value added strategy as a possibility to create the opportunities to find market niches and to increase the profitability of the cooperatives.

While a collective character of the internal structure is satisfactory for the commodity (thus more or less bargaining) strategy, the shift to more individualized structure is being recommended if investments in facilities for value added products are needed. In accordance to Nilsson (1998) idea about the relation of liberalization and value added Nilsson and Ohlsson (2007) argue that more liberalized and open markets require cooperative organizational models with more

individualized traits. According to Nilsson (1998) by establishing a cooperative firm, the traditional model is a superior solution for recruiting farmers to join the coop. The open membership, collective ownership, equal voting power, principles of equality and solidarity, ideological motivation and other are relevant when the cost curve is declining with size and when the price is not affected by the individual firm's sales volume – either due to agricultural policy or due to small size of the coop in comparison to the market size. Cook (1995) emphasizes that the need to make substantial investments calls for the individualization of the governance as collective ownership weakens the incentive for members to supply additional equity capital. Typically the allocation of income rights and decision rights, the supply of equity capital, the assignment of ownership title and the owners' control of the management are subject of the internal organization (Bijman, 2000). A number of internal structure designs was introduced with different levels of individualization. Cook and Chaddad (2004) defined categories of traditional form (1), proportional investment coop (2), member investor coop (3) and new-generation coop (NGC, 4). While in the proportional investment coop the members invest in proportion to their patronage, in the third mentioned scheme the returns to members are distributed in proportion to shareholdings in addition to patronage. In the NGC the ownership rights are in the form of tradable and appreciable delivery rights either restricted to members or opened to non-members as well. The last mentioned model includes coops with capital-seeking companies, investor share coops and coops which converted to an investor-driven ownership structure. Even the examples of the exit of the cooperative status to an IOF model are quoted. (Cook and Chaddad, 2004; Chaddad and Iliopoulos, 2013). Similarly to the NGC model, Nilsson (1998) referred to empirical examples of a new coop model, where the secondary processing (means consumer goods production) was performed in private companies, jointly owned by the cooperatives and external investors, which moved the conduct of such firms to investor-owned firms.

The literature dealing with the empirical experience shows that once the market comes through the deregulation process, the role of cooperatives in the market control is confirmed either as a top down effect of getting more competencies within the policy, or as a bottom up response

of farmers to the reduction of their protection. Szabó and Popovics (2009) even mention as intermediate form of coops establishing initiated by the processor. At the same time, the internal structures of coops are being accommodated to the new market regimes

The Swiss experience with quota withdrawal (Chavaz, 2012) combines both the top down and the bottom up effects. During the transition period the farmers were encouraged by the policy to enter the coops by providing them a chance of production increase, while after the quota abolition the Swiss Farmers' Union initiated the foundation of the vertical Inter-branch Organisation (IOM) to face the market distortions. The IOM associated milk producers organizations, milk processing companies, cheese dairies, milk traders and retailers, which covered 95 % milk production and processing. It's internal organization is based on the volume control and price recommendations. In Australia, after the milk market was fully deregulated, the traditional model of farmers owned cooperatives covering milk production, manufacturing and marketing, became uncomfortable for a part of farmers (ADIC, 2010). To free up their capital and to dispose more flexibility and a short run certainty over the milk price, part of farmers withdrew the traditional coops and formed the independent bargaining groups. The market balance is being reached by parallel operations of traditional coops, bargaining groups and direct contractual relations between farmers and processors. There is to mention that there are regions with supply shortage, which favours to bargaining, and on the other hand, ADIC remarks, that not every bargaining group has been successful. In New Zealand, one and half decade after the milk market deregulation, the Fonterra coop, collecting round 92 % milk, introduced the reform of the coop's internal structure (New Zealand Government, 2010). Under the New Zealand Dairy Industry Restructuring Act 2001 free and anytime entry/exit regime was implemented with the redemption of co-operative shares at fair value. Moreover, part of milk purchased was allowed to be supplied to independent processors. Thus a mobility of farmers' capital and their risk responsibility have been amplified.

## Materials and methods

The methodological approach exploits from the concept of dairy cooperative models introduced by Onno-Frank V. Bekkum (2001). In this concept, by a combination of different institutional

environment (generally diversified to regulated and liberalised markets) and different cooperative strategies (generally diversified according to final milk product characteristics) the diverse types of cooperatives with a specific internal governance - the so called cooperative models are defined. The aim of the categorisation is to define an effective internal structure suitable for various cooperative strategies within certain levels of market regulation or liberalization.

For the classification of the cooperatives three dimensions are used. Two sales strategy characteristics (*cost leadership*: on X-axis, and *product differentiation*: on Y-axis) are combined with a characteristics of the cooperative organizational structure (*degree of individualization of cooperative-member relationships*: on Z-axis). Low versus high values along three axis' led to create a cube with eight corners, four of which are either non-suitable or non-logical, while the other four ones represent the extreme cooperative models with the coherent strategy-structure matches.<sup>1</sup> A schematic overview of models is given together with results in Figure 2.

The *village-cooperative* is a model of a small and local oriented cooperative with limited specific product requirements. It exists mostly because of low competition. It's good perspectives come into consideration if the size or location of the market is not attractive for the competitors. This type of cooperative may be organised on a collective basis with democratic voting principles, equal pricing, unallocated capital etc. The *commodity cooperative* represents a model of cooperative that grew out of the village type through internal growth and/or mergers. Basically it's a typically price negotiating cooperative considering milk volume with no processing. It's interest in permanent expanding volumes fits to open membership, free entry, democratic principles, limited investments, use of unallocated reserves and similarly. The *value-added cooperative* invests heavily in processing and marketing so as to serve the top market segments. This requires differentiated pricing for members, controlled

<sup>1</sup>Quantification of cost leadership is made using member-milk intake volumes (as this characteristics basically refers to a horizontal growth). Product differentiation is quantified by total assets per kg of member milk (as this characteristics is mainly connected with the vertical growth and investment approach to value-added products) or market receipts approach is considered. The degree of individualization is assessed by milk pricing schemes, individual versus collective contribution of capital, risk bearing and the rights to residual claims.

delivery volumes by means of delivery rights systems or contracts, high amounts of individualized investments, tradable and appreciable form of capital etc. The strategic orientation of the *niche cooperative* is similar to the value-added one but it is smaller sized with a focus on small market niches, which means that it usually operates on regional markets addressing specific consumer groups etc. This model requires closed membership, obligatory investments in tradable production and delivery rights, differentiated voting schemes etc.

In the article, firstly raw milk sales distribution in the Czech Republic is outlined. In the second step, from all producers' organisations in the country I chose a sample of seven ones in order to estimate their positions in the cube. The criteria for the choice of the MPOs were the annual milk volume negotiated and the regional coverage of milk suppliers (farmers). The choice followed the objectives to have both representatives of the most important organisations in the country and the small ones as well, and to have the most important production regions covered. The position on the X-axis comes from the milk volume negotiated. The position on the Y-axis was indicated according to their involvement in milk processing. For their position on the Z-axis, their internal structure characteristics were examined. Their choice has been inspired by the Onno-Frank V. Bekkum's model (2001). Nevertheless, the complex character of the model was substituted by a simplified way with a limited number of characteristics. After the choice of the characteristics, indicating collective, individual or highly individual character of the internal structure, their occurrence at each of the MPOs was examined and summed in a survey. The examination has been realized by the guided interviews with representatives of the MPOs and completed by the documents search. To complete the position of the MPOs in the cube, I aimed to estimate their position in accordance with the survey. The main constrain rests at the identification of the maximum on the Z-axis as it seems difficult to define the full list of the individualization characteristics which would represent the maximum degree of individualization. Therefore the maximum on the Z-axis was considered like a sum of all individualization characteristics chosen in this examination. The position of each MPO on the Z-axis was estimated in such a way that each individualization or highly individualization

characteristics put the MPO forward to the maximum (by one or by two steps respectively) while a collective characteristics put it by one step back. The allocation on the Z-axis has an estimation character and should be considered like a mutual position of particular MPOs examined with a view of whether the MPO inclines rather to the collective or to the individualized structure in the frame of chosen characteristics.

Finally, the MPOs eventual impacts to the farm economics were estimated. For this purpose the space between the minimum and maximum milk price paid off by milk processors in the country<sup>2</sup> was considered to be a space for farmers within of which they can operate. Thus this space was considered to be a frame for the improvement of the milk price (and farm economics) by a rational behaviour of farmers (MPOs) on the market. This step was done to get a basic and a very rough idea about the impacts of rational market behaviour to the farm economics while to get an exact evaluation, further factors should be taken into consideration. The estimation is based on return on cost calculation where the cost data come from research institute and cover a file of farms representing the country average, while milk price data come from the ministerial sheets, covering all processors in the country.

Within discussions, the positions of particular MPOs in the cube were confronted with the European dairy market policy. Based on the confrontation, the recommendations for the MPOs in the Czech Republic were made to stay competitive on the European market and to help let milk supply chain sustainable.

## Results and discussion

Since the early nineties, when the MPOs started to be established in the Czech Republic, their share on raw milk sales in the country moved to about 70 % in recent years. In the quota year 2010/11 together 1 714 thousand tonnes of raw milk were sold through the mediation of the MPOs, which means 67 % of the national raw milk production. Out of total 2 224 milk producers, 1 147 ones (51,5 %) were organized in altogether 39 MPOs. The overview of milk sales realized by particular MPOs together with their members' number is given in figure 1 and table 1.

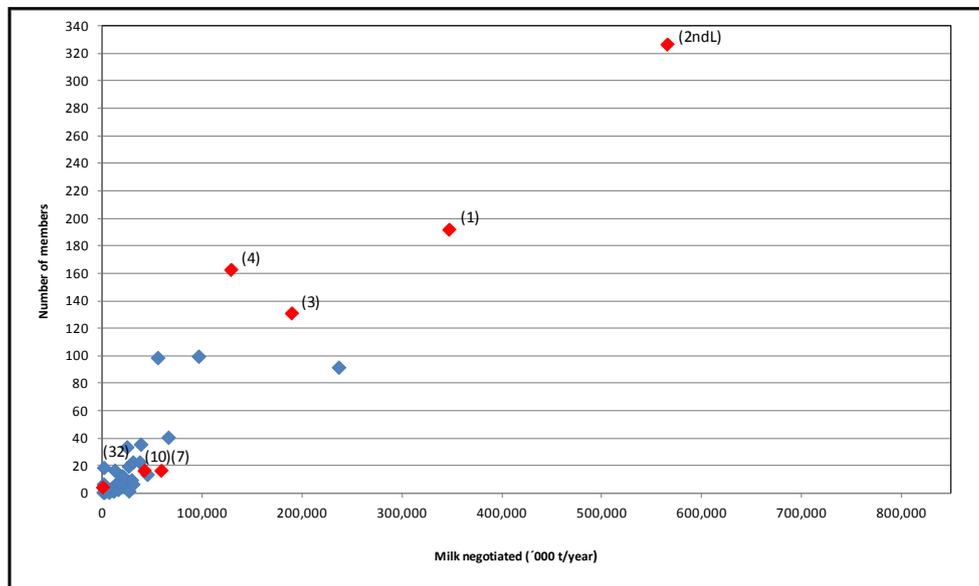
By the Milk Package the maximum milk volume

<sup>2</sup> which means the space between the processor with the poorest and with the highest milk price.

allowed to be negotiated by single MPO was defined up to 33 % of the national milk production. Therefore in the mid-term view and in the context of current national production level, the scale on the X-axis in figure 1, coming up to 775 thousand tonnes, can be considered like a maximum annual sale of a single MPO. The figure 1 and the table 1 show that even the largest MPOs were far below the limit. Except of the 2ndL MPO, only 3 other ones exceeded 5% share on national milk production, while most of the other of 36 MPOs didn't reach more than 2% share. The MPO marked 2ndL is a second level MPO, associating 8 single MPOs. While at the start of the millennium it disposed

of a great influence on the national milk market, due to a national government decree issued in 2005, it lost its official status of milk sales mediator and since 2005 it is functioning like a coordinating body with the remit of recommendations for the MPOs associated.

The MPOs chosen for the examination of their qualitative characteristics represent the spectrum of the MPOs in the country. As processing is concerned (table 2, first section), none of the MPOs chosen is involved in milk processing because they are not interested in. Thus they voluntarily keep the positions of organisations bargaining



Note: data related to the quota year 2010/11  
Source: own survey based on the data of SAIF (2013)

Figure 1: The size of milk producers organizations (MPOs).

MPO code	SP <sup>1)</sup>	2ndL <sup>2)</sup>	1	2	3	4	5	6	7	8	9	10	11	12
Share on total sales <sup>3)</sup>	33.3	22.0	13.5	9.2	7.4	5.0	3.7	2.6	2.3	2.2	1.7	1.6	1.5	1.5
Share on MPOs sales <sup>4)</sup>	0.0	33.0	20.2	13.8	11.1	7.5	5.6	3.8	3.4	3.2	2.6	2.5	2.2	2.2
MPO code	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Share on total sales	1.2	1.2	1.1	1.0	1.0	1.0	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.5
Share on MPOs sales	1.8	1.8	1.7	1.5	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.9	0.8
MPO code	27	28	29	30	31	32	33	34	35	36	37	38	39	
Share on total sales	0.5	0.4	0.4	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	
Share on MPOs sales	0.7	0.7	0.7	0.6	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	

Note: <sup>1)</sup> Single producers non organized; <sup>2)</sup> Second level MPO - association of eight MPOs, the figures to be excluded from the sum of shares; <sup>3)</sup> Share on all milk sold by producers registered in the country; <sup>4)</sup> Share on all milk sales realized by the MPOs in the country.  
Source: own survey based on data of the SAIF (2013).

Table 1: Sales shares of the MPOs in the Czech Republic on the national milk production.

the best milk price. The MPOs (4) and (7) got a short experience with the integration with processing few years ago, however, as shown in Ratering, Bošková (2013), both of their attempts failed and they are not interested anymore. Other MPOs chosen showed no willingness in any capital investments in milk processing. They usually argue with no management skills to conduct milk processing. Only two of seven MPOs examined (and even of all MPOs in the country) have the full time managers, the rest of MPOs is led by farmers themselves like a side job.

As the internal structure is concerned, all the MPOs chosen proved certain features showing the individual approach in transaction relationship (table 2, second section), whereas the results of the individual approach in investments relationship (table 2, third section), were almost negative. This is a logical effect of zero involvement in milk processing, where only basic investments relationships connected with the entry and leaving the MPO are treated, while the other ones are of low importance.

Summing up the internal structures it is to say that the MPOs examined are individually developed in transaction relationship dominantly. All of the MPOs work with milk quality appreciation and the volume related characteristics are partly found. The patterns for milk appreciation within the coop usually follow the processors' patterns. The volume control insists in annual contracting the volumes with members, based on the contracts with processors. This indicates that the coops examined operate with the characteristics which are able to transfer the processors (thus market) needs of milk volume and quality to the primary production. By this way they are able to carry the regulatory function of the volume and quality.

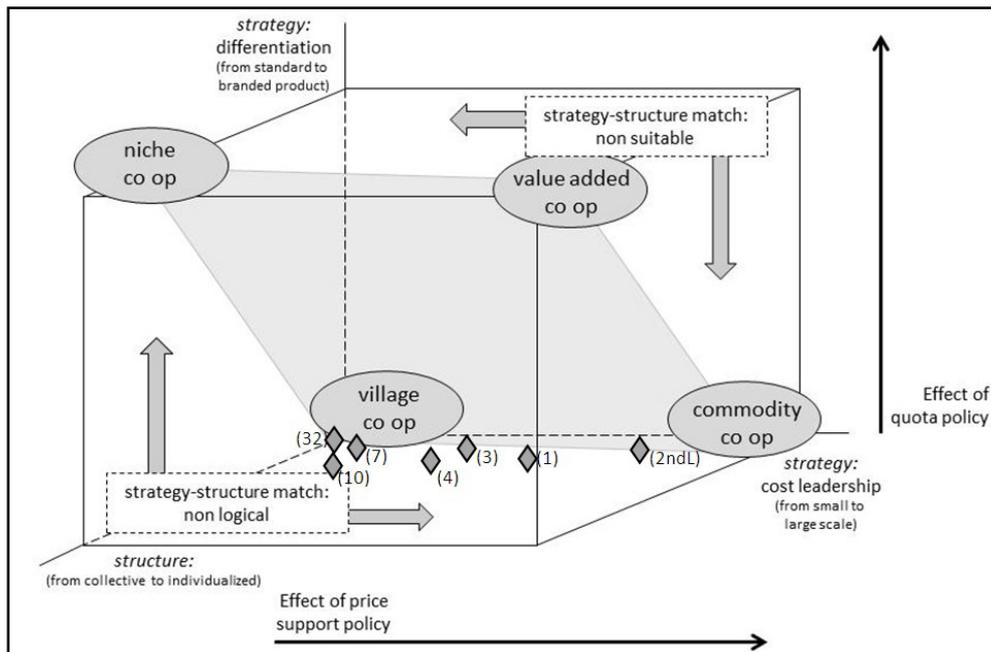
The position of the MPOs in the cooperative model is shown in figure 2. With regard to the Y-axis position, all seven MPOs lie at the zero level due to no involvement in milk processing. Based on the milk volume negotiated, they are distributed between cost leadership (commodity coop) and no competition (village coop) at the X-axis.

MPO code	IN <sup>1)</sup>	2ndL	1	3	4	7	10	32
<b>Transaction relationship</b>								
Processing		-	-	-	-	-	-	-
Open membership	C	+	+	+	+	-	-	+
Volume control	I	-	+	-	+	+	+	+
Volume included in price formula	I	+	-	+	-	-	+	-
Market related pricing formula	C	-	-	-	-	+	-	-
Performance based pricing <sup>1)</sup>	I	+	+	+	+	-	+	+
Tradable production and delivery rights	I	-	-	-	-	-	-	-
Premium for high proportion of protein to fat content	HI	-	-	-	-	-	-	-
Price corrections based on distance	HI	-	-	-	-	-	-	-
Above/below hygiene standards appreciation/levies	I	+	+	+	+	+	+	+
Surplus distribution according to delivery	I	+	+	+	+	-	+	-
Creation of supportive fond	C	-	-	+	-	-	-	-
<b>Investment relationship</b>								
Pro-forma entry fees	C	+	-	+	-	+	-	+
Entry fees according to delivery	I	-	+	-	+	-	+	-
Voting according to residual rights	I	-	-	-	+	-	-	-
Obligatory production linked capital	I	-	-	-	-	-	-	-
Production linked ex post investments	I	-	-	-	-	-	-	-
Production linked ex ante investments	I	-	-	-	-	-	-	-
Allocated risk-bearing capital in total assets	I	-	-	-	-	-	-	-
Tradable allocated capital	I	-	-	-	-	-	-	-
Allocated capital redeemable upon exit	I	-	+	+	+	+	+	+

<sup>1)</sup> Note: IN = individualization code: C - collective structure characteristics, I - individualized structure characteristics, HI - highly individualized structure characteristics.

Source: Ratering, Boskova (2013) completed with own data

Table 2: Characteristics of the internal structure of chosen MPOs.



Source: Bekkum, O. F. (2001), completed with own records

Figure 2: Allocation of chosen MPOs in the cooperative model.

Close to the cost leadership strategy, there came the 2ndL MPO only. However, as described above, this MPO has no competencies to bind the MPOs associated with fixed rules and works rather like an advisory body. Other three MPOs lie somewhere on the half way between the „no competition corner“ and the cost leadership strategy. Three MPOs are clearly located in the village coop corner, among them even the seventh largest MPO in the country (neither cost nor value added advantage).

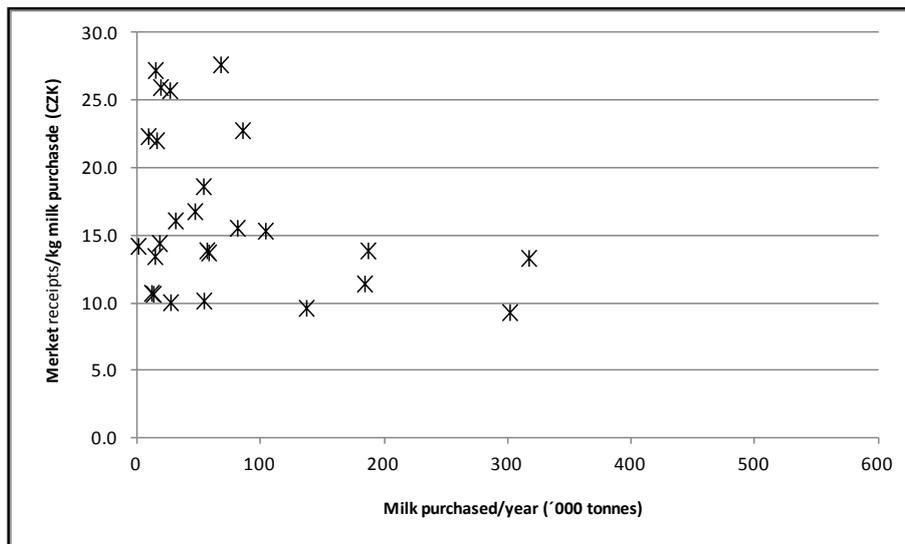
The internal structures showed dominantly collective characteristics in the area of investment relationship and therefore none of the MPOs chosen exceeded the middle of the Z-axis. However, the MPOs (10), (4) and (1) showed a number of individualization characteristics in the area of the transaction relationship. Despite they aren't involved in milk processing directly, their internal structures seem to be well developed to transfer price requires of processors to the MPOs members.

In figure 3 there are shown market receipts, reached by processors in the Czech Republic from 1 kg milk purchased. There operates a scale of processors in the country, some of them being able to utilize milk purchased in significantly higher market returns than others. Correspondingly there is significant milk price variation within the country. This gives a space to the MPOs and to farmers

to improve their economics by milk price if they find a proper way to reach the value added market. The most value added was observed at processors with low milk purchase, while the largest processors exhibited rather an average or under-average market receipts per milk unit. This might describe the situation that processors producing bulk products (having low value added and being milk volume demanding) swallow big volume of milk. One would expect to have cheese makers at the top of the value added scheme. Nevertheless the top positions are occupied by processors having important share of fresh products in their production programmes, such as yoghurts and sour creams.

The estimated theoretical MPOs impacts to the farm economics are given in figure 4. The scale of milk price paid off in the country showed a difference in the return on cost between 9 p. p. (in 2012) and 20 p. p. (in 2009).

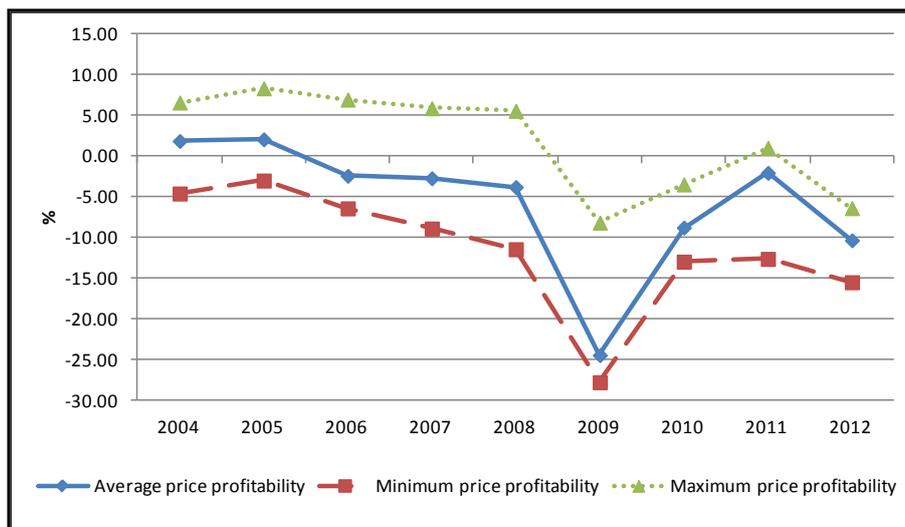
Summed most of milk volume produced in the country is being marketed through MPOs with low market share which use bargaining strategies. The internal structures of the MPOs examined have well developed transaction related characteristics thanks to which they are able to carry partly the regulative function in the chain (as an mediator), the issue remains that they don't use them in this way. In the country there are processors with the market for significantly higher



Note: The survey contains 24 milk processors where data available of 38 total ones. Top 5 and bottom 7 in milk purchase are complete.

Source: own survey from data of the SAIF (2013) and of the CR (2013)

Figure 3: Milk processors' market receipts from kg milk purchased<sup>1)</sup>.



Note: Return on cost without government supports; milk price is the annual average of all processing plants in the country.

Source: own survey

Figure 4: Return on cost of primary milk production in the Czech Republic

value added output than other ones and thus there is a milk price range.

Most of the MPOs in the country are located close to the „no competition“ corner of the cube. It evokes an idea that they operate in a low competition environment or it calls a question about other reason of their existence. It is hardly to declare the dairy sector in the country as a low competition

area. Neither from the volume viewpoint, as there is about 20 % oversupply (MoA, 2011), neither from the regional viewpoint, as there are no significant distances between the farmers and MPOs, nor from the product viewpoint, as a homogenous product of raw milk is negotiated. Therefore it is hardly to consider the MPOs from this corner to be functional. One would assume

that the contribution of the MPOs from this cube's corner to the dairy farmers is marginal or even that their existence is formal.

Some of the MPOs tend to the costleadership strategies. As the environment for this strategy is concerned, the EU mid-term outlook sounds for the milk production increase (EC, 2012), mainly as an effect of the global demand increase combined with the quota phasing out and abolishment. These effects may push the agents in the EU chain to aim for exports. Then the strategy of cost leadership and the commodity coop model would comply to the market character where bulk products are traded. However, the EU doesn't belong to the cost leaders in the international scope and its export success relates to specific conditions when global supply drops under the global demand. Thus this is an unreliable strategy especially with respect to recent developments when the global market suffered of great imbalance (e. g. IFCN, 2012) and periods with supply shortage took turns to periods with global surplus and price volatility exceeded upper and lower historical records.

None of the MPOs applies the value added strategy. There is to refer Nilsson (1998) with his findings that if market is tight, the value added strategy generates the options to find market niches. In this context the strategies of the MPOs examined are not suitable for tight markets. Some of the MPOs in the country probably found a collaborative way of partnership with processors by means of contractual relations, as there are transaction costs spared and other advantages reached. Nevertheless, when the price is pushed downwards, reaching a mutual satisfaction becomes difficult and collaboration converts to bargaining. With respect to uncertain market future development, the value added strategy seems to be more reliable than the two a. m. ones, costleadership and no competition.

## **Conclusion**

Milk producers organizations (MPOs) apply strategies which don't match to the outlook for the business environment or which are risky. In this way they would rather disturb than support the dairy chain in future. Therefore first conclusion is made. Those ones, who are in the "no competition" corner, once they aim to be a supportive element both for the farmers and for the sector, should aim to move from this corner. Either by a vertical growth, i. e. by differentiation strategies (which is recommended) or by a horizontal growth (internal

growth or mergers), which is easier but more risky step. Those MPOs, which tend to costleadership strategies should be careful as they apply a risky strategy. For both a value added strategy with the participation in milk processing seems to be more reliable. In this way the farmers might benefit of value added, differentiation and market access. For doing it the farmers and the MPOs might choose different models of collaboration of the primary production with its processing. The direct integration of processing within a single coop might be implemented in various levels of farmers' investments (e.g. Cook and Chaddad, 2004), or the joined ownership of processing by the coop and external investors are referred (e. g. Nilsson, 1998; Cook and Chaddad, 2004) or example of coordination within an inter-branch organization is described (Chavaz 2012).

In the context of the value added strategy recommendation, the second conclusion is made. Would the MPOs in the Czech Republic decide to join processing in an investments bound way, they will need to develop their internal structures. To stay competitive on the market with final milk products, the continuous investments in modern technologies and an innovative approach in the processing industry will be inevitable. In order to avoid the incentive problems associated with vaguely-defined property rights within the MPOs, the individualization of investments relationship will be required. Having reached that stage, however, it would seem difficult to continue to manage the MPOs as a side job. A voluntary additional job would have to be replaced by a designated management staff in those MPOs, where it is not matter of course so far. In this way the MPOs might become an element supporting farm economics and stability of the sector.

Finally the third conclusion is made. To make a step towards an integration of primary milk production to processing the government should create a supportive environment. Investments incentive measurements would be helpful, assistance for running the chain like backing for regional retailing, logistic, support of management posts focused on conducting the chain and others. In the sector there is a plenty of qualified and skilled managers to utilize such incentives and to help to keep the chain vital.

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## References

- [1] ADIC. Australian Dairy Industry Council: Submission to European High Level Expert Group on Milk, 2010. Available at: [http://ec.europa.eu/agriculture/markets/milk/hlg/3countries\\_au\\_en.pdf](http://ec.europa.eu/agriculture/markets/milk/hlg/3countries_au_en.pdf).
- [2] Bijman, J., Hendrikse, G., Veerman, C. A Marketing Cooperative as a System of Attributes: A Case Study of VTN/The Greenery International BV. Erasmus Universiteit Rotterdam, Rotterdam, 2000. Erim Report Series ERS-2000-10-ORG.
- [3] Chaddad, F., Iliopoulos, C. Control Rights, Governance, and the Costs of Ownership in Agricultural Cooperatives. *Agribusiness*, Vol. 29, 2013, pp. 3-22, ISSN 07424477.
- [4] Chavaz, J. Summary: The Swiss milk market. Federal Office for Agriculture (FOAG), Berne, 2010. Available at: [http://ec.europa.eu/agriculture/markets/milk/hlg/3countries\\_ch\\_en.pdf](http://ec.europa.eu/agriculture/markets/milk/hlg/3countries_ch_en.pdf).
- [5] Cook, M., Chaddad, F. R. Redesigning Cooperative Boundaries: The emergence of New Models. *American Journal of Agricultural Economics*, Vol. 86, 2004, pp. 1249-1253, ISSN: 0002-9092.
- [6] Cook, M. L. The Future of U. S. Agricultural Cooperatives: A Neoinstitutional Approach. *American Journal of Agricultural Economics*, Vol. 77, 1995, pp. 1153-1159, ISSN: 0002-9092.
- [7] CR. The Commercial Register, 2013. In Czech only. Available at: <http://portal.justice.cz/Justice2/Uvod/uvod.aspx>
- [8] EC. Prospects for Agricultural Markets and Income in the EU 2012 – 2022. European Commission, Agricultural and Rural development, 2012. Available at: [http://ec.europa.eu/agriculture/markets-and-prices/medium-term-outlook/index\\_en.htm](http://ec.europa.eu/agriculture/markets-and-prices/medium-term-outlook/index_en.htm)
- [9] Hendrikse, G. W. J., Veerman, C. P. Marketing Cooperatives as a System of attributes, in: Nilsson, J., Dijk, G. Strategies and Structures in the Agro-Food Industries, van Gorcum, Assen, 1996, pp. 11-130, ISBN: 90 232 3264X.
- [10] MoA. The Report on the State of Czech Agriculture in 2011, Ministry of Agriculture of the Czech Republic, 2011. In Czech only, Zpráva o stavu zemědělství za rok 2011. Available at: <http://eagri.cz/public/web/mze/zemedelstvi/publikace-a-dokumenty/zelene-zpravy/zelena-zprava-2011.html>.
- [11] New Zealand Government. New Zealand Government Paper for the European Union High Level Experts Group on Milk, 12 January 2010. Available at: [http://ec.europa.eu/agriculture/markets/milk/hlg/3countries\\_nz1\\_en.pdf](http://ec.europa.eu/agriculture/markets/milk/hlg/3countries_nz1_en.pdf).
- [12] Nilsson, J., Ohlsson, C. The New Zealand dairy cooperatives' adaptation changing market conditions. *Journal of Rural Cooperation*, Volume 35, Issue 1, 2007, pp. 43-70, ISSN: 03777480.
- [13] Nilsson, J. The Emergence of New Cooperative Models for Agricultural Cooperatives. Scandinavian University Press, *Swedish Journal of Agricultural Sciences*, Vol. 28, 1998, pp. 39-47, ISSN 0049 2701.
- [14] Rättinger, T., Bošková, I. Strategies and Effects of Milk Marketing Organizations in the Czech Republic. *Agricultural Economics*, Vol. 59, 2013, pp. 134-142, ISSN 0139-570X.

- [15] SAIF. The quota system administration. The State Agricultural and Intervention Fund, 2013. In Czech only. Available at: <http://www.szif.cz/irj/portal/anonymous/komodity/zv/01/01> and subject of internal regime.
- [16] Szabó, G. G., Popovics, P. Possible Ways of Market Coordination and Integration in the Hungarian Dairy Sector. *Journal of Rural Cooperation*, Vol. 37, 2009, pp. 32-51, ISSN 03777480.
- [17] van Bakkum, O. F. Cooperative Models and Farm Policy reform. Exploring Patterns in Structure-Strategy Matches of Dairy Cooperatives in Protected Versus Liberalized Markets. Koninklijke Van Gorcum, Assen, 2001, ISBN: 90 232 3705 6.