MAP AS MANAGEMENT TOOL IN PRODUCTION CHAINS

Leandro Nicaretta

University of Caxias do Sul, Graduate Program in Management

Caxias do Sul, Brazil

Guilherme Cunha Malafaia

University of Caxias do Sul, Graduate Program in Management

Caxias do Sul, Brazil

Maria Emilia Camargo

University of Caxias do Sul, Graduate Program in Management

Caxias do Sul, Brazil

Márcia Rohr da Cruz

Universityof Caxias do Sul, GraduateProgram in Management

Caxias do Sul, Brazil

ABSTRACT

This study's main function is to present the MAP tool, as an analytical process in the construction of the analysis of agro-industrial chains. After the construction of the tool in the chain it presents indicators that allow managers to better design failures and social effects it offers. Compared to other tools MAP, allows visualization of competitive indicators thus defining the advantages and disadvantages of using the tool. Thus, these performance indicators may show that public policies are reducing the competitiveness of the chain in the external market and the internal market.

Keywords: chain, competitiveness, indicators.

1. Introduction

The array of policy analysis, here on named briefly by the corresponding MAP is a set of integrated and dynamic tables that collect data and information, the estimate with economic rules and generate accounting indicators of market prices and those without Government distortions because it considers both prices paid and received throughout production chains. These tables are built based on the theory of comparative advantage in international trade, in addition to other theoretical and functional references of the agricultural economy, for studies of competitiveness of production chains and comparisons between agricultural systems, as well as highlights the effects of policies of investment and funding on private profitability, social profitability and their differences.

The construction of this method of economic studies of productive chains was from the publication of MONKE and PEARSON (1989), professors at Cornell University. One of the most recognizable uses was the application on the basis of studies that defined the entry of Portugal in the European Union, as well as later was employed by Mexico to form the area of free trade with United States and Canada called NAFTA – North American Free Trade Agreement. Other authors also used in studies of agro-industrial chains. In Brazil the jobs are disseminated in several publications, some of which are summarized below in order to illustrate the possibilities of organization and interpretation of knowledge by MAP (EMBRAPA, 2012).

The concept of the production chain has been developed as an instrument of systemic vision. Part of the approach to the production of goods can be represented as a system of links, where the various agents are linked by flows of materials, capital and information, in order to supply a final consumer market with products of the system.
Although the concept has been developed taking the agricultural production and forestry as main, has approached it has potential for extrapolation to other productive areas beyond agriculture. This greater range would make the concept of employment of various models and would use their skills and analytical tools, to the formulation of development strategies and policies in a large number of productive processes.

In this work, it is proposed that the focus of analytical tool based on the concept presented in the concept of productive chains, which may be a method of presentation and management of results of agro-industrial chains. Its objectives are: a) present the advantages of the adoption of this conceptual model as a facilitator of analytical studies of the various

chains. b) point and discuss analytical techniques associated with the various production chains; c) indicate how will facilitate the carrying out of studies of competitiveness of chains.

2. MAP and its use as a tool

The concept that the MAP is a quantitative method that aims to measure the impact of policies, among other similar applications, is designed for evaluations of the results of the creation of taxes, tariffs, interest rates set by monetary authorities, social security contributions, as well as subsidies on inputs and products, and the recovery of taxes paid within the country.

Most of them cause differences in economic incentives in an agricultural chain, and one of the losses in competitiveness and change in the effectiveness of each link in the chain – from the producer to the industrialization and agro-industrial processing, through links of transport of raw materials and processed products, i.e. primary production to export freight (the port) or at the wholesale market.

The usefulness of the indicators of the MAP is, in this case, is to provide those who hold strategic decisions undertakings or chains and respective agencies of sectoral or professional class, the ability to develop a scientifically competent dialogue, solidly grounded and long lasting with policy makers in order to show, with concrete facts and numbers generated by universal method accepted by the main institutions governing the world agricultural trade, that public policy would be dispelling the comparative advantages of the chain. (MONKE; PEARSON .1989)

The use of MAP features, in addition to the indicators and impacts of public policies, its main function, important elements of market intelligence, to support businesses or chains of them – gathered in organizations-investment decisions. These elements provided by business intelligence MAP can be summarized in the following points:

a) Measuring quantitatively the impact of the investment group over the most important links of true value chains;

b) Identifies the profitability of the links of the chains and of the chains as a whole, before and after the investment;

c) Evaluates the impact of cost savings after investments, because indicators may be re-estimated after capital investments;

d) Gauges the General competitiveness improvement of jail after investments;

e) if the basic issue is where to invest, the MAP assists indicating which links more efficient and more fragile, with the analysis of indicators link by link. (EMBRAPA, 2012)

On the other hand, the MAP can be characterized by the following essential elements:

a) Uses the concept of productive chains, in which all that matters is the profitability of same as a whole and not one link comparative advantages (such as agricultural production, for example).

b) Adds the concept of value chains, which goes far beyond the concept of chain of products (physical).

c) Uses the method of Accounting Matrices of easy understanding.

d) only requires a reorganization of the data (easy to be obtained).

e) Confers also emphasis on logistics: the geography of chain links and transport.

f) Identifies trainers centers of prices and final destinations of the products of the chains so indicated by the market, which ultimately validates the chain (ports and attacked).

g) works with external prices versus costs of production, i.e. compare home prices with distortions and external prices without distortions.

h) follows the scripts and sales channels of the real world (market).

i) part of the FOB and wholesale to producers or vice versa, centres of production until the FOB, because the method is flexible.

j) works with representative establishments (production, industry, carriers) (EMBRAPA, 2012)

3. Competitiveness of chains

Private sector decisions are primarily price signals, inputs of production factors ' costs and prices of final products of chains, which may contain distortions arising from public policy. With the opening of the economy and increasing globalization of markets, these signs have become critical to entrepreneurs allocate its resources efficiently in production processes and industrialization in the agrifood sector.

Competitiveness can be understood as the performance or participation of the company in the market over a given period of time, or its market share. According to this approach, is that market demand, to arbitrate which products of which companies will be

acquired, will be setting the competitive position of companies, sanctioning or not productive, commercial actions, investments, or marketing (KUPFER, 1991).

The second focus of the concept, competitiveness concerns the economic efficiency or the ability to produce more efficiently in the chain as a whole and in links. Economic efficiency would set the competitiveness of a company, industry or country. The increased efficiency would be expressed by the best price quantity, technology, wages and productivity. Competitiveness has a structural feature of the sector itself, which relates to the conditions under which the firm's production takes place in each link in the chain and the chain as a whole (CROOCO, 1994). However, inside there is a critical link in the chain: the agro-industrialization. Chain strategies have a lot to do with the strategies of the third link, which represents the industry, which also happens to be the only source of innovation and determinant of specialization and productive integration processes.

Table 1. Accounting of expanded and used to MAP new indicators of competitiveness

EXPANDED POLICY ANALYSIS MATRIX

	Recipes	Costs		Profits
		Insumos Comercializáveis	Fatores Domésticos	
Private Prices	A	B	C	D^1
Social Prices	E	F	G	H^2
Effects of differences and of efficient policies	I^3	J^4	K^5	L^6
Effectsofmarketfailures	M	N	O	P
Effectsofdistorting policies[7]	Q	R	S	T
Effectsofefficient policies	U	V	W	X

[1]Private profits, D, equal to minus B minus C.

[2]Social profits, H, equal to and less F least G.

[3]Transfers of production, (I), equal to the least and.

[4]Transfer of inputs, J equals B minus F.

[5]Transfer factors, K equals C minus G.

[6]Net transfers, L equals D least H; I also like the I J K less.

[7]Thatdistorteconomic incentives.

Fonte: MONKE e PEARSON. The Policy Analysis Matrix (1989).

A Monthly Double-Blind Peer Reviewed Refereed Open Access International e-Journal - Included in the International Serial Directories

International Journal in Management and Social Science

http://www.ijmr.net.in email id- irjmss@gmail.com   Page 23

Competitiveness cannot be understood as intrinsic characteristic of a particular product or company. Competitiveness is a concept of extrinsic nature to the firm or to the product, being directly related to the standard of competition prevailing at the specific market considered and how it positions the chain as a whole. Is the standard of competition in the chain, so the determining variable. And competitiveness is determined from this reality or is the result of the sum of effects of the factors involved (KUPFER, 1991).

Competitive firms would be at every moment to adopt strategies of conduct in terms of investments, sales, technological innovation, purchasing, financing etc. more suited to the standard of competition in the sector in which it operates (KUPFER, 1991). To this end, it is necessary to use quantitative methods.

4. Efficiency of Chains

The studies made with production costs reveal partial results and do not reflect the level of competitiveness of the entire production chain, which also covers the link processing, processing and industrialization, in which Brazil enjoys relative competence.

Secondly, these studies do not take into account the effects of public policies, forms of taxation, the unbalanced Exchange, the weight of social and financial burden, and other factors that very weakness and weakening the competitiveness of agro-industrial chains in Brazil. These factors cause profound impacts on efficiency of Brazilian prisons. (EMBRAPA, 2012)

Thirdly, it is necessary to mention that the indicators of the few studies done with complete chains do not tell the whole story of the efficiency and the competitiveness of Brazilian industry. This is because the methodology adopted was compute costs and revenues assessed in social terms, that is, did not consider the fact that we need to account for not only the values in terms of private costs and revenues, but also the prices, costs and revenues in social terms, as recommended in this Manual.

This requires the theory of analysis of productive activities which seek to add income to the company. For society to decide whether to keep or not a productive activity, she has to meet the costs and net social benefits that it generates, not just costs and revenues with a high weight of income transfer.

According to GITTINGER (1987) a productive activity must be evaluated in terms of the additional benefit to national income (value of goods and services produced by

economic activity). However, as pointed out GITTINGER (1987), analysis of economic efficiency must go beyond the assessment of the costs and private profits. The economic evaluation should be done by eliminating, in General, the policies of State intervention in the foreign exchange, interest in us labor law that creates social charges, tariffs and taxes. And compute, also, subsidies, which enhance the competitiveness, besides artificially favourable conditions of market, as "taxes", but with negative sign.

5. Indicators of economic efficiency and competitiveness of the chain by MAP

In general the final products of this methodology are expressed by six key indicators, all of great importance to the assessment of the efficiency and competitiveness of production chains generated standards products under study. The following letters are used to express them: private recipes (A), private costs of tradable inputs (B), private costs of domestic factors (C), (E) social income, social costs of tradable inputs (F), and social costs of domestic factors (G). (MONK; PEARSON, 1989)

As operações aritméticas feitas com eles dentro da matriz contábil rendem resultados que podem ser usados como indicadores de eficiência. São eles:

Arithmetic operations made with them within the accounting matrix yield results that can be used as indicators of efficiency. They are:

Private profit (LP=A-B-C): it is a significant indicator of competitiveness at market prices for the studied and allows the comparison of production-marketing and corridors between production-related processing systems with a standard product, previously defined. With the positive value for LP, signals that the agents remain in activity and, in the future, may even increase investments in chain studied.

Private Cost ratio [RCPC = C/(A-B)]: Note that if the value of CPR is equal to unity, the value added is exactly equal to the remuneration of domestic factors. A value lower than the CPR unit – a result that would be considered normal-indicates that the domestic production factors are getting more than the normal return. This indicates that the activity will keep the domestic factors that are employed, and may even come to expand.

Social profit (LS= E-F-G): measures the agroindustrial chain efficiency or comparative advantage of production hall-marketing. Social profitability is defined as the measure of efficiency, because the production end (E) and inputs (FG) are valued at prices that reflect the

values of the shortage or social opportunity costs. The social profit, as well as the analogue of private profit is the difference between income and costs, all measured social prices.

Cost of Domestic Resources [CRD=G (E-F)]: when the value of the CRD is equal to unity, domestic factors will be receiving exactly your social opportunity cost. This activity, therefore, generates returns for the domestic factors that are compatible with the value they have for society. If the CRD is higher than the unit, the domestic production factors will be receiving more than its opportunity cost, i.e. are being subsidized.

Activities that present values less than or equal to the unit are those in which the country has comparative advantage. Note that when the value of the RCP is less than or equal to unity and CRD is equal to unity, the activity is sustainable and the factors of production receive exactly its social cost of opportunity. Note that RCP higher than the unit and CRD equal to the Unit indicates a situation untenable, because the factors of production are getting less than the private return normal. It is also a measure of how much domestic resources is used to generate a dollar of currency through export, or to save a dollar through currency for imports. It is important to keep in mind that those chains that have very low indicator that possess the trait that use very few domestic production factors to generate or save foreign exchange.

Net transfer of policies (TLP=I-J-K): is the sum of the effects of all public policies considered, namely, the effects on the price paid for the product, about the costs of tradable inputs and on the cost of the factors. Is the value in currency that public policy transfer ("out") of the chain in the system analyzed. In this case, the negative value indicates that the Government transfers the chain, through public policies, certain amount of income for other sectors of the economy.

Nominal Protection coefficient (CPN=A/E): is the ratio of the private international price equivalent price. Measures directly granted protection to the chain. In this case, a smaller gauge than the Unit indicates the deprotection that is exposed the hallway or parsed form of taxation implied about the jail, because shows that the value received by jail corresponded to a lower value, at market prices, to their economic value. This indicator captures the total effect of all the distortions or direct interventions on the main product market chain. This coefficient can be transformed into percentage by multiplying by 100, facilitating its understanding.

Effective Protection coefficient [CPE=(A-B)/ (E-F)]: is the ratio of the value added in private prices and value added in social prices (inputs valued the international prices). Considers the effects of unsuitable policies about products and marketable inputs.In this case, the value smaller than the unit represents deprotection (or taxing).The closer the value 1, so minors are transfers of income of the productive sectors of the chains for the inputs. This coefficient can be transformed into percentage by multiplying it by 100.

*Coefficient of Profitability (CL=D/H):*when the values of the indicators D and H are positive numbers the interpretation of the coefficient is relatively simple. If the coefficient is greater than unity, indicates that the activity is being subsidized and liquidate if it is less than unity indicates that the activity being taxed liquidate. However, the interpretation is less transparent when both are negative and, worse still, when D and H have opposite signs. In this case, you have to review the data that fueled the array to the worksheet from the MAP.

Subsidies to producers (SP=L/E): this indicator measures, in percentage terms, the level of support that public policy grant to the chains. However, the negative percentages indicate how much the chain is liquidate taxed, as a result of all policies that distort the prices of factors, inputs and products. When negative this percentage measures, therefore, the net transfer of policies as a proportion of total social supply chain revenue.

Net transfer ratio (RLT=K/I-J): demonstrates the effects of divergence of public policy on the factors of production, in respect of disagreements arising on the value added. The value must be non-negative and less than the unit.

Reason of Social Profitability (RLS=H/G): Represents, in social terms, the profitability of the factors land, capital and labour. The higher the value, the greater the scalability of production factors in jail. (EMBRAPA, 2012)

6. Final Considerations

The analytical features of the methodology MAP transcend the limits of efficiency analysis of a single string. When they built the arrays MAP to a set of chains, you can decide on the impact of public policies on various chains, tiering the effects of same on a set of products. All the more so because the impact of the policies tends to be different in individual chains, requiring ready action of Governments in the case of endangered chains. (MONK; PEARSON, 1989)

The most important thing to understand procedures for the construction of the MAP is the use of the model, through a passage for all cells of all links, including checking the annotations present in the main cells.

It is important to note some points of interest about the MAP vary according to the type of culture that works.

In cultures is necessary a temporary adjustment of the complete cycle of the worksheet to a harvest schedule, as in the case of cereals, grains, fibers, and oilseeds. Therefore, you must use a full crop year. However, when there is another annual harvest, as, for example, the summer harvest, the harvest and the winter off-season, it is necessary to include the three harvests within the worksheet, generating, when needed, combinations of crops such as soybeans (summer crop), corn (off-season) and wheat (winter harvest).

The construction of the worksheet should reflect the real world where there's this combination of crops, but a spreadsheet can be built exclusively for soybeans or corn, since if you make an assessment of all the fixed costs and use as inputs variables, only those relevant to that product. This is a general statement to the beginning of calculations. It must be remembered that the cost of production at the end is tonnes per hectare (for grains and fruits, for example) or per tonne (for meat and milk, for example). (EMBRAPA, 2012).

The productive chains feature a certain complexity and analyze this scenario is critical to the agents and middlemen. More precise management of agro-industrial chains comes against the professionalization of the sectors and the constant search in competitiveness. The MAP allows you to analyze the competitive landscape and social private it more assertive defines the flaws or processes that have more onerous, and thus serve as a flag of new placements by members of the process.

7. References

- ARAÚJO JÚNIOR, J. T. Tecnologia, concorrência e mudança estrutural: a experiência brasileira recente. Rio de Janeiro. IPEA/INPES, 1985.

- BONELLI, R., P. F. Fleury, W. Fritsch. Indicadores do desempenho competitivo ao nível da firma. Rio de Janeiro: BNDES, out. 1992.

- CROOCO, M.A. Padrão de Concorrência: Um Estudo do Complexo Têxtil. Texto para discussão n.º 72. UFMG. 1994.

- FOCHEZATTO, A. Análise da carga tributária incidente sobre as cadeias agroindustriais do arroz e da soja. Universidade Federal do Rio Grande do Sul. Porto Alegre. 1994 (dissertação de mestrado)

- GITTINGER, J. P. Economic Analysis of Agricultural Projects. The JohnsHopkinsUniversity Press. Baltimore and London. 1987.

- IPARDES. Mercosul: custos e incidência tributária na produção agropecuária e agroindustrial. Curitiba, 1992, 63 p.

- KUPFER, D. Padrões de concorrência e competitividade. Rio de Janeiro. IEI/UFRJ, 1991. (texto para discussão n.º 265).

- LITTLE, I. M. D. e J. A. MIRRLEES. Project Appraisal and Planing for Developing Countries. Basic Books. New York. 1974

- LOPES, M. R. Restrições às trocas internacionais livres e desgravadas no processo de integração Latino Americana: o papel das dificuldades criadas pelo Acordo do GATT em Agricultura. 1995.

- MARTINS, P. do C. Políticas Públicas e Mercados Reduzem o Resultado do Sistema Agroindustrial do Leite.Piracicaba, ESALQ-USP, 2002. 178 pág. Tese de Doutorado. 2002.

- MONKE, E. A. e PEARSON.S. R. The Policy Analysis Matrix for Agricultural Development.Cornell University Press. Ithacaand Cornell. 1989.

- MINTZBERG, Henry.O processo da estratégia. Porto Alegre: Bookman, 2006.

- **MINTZBERG, Henry; QUINN, James Brian.O processo da estratégia**. 4. ed. Porto Alegre: Bookman, 2006.

- NONEMBERG, M. *Impacto dos financiamentos sobre o crescimento das importações brasileiras,1992/95*. Abr. 1996. Versão Preliminar.

- PORTER, M. Vantagem competitiva. Rio de Janeiro. Editora Campus. 1985.

- REZENDE, Fernando. Finanças Públicas. Atlas Editora. São Paulo. 1983.

- REZENDE, Fernando. O Peso dos Impostos no Custo da Alimentação: Análise do Problema e Propostas de Redução. Rio de Janeiro, IPEA, 1991.

- VIEIRA, R. C. M. T; FILHO, A. R. T; OLIVEIRA, A. J; LOPES, M. R. Cadeias produtivas no Brasil. Análise da competitividade. Brasilia, Embrapa Comunicação para Transferência de Tecnologia e Secretaria de Administração Estratégica, 2001. 469 pág.

- TSAKOK , I.Agriculture price policy. A practioner's guide to partial equilibrium analyses. Ithaca: Cornell Univerty Press, 1990.