

REASONS FOR GOVERNMENT INTERVENTION IN AGRICULTURE

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Abstract—In this paper, specific aspects of government intervention in agriculture are considered. The analysis shows that there are theoretic reasons for greater interventions in agriculture. State intervention in agriculture starts from the fact that by this term we imply consciously aimed action of the state for the sake of as better as possible development of agricultural sector. The greatest number of developed countries developed their agricultural sector using various forms of direct or indirect subsidies of the state.

Keywords—Government intervention, economy, economic policy, economic system, agriculture.

I. INTRODUCTION

IN all countries, the government regulates economic processes, which includes agriculture. Government intervention in agriculture is much different between particular countries and dependence on various factors. Interventions in agriculture are the issue of controversial discussions, and lately the price politics and support to farmers' income are targeted by the critics. Agrarian policy during the second half of XX century continuously pushed agricultural sector of developed economies into hyperproduction, thus conditioning the decline of prices of basic agricultural products in world market. In addition, by speeding up the structural reform, such policy led to impairment of balance between two models of agricultural sector organization: agrobusiness and family agriculture. For that reason, we will today frequently encounter the reflexions regarding total liberalization, i.e. no government interventions in market flows within agricultural sector. On the other hand, the supporters of agrarian interventions will, partially admitting negative effects of practiced measures of agrarian policy in the past, point out the necessity of modification and proper dosage of government interventions in the future. They particularly stress new fields in which government interventions are required, such as national food safety and safety or protection of the environment of rural value system.

Observing the treatment of agrarian interventions, we can say that general consent is achieved in the aspect of unduly high expenses of leading contemporary agrarian

policy, as well as distorting effects that government interventions model in agrarian sector has produced in global market of agricultural products. This simultaneously doesn't have to imply that agrarian economists will give up the idea that agrarian sector should be „protected“. For that reason, current discussions related to agrarian interventions are mostly oriented on identification of the field of legitimate right of the country to intervene and how much can such an intervention cost today. In that sense, main reasons for government intervention in agrarian sector are identified in the following fields:

- 1) *Efficiency increase of agricultural production;*
- 2) *Protection of farmers' income;*
- 3) *National food safety and security and*
- 4) *External effects and public goods in agriculture.*

II. EFFICIENCY INCREASE OF AGRICULTURAL PRODUCTION

Historically observed, provision of the increase of food supply for continuously growing population (solving the problem of hunger) is a legitimate reason for practicing the measures of agrarian interventions. Measures of agrarian policy are in that aspect aimed towards the efficiency increase of resources use.

All of us can rightly wonder why would the country have to provide the funds from the budget in order to help the efficiency increase of resources use when this efficiency is endogeneously stimulated in the system of free effect of market laws. Manufacturers who are led by maximization of profits as target function will be systematically aimed to continuous innovations and improvement of technology, i.e. increase of efficiency of the production. However, the structure of agrarian sector (agrobusiness and family model of agriculture) by its definition conditions important differentialization of households into those whose motive is profit or lifestyle. Within theoretical analysis of supply factors, it is clearly determined that all agricultural households do not need to have profit maximization as a goal. Some of them can strive for standard profit or maintenance of own family in that household. Therefore, there is a problem of suboptimization at branch level, and thus the concern of the country that they will not be able to provide sufficient

amount of food at acceptable prices for urban consumers.

Technologically observed, the efficiency increase of agricultural production is achieved by the application of green revolution package and it is already concluded, in the chapter that deals with changes in agriculture, that contemporary agricultural manufacturer is seen in entire range of different activities: once he is turned into a pilot who sprays the crops with pesticides from a plane, another time into an operator of countless agricultural mechanization who is more familiar with the machine than botanics, then into a financier, analyst and researcher as well. Here we ask the question is it possible for agricultural manufacturer to independently perform all these functions that modern agriculture imposes on him? It particularly refers to the domain of research and development. In other words, can agricultural manufacturer independently develop new technologies? Big agro-manufacturers can integrate development-research stations capable for independent research. However, manufacturers from family agriculture system cannot independently respond to this requirement. Due to the scope and character of the research, this activity is the imperative of wider inclusion of the state in funding of basic research. Even in case that research activity is independent, the state still needs to protect the rights of the producers of new sorts/breeds or technological procedures.

To everything above-mentioned, we must add that agricultural manufacturers very frequently do not dispose with information on the necessity of applying new technologies, due to which the state is also included in projects of new knowledge diffusion and their implementation in practice through advisory service. It is known that agricultural manufacturers, in most cases, are very cautious in implementation of new technological achievements. Therefore, systems of continuous monitoring of the activities of agricultural households are developed through agricultural advisory service that acts towards informing the farmers about the benefits of the implementation of new technology. Advisory services very frequently base their activity on cooperation with so-called early innovators, households with long tradition and reputation in local environment within which new technological solutions and organizational improvements are applied. According to the system of „modelling“ the diffusion of new solution in practice is what follows. In that way, public investments in research and development have appeared to be a field of interventions in contemporary agriculture since they led to a significant increase of the productivity of agricultural production.

Extremely important field of government's intervening in the functioning of agrarian sector refers to informing of the farmers regarding all the relevant data for making business decisions. In contemporary conditions we say that agricultural manufacturers are responsible for the selection of production structure and effects of their own business, then the state should aim its activities towards the provision of information required by agricultural

manufacturers for decision-making. The state, through the Ministry of Agriculture informs the agricultural manufacturers about different reports on the movements of demand for agricultural products in national and international framework, on long-term tendency of prices of basic agricultural products, on the change of climate and effects on agricultural production, on daily fluctuation of the prices of agricultural products in different segments of national market, expected yield, etc. Reports are usually presented in electronic form and together they make up the system of market information. If there is no system of market information, then we cannot expect that farmers will have conditions to efficiently make decisions and do business.

Finally, the efficiency of using the resources depends on institutional assumptions for market functioning. For agriculture, particularly important is the condition of efficient functioning of land market. In this segment, high transaction costs exist in conditions of outdated land registries and non-functioning of lease institution. Modern country increases the mobility of factors acting towards the land transfer towards those owners who are able to use it in the most efficient way.

III. PROTECTION OF FARMERS' INCOME

Factors due to which agricultural manufacturer is continuously pushed towards the improvement of technology of own business and thus increase the efficiency of resources use are related to the need of increase of food supply at acceptable prices for consumers. Encouragement of technological progress in agriculture is a condition for development of not only this sector, but economy as a whole as well. Release of labour and capital from agriculture for development of priority sector in initial phase is possible only if those who remain in agriculture are able to produce enough food for growing urban population at prices that will not jeopardize standard of living. Otherwise, there will be pressure on increase of salaries of industrial workers which would reduce the possibility to realize the profit of industrials, and also the process of industrial investing. After the initial phase, continuous technological innovation still remains the condition for development of agrarian sector in balanced model of economy. The priority now has the system of integral relations within agro-economy as a whole, where agriculture becomes central segment around which there are all the others that precede or follow after the process of primary agricultural production. What does agricultural manufacturer obtain in modern system in which he is, through different methods, continuously „forced“ to buy new, upgraded technology? In measuring the effects of the application of new technology, one thing is certain: agrarian sector as a whole suffers due to continuous decline in prices of agricultural products in developing economy.

In the analysis of market balance in the aspect of the specificity of agriculture, it was already concluded that change in price of agricultural products depends on many

factors: elasticity of demand and supply of the rate of technological process da/a , income elasticity η and income growth rate dY/Y , as well as population growth dP/P . In analytical interpretation of explanation of market balance (manner of establishing the balance of the price of agricultural products) it is started from the following formula:

$$\frac{dp}{p} = \frac{1}{\varepsilon_{q,p}^D - \varepsilon_{q,p}^S} \left(\frac{da}{a} - \eta \frac{dY}{Y} + \frac{dP}{P} \right) \quad (1)$$

If we start from the fact that demand elasticity always has negative foresign (with the increase of product reduces, and vice versa), it means that formula before the brackets has negative value. Mathematical formula that stands for the previously described is:

$$\frac{1}{\varepsilon_{q,p}^D - \varepsilon_{q,p}^S} < 0 \quad (2)$$

Systems of economic growth in interpretation of production factors use start from different assumptions. However, the condition for economic progress in different models is identical: technological progress rate must be higher than population growth rate, and then also than income growth rate, i.e. nominal growth of demand for certain category of products if we analyze a particular sector of economy. As we here analyze the situation in agricultural sector, it means that technological progress rate in agrarian sector must be higher than the population growth rate in particular area and than increase of demand for agricultural products that is measured by the level of existential goods consumption of each additionally earned unit of household's income (income elasticity) and income growth rate. Following the formula that explains the change in price of agricultural product (formula 1), it means that expression in brackets in developing economy can have only positive value which, analytically interpreted, is written as:

$$\frac{da}{a} > \eta \frac{dY}{Y} + \frac{dP}{P} \quad (3)$$

$$\frac{da}{a} - \eta \frac{dY}{Y} - \frac{dP}{P} > 0 \quad (4)$$

If the mentioned conditions are met, then agricultural manufacturer, pushed into the race for profits, is forced to accept continuous absolute decline of products price and relative decline of income that he achieves through engagement of resources in agriculture. Great manufacturers are not concerned with such development of situation. By increase of yield and lowering the costs per production unit in system of modern, technologically innovated production, they are able to achieve high profit rates regardless of the drop of agricultural products in the market. However, this development of situation mostly

affects those who are in the system of family agriculture, and who whether they want it or not, suffer the consequences of technological innovation. It particularly refers to manufacturers in the model of traditionally-aimed agriculture (so-called rural world). This process is frequently marked as „agricultural settlement“.

Finally, we must point out that, historically observed, in developed economies, the income of farmers was lower than income of employees in other sectors of economy. For that reason, the reduction of income disparity was a popular reason of government intervention in the field of agriculture. Over the time, farmers' income, which can be achieved from various sources, including government subsidies, has grown sufficiently. Thus, for example, in USA the annual income of farmers in 1999 was 60.000 USD, while commercial, entrepreneurially-oriented farms achieved two times higher income than the mentioned one. On the other hand, average income of households in the same period was achieved at the level of 70% of average annual farmers' income [7]. For that reason, today the programmes of support to income are modified towards support to programs that reduce instability of agricultural products prices and farmers' income.

The underlying reasons that are mentioned in the sense of necessity of intervention for the sake of stabilization of prices and farmers' income are today related to fundamental analysis of elasticity of supply and demand for agricultural products. Small change in supply or demand in the market of agricultural-food products causes disproportionately greater reaction in change of the price of the same products (King's law). This certainly leads to significant variations of farmers' income.

In favour of demand for agricultural-food products we can claim that it is ultimately inelastic. For now, there is no substitute for food. However, there are important differences in treatment of the elasticity of demand for food articles in different countries. In developed economies, it is more and more spoken about the need of making a difference between food demand in national and international frameworks having in mind that value of elasticity of export demand tends to be higher than values achieved by elasticity of demand for food in national market.

Since the length of production cycle of agricultural products is inelastic, i.e. insensitive to prices, what is planted it cannot be changed until the next production cycle, i.e. in most cases, at least until the next year. Agricultural manufacturers are in business rather led by increase than reduction of production volume, for at least two reasons. Firstly, the land is a fixed resource that has the best alternative of use in agriculture – which means that decline of the price of agricultural product (for example wheat) will have insignificant impact on the change of production volume. The same is valid for production in cattle breeding. In this case, dropping the production means reduction of basic herd which can be done only based on relevant market information in perennial production cycles. Secondly, technological progress pushes the farmers, as it is concluded, into

continuous increase of supply and reduction of costs per unit, thus affecting the drop of prices of agricultural products. Therefore, the protection of farmers' income in the era of technological innovations appears as legitimate political goal.

By supporting the farmers' income, the carriers of agrarian policy protect the capacity of agriculture to fund the development of other activities, both in initial phase of development and after acceptance of parity conditions of developing different sectors of economy. Providing the support to the income here implicitly means provision of support to sectors that produce inputs for agriculture since it increases the capacity of agricultural households to technologically innovate themselves, i.e. purchase new technology. On the other hand, positive effects feels the processing sector as well, since due to the increased supply of agricultural products, the price of inputs in processing industry is continuously dropping. In final instance, consumers who get the opportunity to buy existential groceries at lower prices feel the advantages of this form of aid. Actually, by helping the farmers' income, carriers of agrarian policy help to all those people who are found „around the agriculture“.

IV. FOOD SAFETY AND SECURITY

The latest history shows that many governments lost the support if they weren't able to provide adequate food supply for their population [8]. Thus, for example, the issue of providing food safety plays very important role in conception of European agrarian policy from its beginning. Observed from political aspect, situation in food system is observed from two aspects – from the aspect of safety and security of food supply.

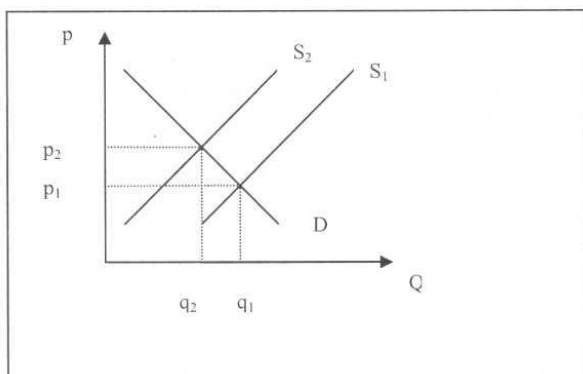


Fig. 1: Self-sufficiency of food supply.

National food security is identified to the term of self-sufficiency, due to rejection of the concept of international labour division and specialization, it can result in unsatisfying food supply in teh aspect of amount, quality and range in national market. The amount of primarily offered food (q_1) can be reduced (q_2) with simultaneous growth of prices (from p_1 to p_2). Food supply from the only source available – national production is inadequate and new market balance is

formed at the expence of consumers who set aside more than they should in conditions of open economy.

When defining food safety, it is usually started from observing the possibilities to provide sufficient amount of food within national food system [9]. Therefore, food safety is often equated with the term self-sufficiency in food production. In this case, it is certainly about the analysis of possibilities to produce sufficient amounts of strategic agricultural products and then all teh others that can be produced for the needs of domestic population, in accordance with climate and resources in the specific region. Statistically observed, food safety understood in this manner is measured by the share of consumption of food that comes from domestic production. In terms of total orientation of national economy to provide as higher share of consumption of food from domestic production, there can appear problems related to teh efficiency of allocation and use of resources in agriculture. Theoretically observed, this situation can be identified with conditions for food supply in closed economy. Due to inability to provide efficient production (rejection of international labour division and specialization), the total food supply and range of offered food products in domestic market will be lower than the planned level, and prices of food will be far above world prices.

The issue of food safety can be analyzed from other standpoint, as well. Interest of consumers to obtain cheaper food in domestic market thus becomes the focus of attention. Food safety is defined as full supply of the market with food products by „fair price“. A fair price that consumer should pay is equal to the price of the same agricultural product in world market. Concept of full supply at „fair price“ presumes the functioning of open economy. Interest of consumers in such a system is entirely satisfied since food supply in domestic market is growing and food prices become equal to world prices of basic existential groceries. The share of domestic production that is able to answer by adequate supply in teh existing conditions (without technological innovations) is dropping, while full satisfaction of domestic market is provided by opening the borders for the import of agricultural-food products.

Opinions of economists today are divided regarding whether the advantage should be given to self-sufficiency concept in food production or full supply of market at acceptable prices. Main reason of their disagreement is related to treatment of crisis-deficit situations. Crisis, according to their character, can be described as absolute and relative. The first emerge in conditions of big world shocks – wars and significant climate changes. Then, there is not enough food both on global and domestic market. Embargo can, also, be classified in absolute crises. In terms of absolute crises, food supply is entirely relied on capacity of domestic agriculture and concept of self-sufficiency. Relative deficit situations occur in conditions when a region is affected by natural disaster, or certain social-political problems occur at national level and reduce capacity of domestic agriculture to produce sufficient amounts of food for population (for example

strikes, rebellions, revolutions, etc.). Then it is always possible to obtain the food from the import.

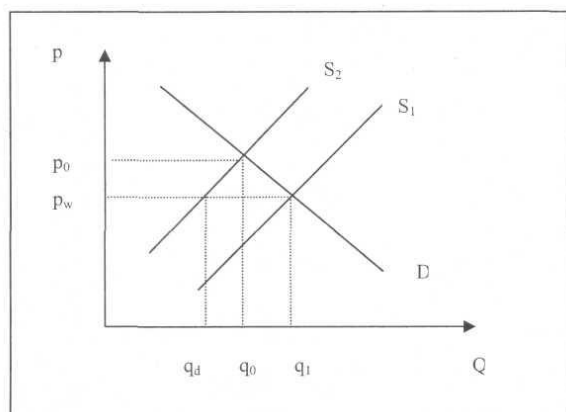


Fig. 2: Full supply of market at „fair price“.

Fair price equals world price of agricultural products - p_w . Amount of previously offered food (q_0) in conditions of open economy is growing (q_1) with simultaneous decline of the prices of food (from p_0 to p_w). New market balance is formed in favour of consumers whose budget suffers less burden related to money required for food purchase. Domestic (non-competitive) production in new conditions can offer drastically smaller amounts (q_d in relation to previous amount q_0) – Difference up to full market supply ($q_1 - q_d$) is compensated from the import. The only rational response of domestic manufacturers is the increase of agro-competitiveness level.

The cognition that deficit situations can occur leads the carriers of agrarian policy towards the thinking about providing certain reserves for unpredicted circumstances in the period of stability, which equally refers to both absolute and relative crisis situations. Programmed increase of the capacity of self-sufficiency in manufacture of selected products is strategic response to possible absolute crises when agro-sector should provide so-called economy of survival. Management of strategic commodity reserves is simultaneously considered as an option for overcoming relative deficit situations. Activity of national agrarian sector is obviously not observed only through the prism of economic-social, but also political-security issues. For that reason, we today say for food that it is economic-social and political-security category.

However, food safety should be distinguished from the term food safety, because while the safety refers to provision of sufficient amount of food at acceptable price for domestic consumers, the term security implies creation of health-acceptable supply of food which guarantees the health of the nation. While underdeveloped economies today deal with the issue of food safety, the second issue – provision of food security, gets greater attention in economically developed parts of the world.

The need for considering food security has become especially important in the beginning of the 1980's, and since then there are excess situations related to health

correctness of food in the market. Presence of the bacterium *E. coli* in hamburgers, *Salmonella* in pork and *Listeria* in dairy products are only some of the examples that rightfully concern the consumers throughout the world. Perhaps the situation related to the discovery of mad cow disease (Bovine spongiform encephalopathy - BSE) and indication of possible transferability of disease were remembered as extremely dramatic, or the situation related to bird flu. On the other hand, many pesticides are forbidden for use since tests have proved their carcinogenic effect. In addition, the allowed level of non-organic chemicals use in plant products is reduced due to proved harmful effects on nervous system of children and infants.

Terrorist attacks on USA on 11. September 2001 have additionally drawn the attention to the issue of providing food security [10]. Although there were requirements for providing the possibility of monitoring food production in entire chain from field to table even before, they were materialized through (Hazard Analysis Critical Control Point - HACCP). This standard is today widely applied throughout economically developed world and provides full monitoring of supply in chain from final user – consumer, through the system of retail and wholesale facilities, to the processing industry and primary agricultural manufacturer. Today, national and local public agencies formed in the sphere of health, food and medicines safety, as well as inspection at the Ministry of Agriculture, deal with provision of food safety.

Continuous concern about the possibility to provide acceptable food supply safety has inevitably initiated the necessity of revising developmental path of agriculture from traditional to modern, in which aspect, revisionists stress the significance of returning of agriculture to its roots and organic production of food. However, regardless whether it is about the quality and health correctness of conventional or organic production of food, the role of modern country is reduced to determination and prescription of acceptable standards of production and quality, as well as provision of mechanisms of strict control of implementing the prescribed rules. Today, the issues related to provision of health-acceptable supply of food are extended and they include a whole range of areas related to practicing agricultural manufacturing that is „friendly for the environment“ with humane treatment of animals (animal welfare).

V. CONCLUSION

Based on the above-mentioned, we can conclude that the role of the state is present in all economic activities, including agriculture. Role of the country in agriculture is inevitable for normal and stable functioning of all its activities, because agriculture in Serbia is not considered an ordinary economic branch, both due to peculiarities of this production and tradition it has, but also due to great expectations from it. In the territory of entire Republic, it is known as one of basic strategic directions of development, and majority of population sees the greatest

development chance of Serbia in agriculture.

Serbia has great potential in agrarian sector due to favourable climate conditions, good natural characteristics of land and available water resources, but that resource is not entirely used in Serbia.

Direction and dynamics of agriculture development in our country shows great lagging behind in relation to other European countries that have begun reformation process a decade before us. With adequate state policy, agriculture can give significant contribution to economic development of the country. Due to its relations and impact on other sectors, it is extremely important for development of Serbia.

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- [7] According to Knutson D.R. et.al., *Ibidem*, p. 12
- [8] For example, in many textbooks in the West it can be read that inappropriate relation of country towards this issue has contributed to disintegration of Soviet Union (according to Ronald D).
- [9] Knutson et.al., *Ibidem*, p. 13). Although this country could provide successful program for conquering the space, it still fights to provide adequate food supply for own population. Industrialization as selected development model and agrarian policy based on treatment of agriculture as a basis for long-term drawing of tributes for industry sector development are nominated as main reasons of unsatisfactory food situation.
- [10] The possibility of bio-terrorism through biologically and chemically polluted food is particularly considered, according to Knutson D.R. et.al., *Ibid*, p. 6 and p. 14.