

Social Responsibility as a Factor in the Survival of Small Agricultural Producers of Pigs in the Rural Area of the Republic of Croatia

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Abstract. *The Republic of Croatia has several rural areas where agricultural production is carried out. Unfortunately, these areas have been experiencing negative trends and decline, leading to concerns about their survival. Despite state policies that are supposed to protect small agricultural producers, these conditions have been threatened by other interest groups and factors. The current state policy measures have proven to be ineffective, which is evident through the numerous barriers that small agricultural producers face when attempting to place their products on the market. To address these issues, a research paper was conducted to highlight the social responsibility of the state to protect small agricultural producers and ensure that they have equal market conditions. The research paper also presents the concrete demographic and economic situation in these rural areas, and regression calculations, trends, and hypothesis testing were used to identify possible future perspectives of development in these areas. The data used in this research paper were collected from various sources such as the State Statistical Office of the Republic of Croatia, the Agency for Payments in Agriculture, and the Ministry of Agriculture of the Republic of Croatia. The research analysis was carried out using mathematical and statistical methods to quantify the collected data and present them in the form of research results. Based on the findings of the research paper, concrete activities were proposed to create assumptions that small agricultural producers can carry out their business activities without hindrance. These activities aimed to protect small agricultural producers and ensure that they have equal market conditions, thus creating a healthy and sustainable agricultural sector in Croatia.*

Keywords: social responsibility, sustainable development, pig production, small agricultural producers.

Introduction

Management of social impacts and responsibilities in society according to Drucker (2005), is one of the three key tasks of management. No institution exists by itself and is not an end in itself. Everything is an organ of society and exists for the sake of society. Business is no exception. Any free initiative cannot be justified by the argument that it is good for business, and thus for business. Circumstances in which modern business systems operate increasingly force market actors to socially responsible and ethical behavior (Sikavica et al., 2008). In today's business landscape, it is imperative for market actors to pursue and attain not just organizational goals, but also social objectives. As highlighted by Certo et al. (2008), a market actor must strive to balance both economic and societal aspirations. This entails conducting business in a socially responsible manner and considering the overall welfare of the society. In other words, those responsible for running businesses are expected to go beyond their economic interests and focus on serving the greater good of the community. This shift in mindset is in line with the views of Drucker (2005), who emphasized the importance of conducting business in a socially responsible manner. In addition to contributing to the improvement of the quality of life, social responsibility also contributes to sustainable economic development (Orešković, 2008). Being socially responsible implies fulfilling legal obligations, investing in human capital, environmental protection and relations with all stakeholders.

The key element in defining social responsibility is discretionary behavior. This term implies that these are activities that are prescribed by law or are moral or ethical in nature, and therefore expected (Wehrich et al., 1998). In the literature, a new concept similar to social responsibility is increasingly encountered, namely social sensitivity, which simply means the ability of a business system to connect its actions and policies with the social environment in a way that benefits both it and society. In this sense, the government must create sustainable conditions that influence citizens, community and society to perform their work purposefully. Business ethics arose from analyzing the relationship between economics and morality, considering the ethics of economic procedures and practices as well as the moral properties of market relations, which are characteristic of an economy in which private property and broad economic freedom are of great importance. In business ethics, two perspectives meet, ethical and business or economic (Raffaelli, 2012).

Economic responsibility implies that in a certain country, there are economic prerequisites for the normal life of people. Monetary and fiscal policy measures should create conditions that meet all interest groups in society so that production and consumption functions can be carried out normally. Key performance indicators are quantitative measurements whose results must be measurable. The state must be aware of the fact that its survival depends on sacrificing short-term goals for the sake of positive effects in the future, all to create a sustainable state.

Legal responsibility implies the expectation that the government fulfils its economic goals within the legal framework. All business segments in the company and activities must be carried out according to the adopted laws and public policies that serve as a guide in their work. The principle of equality must be respected.

Ethical responsibility consists of procedures that are not necessarily codified in law and do not necessarily serve the economic interests of the organization directly (Trcol, 2001). To be an ethical decision-maker, one must work fairly and honestly, respecting the rights of individuals. Unethical behavior exists when decisions enable an individual or organization to work to the detriment of society (Brockett et al, 2012). These are not the only values that should determine the business culture, but they are also crucial for the sustainability of the organization.

Discretionary responsibility forms the top of the pyramid and is characterized by voluntariness that is guided by society's desire to make social contributions without obligations concerning economics, law or ethics (Srblić, 2012). Discretionary responsibility is the highest measure of social responsibility because it exceeds society's expectations for contributing to the community. These are concerns for the quality of life and environmental protection in transition countries, i.e. population retention. It is precisely in this that the purpose of social responsibility is monitored (Wehrich et al., 1998). Society as a system must take care of the environment, population, and business groups and be aware of its business decisions.

Rural areas constitute a unique and intricate confluence of economic, social, ecological, and spatial factors that, in most countries, account for over 70% of the national territory. These areas are home to up to 50% of the population (Portnov et al., 2005). The Republic of Croatia's rural areas, in particular, are characterized by a sparsely distributed, aging population that is experiencing a significant decline, a notable representation of daily migrations of the younger population, inadequate provision of transportation, public utilities, and general living standards, a preponderance of agrarian activities, and a lack of diversification in other productive and non-productive sectors. The rural areas, especially the continental ones, are situated in a region of ecological stability and, therefore, hold considerable significance. The OECD's definition, which employs population density as the most commonly used international criterion to differentiate between rural and urban areas, is used for the purpose of implementing rural development policies.

The goal of this paper was to point out the social responsibility of the state, which supposed to be put in the function of protecting small agricultural producers and thus ensure equal market conditions for them.

Methodology

The presented macroeconomic indicators in Table 1 show negative trends in Croatia in comparison with the EU; the unemployment rate in the EU is lower by 16%, GDP per inhabitant is lower by an average of 25%, inflation is five times higher on average, while net earnings are three times lower on average.

Table 1. Macroeconomic indicators

Indicators	Republic of Croatia	European Union
Number of inhabitants in rural areas in %	47.6	40.0
Unemployment rate in rural areas in %	21	5
GDP in EUR million	3 769	9 483 734
GDP per capita in EUR	8 405	28 500
Inflation in %	3.4	0.7
Net earnings in EUR (per capita)	705.31	2115.93

Source: Authors' own research. [Prepared by the author based on data from the DZS].

The current situation for pig producers in Croatia is characterized by the following situation:

- lack of a clear development strategy,
- low accumulation capacity of rural households,
- unfavorable capital market and uncertain investment environment,
- limited market for the placement of products and services from rural areas, and
- insufficiently educated human factor with a low level of private entrepreneurship.

Table 2. Trends in the number of pigs by year and the total amount of pork meat produced

Year	Total number of pig producers	Number of small agricultural producers of pigs up to 10 animals	Total number of pigs	Number of sows and gilts	Total meat produced in tons	Sold meat and meat products on the domestic market in tons	Exported meat and meat products in tons	Production self-sufficiency %
2018.	41,434	35,713	1,157,162	129,994	109,008	97,996	10,012	61
2019.	68,913	61,922	1,170,770	131,551	109,807	99,004	10,803	71
2020.	71,430	62,664	1,326,220	134,641	123,993	110,001	13,992	76
2021.	70,401	60,906	1,321,734	134,327	119,669	106,959	12,710	43
2022.	39,988	33,812	869,886	111,827	94,135	104,364	10,771	58
2018.	41,434	35,713	1,157,162	129,994	109,008	97,996	10,012	61

Source: Authors' own research. [Prepared by the author based on data from the DZS and Ministry of Agriculture].

From the results shown in table 2, it can be seen that the total number of pig producers is decreasing from 2020 onwards. Other indicators are also negative for the mentioned period. It can also be seen that the percentage of self-sufficiency ranges from 58% to 76%, which makes the amount of total production insufficient for own needs. This situation has a negative impact on economic accounts in agriculture and on the overall balance. Furthermore, based on the data from Table 2, a simulation of the development of the pig production market will be calculated using the AGMEMOD model. AGMEMOD is an econometric, dynamic, multi-product partial equilibrium model composed of models of key agricultural product markets that make up the national model, and national models of the member states make up the EU 28 model.

The number of pig producers is modelled by the following equation:

$$cct_{i,t} = f(cct_{i,t-1}^k, p_{i,t}, V) \quad k=1, \dots, n \quad i=1, \dots, n \quad (1)$$

where:

$cct_{i,t}$ = number of pig producers in year t

$cct_{i,t-1}^k$ = number of pig producers in year $t-1$

$p_{i,t}$ = price of pigs i in year t

V = vector of exogenous variables that can affect the final stocks of pigs i

The amount of pigs is expressed according to the following equation:

$$spr_{i,t} = f(cct_{i,t} - 1, ypa_{i,t}) \quad i=1, \dots, n \quad (2)$$

where:

$spr_{i,t}$ = amount of pig i in year t

$cct_{i,t}$ = number of pig producers t

$ypa_{i,t}$ = average number of sows a in year t

The production of pork meat i can be determined by the factor m , which indicates the taxable finished products j . The number of pigs i slaughtered and converted into finished products j can be expressed as:

$$ktt_{i,t}^j = f(cct_{i,t}^j, p_{i,t}, z_{i,t}^j, V) \quad i=1, \dots, n \quad j=1, \dots, m \quad (3)$$

where:

$ktt_{i,t}^j$ = produced amount of pork i and meat products j of pig origin in year t

$cct_{i,t}^j$ = quantity of pigs i within the category of finished products j in the year t

$p_{i,t}$ = price of pigs i in year t

$z_{i,t}^j$ = an endogenous variable that represents the share of different factors in the sale of pork

V = vector of exogenous variables that can affect the amount of pork sold.

Total sales of pork i and meat products j can be expressed as:

$$slw_{i,t} = f(slw_{i,t} - 1, p_{i,t}, z_{i,t}^j, V) \quad i=1, \dots, n \quad j=1, \dots, m \quad (4)$$

The total sale of pork from animal species i is calculated as the result of the average slaughter weight multiplied by the total slaughter within the same species of slaughtered animals, and can be expressed as:

$$ktt_{i,t} = \sum ktt_{i,t}^j \quad i=1, \dots, n \quad j=1, \dots, m \quad (5)$$

The total domestic consumption of pork meat is calculated by the consumption of pork meat per capita multiplied by the total number of the population. Pork consumption per capita is calculated as:

$$upc_{i,t} = f(upc_{i,t}, p_{i,t}, p_{k,t}, gdp_{i,t}, V) \quad k, i=1, \dots, n; \quad k \neq i \quad (6)$$

where:

$upc_{i,t}$ = consumption of pork per capita of the animal species i and in the year t

$p_{i,t}, p_{k,t}$ = price of pork i, k in year t

$gdp_{i,t}$ = real income per capita in the year t

V = a vector of exogenous variables that can influence meat consumption per capita.

The total export of pork I and meat products j can be expressed as:

$$elw_{i,t} = f(ktt_{i,t} - 1, p_{i,t}, z_{i,t}, j, V) \quad i=1, \dots, n \quad j=1, \dots, m \quad (7)$$

The simulation of the development of the pig market in Croatia was modelled according to the baseline scenario. The baseline scenario assumes the continuation of current economic instruments and measures without major market shocks (general economic environment, diseases, etc.), with a stable demand trend until 2030.

Results and discussions

The AGMEMOD model simulated the period from the year 2023 to the year 2030. Looking at the data on Figure 1 (2018 - 2022), it is clear that the number of pigs in Croatia fluctuates, with a tendency to decrease from 2020 onwards. By the end of the simulated period, the number of pigs is expected to decrease by an average of 8.63% compared to 2022. Detailed analysis is shown in the following graphs.

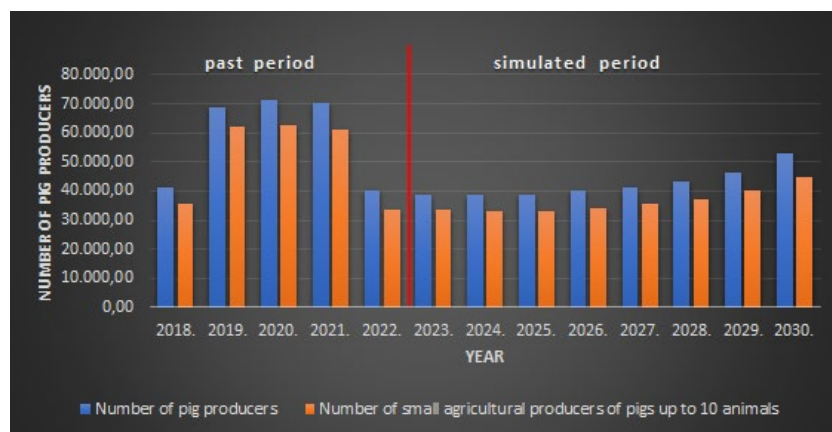


Figure 1. Mid-term simulation of the total number of pig producers and small producers

Source: Authors' own research. [Prepared by the author based on data from the DZS and Ministry of Agriculture].

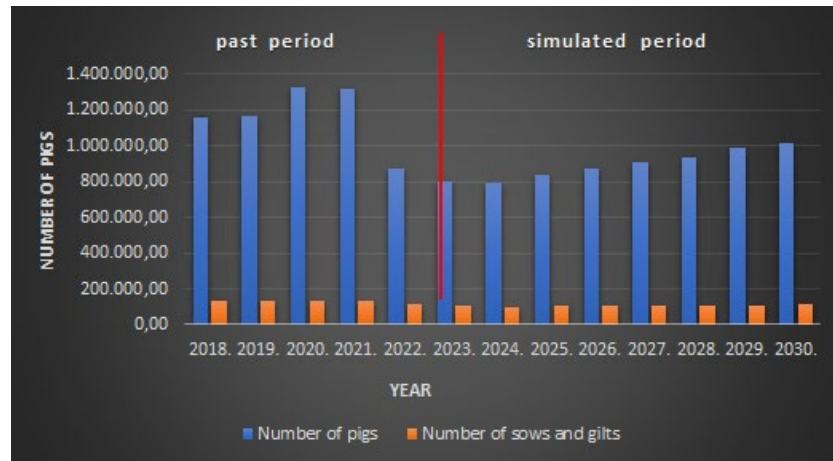


Figure 2. Mid-term simulation of the total number of pigs, sows and gilts

Source: Authors' own research. [Prepared by the author based on data from the DZS and Ministry of Agriculture].

The results in Figure 1 show that the number of pig producers began to decline rapidly in 2022, that is, that this indicator amounts to 60% of the total number from the previous year. The simulation shows that the growth of the number of pig producers is expected only in 2025, but that it will be 40% below the level of 2020. The end of the simulated period shows an increase in the total number of pig producers and the number of small producers to the level of 73% of that in 2020. Figure 2 shows the movement of the total number of pigs and the total number of sows and gilts. The decreasing tendency for both pigs and sows in the simulated period is 32% on average.

The variables of Figure 3 show that in the analyzed period, the amount of production of pork meat and meat products reached its peak in 2020 and 2021. From 2022, the production and sale of meat and meat products on the domestic market will begin to decline. However, due to the increased import of pork, and all due to market needs, the difference between the best year 2020 and the years from 2025 onwards is on average 17%, which is a smaller difference than in the previous chart for the observed period. From 2025 until the end of the simulated period, production and sales of pork are expected to grow at an average rate of 6%. This situation has a negative impact on the sale and export of meat. The difference in the simulated period is significantly smaller compared to the observed period. Meat needs are met from imports. As for exports, they decreased by 14% on average.

Figure 4 shows data on the self-sufficiency of pig production in Croatia in the observed period. Self-sufficiency is at an average level of 61%. In the simulated period, it averages 57%. The reasons for this state of affairs should be sought in economic policy measures. On the one hand, high tax levies burden pig producers and raise the price of inputs, and on the other hand, inflationary pressures additionally contribute to the increase in the cost of the production process, which results in the situation shown in the Figures.

The Republic of Croatia is a country with potential for pig production. It is home to a population that has preferences for pork consumption, which generates a high demand for pork. The cost plays a crucial role in food purchasing decisions, potentially impacting consumption frequency (Mowen & Minor, 1997). However, factors like variations in the perceived quality of pork also hold significance. As noted by Issanchou (1996), consumer decisions to purchase a specific product are often driven by the perceived quality it offers. According to Santos Silva (2012), the sustainability of Mediterranean pig production systems relies on the political and social awareness of local communities, the effectiveness of multifunctional agroforestry resource

management, and the preservation of a robust original ecosystem. However, there are fewer and fewer producers, and thus domestic pigs. The causes of this state are multiple. Fiscal and monetary policy instruments are not effective. Price fluctuations on the stock exchanges are becoming more frequent, and placement is uncertain. There are fewer and fewer redeemers. Small pig producers cannot fulfil all the conditions dictated by buyers. The purchase price of pigs is often below the profitability limit because it is formed according to stock market conditions. In addition to the mentioned problem, there are also new ones, namely hygiene and safety aspects that must be implemented in the production process itself, which further increases costs. The results just mentioned show that the state does not treat pig producers in a socially responsible manner, as it creates an uncompetitive entrepreneurial climate. All these reasons have the effect of reducing the offer of pork meat. According to Kralik et al., (2017), the Republic of Croatia needs to create a strategy for the development of animal husbandry, as well as pig farming, in order to focus on increasing its own production and reducing pork imports. It is also necessary to focus on the use of EU funds for future investments. In order to increase the production of pork meat in the Republic of Croatia, it is necessary to develop domestic autochthonous breeds in addition to breeding hybrid pigs, which requires a change in production technology, the creation of new high-quality and high-value products that are in demand on the market, and the restructuring of production both on family and large farms. In their 2010 study, Wellbrocka et al. emphasized that smallholder pig farming holds cultural significance and serves as a crucial livelihood strategy in rural areas of Croatia. This practice not only aligns with cultural heritage but also plays a significant role in advancing rural development objectives. Consequently, funds allocated for EU accession should prioritize the preservation of smallholders as a cultural heritage, recognizing that expansion may not be a viable solution for all pig production systems in Croatia. Instead, efforts should be directed towards promoting alternative methods to involve smallholder farmers in rural development, ensuring their continued presence in the future. Grgić et al. (2015), concluded that the future trajectory of global pork production will be shaped by a combination of economic and non-economic factors. Key economic influencers include shifts in the animal feed market, such as fluctuations in corn prices, and increased demand driven by income and population growth. On the non-economic front, changing eating habits, particularly the rise in populations abstaining from pork for religious reasons, play a significant role. Given the relatively short reproductive cycle and substantial meat production per sow, it is anticipated that pork production will persistently rise in countries experiencing higher rates of population growth, particularly in Asian nations. In Croatia, the number of pork producers is diminishing, but there is a concurrent increase in the number of pigs they rear. This strategy aims to compete on pricing amidst growing pressure from imports. Unfortunately, smaller producers are becoming economically unviable and disappearing from the market. Simultaneously, due to heightened global demand, the majority of corn production is exported, leading to a surge in animal feed prices. The decline in the primary driving force results in a reduction in the number of pigs for slaughter, prompting Croatia to offset the shortfall through increased imports of pigs and pork from other European Union countries. This unfavorable trend is anticipated to persist in the foreseeable future.

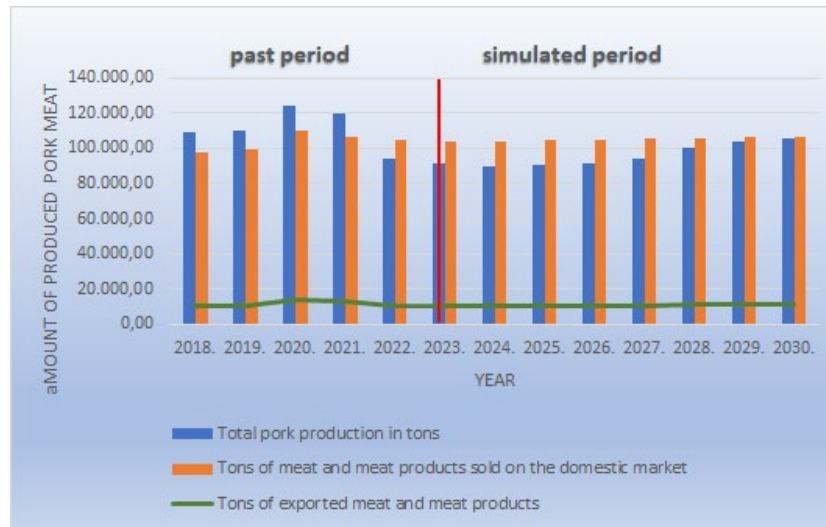


Figure 3. Mid-term simulation of the total amount of produced meat, meat products, and exports

Source: Authors' own research. [Prepared by the author based on data from the DZS and Ministry of Agriculture].

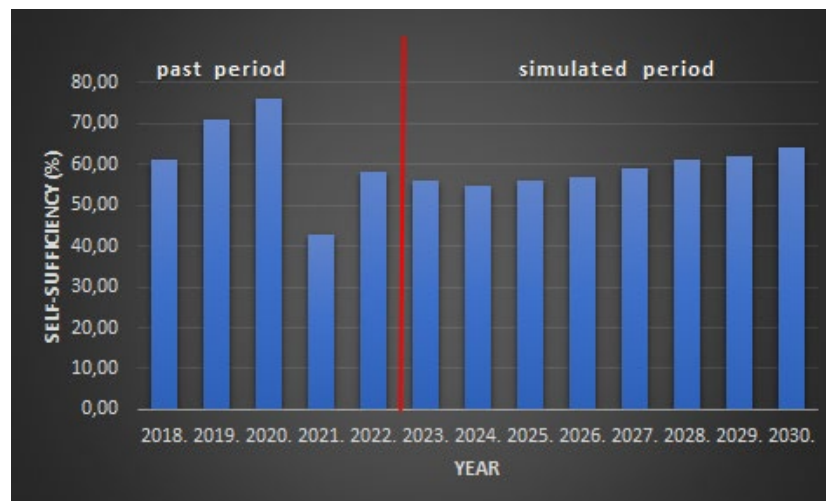


Figure 4. Mid-term simulation of the total self-sufficiency of pig and pork production

Source: Authors' own research. [Prepared by the author based on data from the DZS and Ministry of Agriculture].

Conclusion

The essence of this research focuses on looking at those factors that contributed to the negative economic trends of pig production in the Republic of Croatia. Macroeconomic indicators and aspects of total pig production, number of producers, meat consumption, export and self-sufficiency were reviewed. The medium-term simulation of the development of the pork market confirmed the negative changes during the observed period. By the end of the simulated period, under unchanged market conditions, the model results simulate a drop in the total number of pigs by 35% and a drop in pork production by an average of 17%. Negative trends show a decrease in the number of pig producers in the simulated period by an average of 34%. The amount of exported pork is at a constant level and averages 11,500.00 tons. The results further showed that there is a need for pork, as shown by consumption data, but self-sufficiency is only 61% in the observed period, or 57% in the simulated period. The pork market in the Republic of Croatia belongs to an

extremely sensitive sector that is additionally shaken by the current inflation. Considering the current trends, a significant shift in the strategic vision of the pork sector is needed, i.e. facilitating placement on the market. The general conclusion that can be drawn based on the obtained results indicates that there is no clear direction in the development of pig production, which further results in socially irresponsible behavior of the authorities towards producers. The policy that is conducted at the state level creates a negative economic climate, as shown by the results of the trend in the number of pigs in the observed and simulated period.

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