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REALIZATION OF CROATIAN AGRICULTURAL POLICY GOALS: SELF-SUFFICIENCY AND AGRICULTURAL INCOME

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Abstract

The aim of this research is to determine the achievement of Croatian agricultural policy goals (AP) in the area of self-sufficiency and agricultural income. Previous studies do not provide specific quantitative estimates of the achievement of Croatian agricultural policy goals. Therefore, in this research self-sufficiency is considered achieved if 6 out of 11 selected products have an average self-sufficiency rate above 100%. Income, as AP goal, is considered achieved when agricultural income is lower than income from non-agricultural activities by up to 30%. In the analyzed period (from 1997 to 2020), the goal of self-sufficiency was not achieved. Considering that the income from agricultural activity is usually 30% lower than the income from non-agricultural activity, it can be concluded that the income goal has been achieved. Looking only at the statistics, without conducting empirical research, one can conclude that the Croatian agricultural policy is indeed "the most successful agricultural policy in the world". On the other hand, the same agricultural policy has not resulted in a competitive agricultural sector, developed rural areas, or sufficient production to meet the needs of the local population.

Key words**:** *agricultural policy, goals, self-sufficiency, agricultural income*

INTRODUCTION

Agriculture in Croatia can be described as the basic and traditionally the most represented branch of the economy. Despite the favorable natural conditions and the declared attitude towards agriculture as the backbone of the Croatian economy, the Croatian agricultural sector has not managed to achieve significant production and economic results since independence in the early 1990s.

There are several reasons for the poor socioeconomic situation of Croatian agriculture: the transition to a market economy, liberalization and war devastation in the early 1990s, weak institutional support and insufficient efficiency of administrative services, lack of business and trade cooperatives and farmers' organizations [8, 10]. The recovery of the national economy in the 2000s led to an improvement in agriculture, but still there are very few vital and market-oriented family farms that can withstand import competition [7, 8].

The results of recent research on the state of Croatian agriculture still do not give cause for greater optimism. The total agricultural production of the Republic of Croatia has increased by 2.6% in the period after EU accession compared to the analyzed period before accession [10]. Croatian agriculture contributes less than 3% to the GDP of the Republic of Croatia. The structure of agricultural production is dominated by crop production (about 65%), while livestock production participates with about 35%.

Self-sufficiency as an agricultural policy goal is regularly emphasized in Croatian public debates. Self-sufficiency as a means of ensuring food security within the framework of the European Common Market and liberal economics has no particular justification at the national level and often conflicts with the goal of competitive production. In recent

research, self-sufficiency is associated with the challenges of sustainable development, environmental protection and climate change [1, 25, 26]. In the last two years, due to the COVID -19 and the Ukraine crisis, the issue of self-sufficiency, i.e. the ability of the state to meet the needs of the population through its own production, has returned to the focus of decision makers. The forecast for the period 2021-2031 foresees a slight decrease in total Utilized Agricultural Area (UAA), an increase in the value of agricultural production by 0.7% per year, and stable agricultural income per worker. In addition, the EU economy is expected to return to pre COVID -19 production levels in 2023, but [4] emphasizes uncertainties due to the rise in energy prices (oil) and conflicting forecasts for the USD/EUR exchange rate [4]. In light of the Ukraine crisis, food security becomes an EU priority, with a focus on maintaining and, where necessary, increasing food production by European farmers [5]. The focus on food security goes so far that the European Parliament calls on the European Commission to analyze the objectives set out in the Farm to Fork and the "Biodiversity" strategy, and even to suspend any new legislative initiatives that would lead to a reduction in agricultural production.

The issue of agricultural income as a fundamental agricultural policy goal in developed economies has been researched since the middle of the last century, when the methodology for its measurement was discussed [12]. In the last twenty years, the focus of research has been on the impact of diversification on farmers' incomes [11, 24].

The influence of the international and national contexts on Croatian agricultural policy analyses [15]. According to [15], both contexts have an equal influence on policy making. In domestic policy debates, self-sufficiency is often highlighted as one of the most important agricultural policy goals, while in the international context, the most important agricultural policy goal is to ensure a stable agricultural income. Considering that [17] points out that membership success depends on the initial agricultural structure, the evaluation of the goals of AP is extremely important.

The aim of this research is to determine the achievement of the goals of the Croatian agricultural policy (AP) in the field of self-sufficiency and agricultural income. In her research [14], she analyzes the development documents of Croatian agriculture in the period 1995-2013 and classifies almost 100 goals into four groups: self-sufficiency, income, competitiveness and rural development. The author warns that the policy goals were formulated in a general way, with numerous overlaps and without indicators that would assess their achievement in a simple, quantitative way and with implementation deadlines [14].

MATERIALS AND METHODS

There is no systematic and official evaluation of Croatian agricultural policy. In addition, previous studies do not provide specific quantitative assessments of the achievement of Croatian agricultural policy goals. Due to the methodological limitations explained below, self-sufficiency is observed for only 11 products. Self-sufficiency as a policy goal is considered to be achieved when six products have an average self-sufficiency level above 100% in the observed period. In developed countries, income from agriculture is 30% lower than income from non-agricultural activities. Therefore, in this study, agricultural income is considered to be achieved (as a policy goal) when agricultural income is up to 30% lower than income from non-agricultural activities [14].

This research is based on [14] and supplements it with more recent data. The research period is from 1997 to 2020, but the research periods are not identical for the policy goals analyzed, as the statistics do not provide comparable indicators. For example, in research [16:49], self-sufficiency data come from 10 different sources, resulting in different coverage of agricultural products. In this research, the average self-sufficiency rate (%) is reported for wheat, corn, sugar, meat (pork, beef, and poultry), eggs, oilseeds (soybean grains, sunflower grains, and

rapeseed grains), and wine. Data on self-sufficiency in agricultural products for the entire research period are available only for wheat, corn, and sugar. Data for meat and eggs are available for 1997-2012. Data for oilseeds are available for 2010-2020. Data for wine are available for 2000-2020. Average self-sufficiency rates for meat and eggs were calculated using internal data from the Ministry of Agriculture, while average self-sufficiency rates for other products were calculated using official data from the Central Bureau of Statistics (CBS). Unfortunately, the data for fruits and vegetables or milk are not available in the official statistics. In her research, [14] finds most of the data for various products in the annual reports of the Ministry of Agriculture and supplements them with internal data of the Ministry and data published in various scientific papers. Since her research ends in 2012, the most recent data on self-sufficiency rates were found in the CBS database, which unfortunately covers only 11 of the previously mentioned products.

The CBS does not collect data on family farm income. Instead, the CBS provides data on average monthly gross and net earnings per person employed in legal entities in agricultural and nonagricultural activities. For agricultural income, the research period is 2001-2020. For ease of reference, data for the observed period are presented as a five-year average (2001-2005, 2006-2010, 2011-2015, 2016-2020).

The harmonization of national statistics with Eurostat in 2005 has caused an additional problem. For example, in 2005, the long-standing method of collecting data for family farms through assessments by agricultural experts based on cadastral data was abandoned and the method of interviewing a selected stratified sample was introduced.

Also, for the same reason, the data on entrepreneurial income are now collected through the Economic Accounts for Agriculture. Net entrepreneurial income equals the net operating surplus/net mixed income less paid rents and interest plus received interest that refers exclusively to agricultural production [2].

For ease of reference, data for the observed period are presented as a five-year average (2001-2005, 2006-2010, 2011-2015, 2016-2020. Since 2014, the net farm income can be monitored through the Farm Accountancy Data System (FADN).

In addition to the CBS, data on agricultural income were taken from Eurostat. In this paper, we used the index of real income of factors in agriculture per annual work unit and net entrepreneurial income of agriculture for the period 2005-2020. The year 2010 was taken as the base index.

RESULTS AND DISCUSSIONS

Self-sufficiency

In the period prior to EU accession (2005-2013), Croatia attempted to increase agricultural productivity through various operational programs, change/improve production systems in livestock (pig farming), and renovate and replant vineyards, olive groves, and orchards. The expected goal of these programs was officially not to increase self-sufficiency, but to prepare Croatian agriculture for EU membership. For example, EU Member States were not allowed to plant new vineyards during this period. The intention of Croatian policy makers to use the pre-accession period to improve viticulture was therefore understandable and justified. Ultimately, an increase in production should also lead to an increase in self-sufficiency.

Although the issue of self-sufficiency is a regular topic in agricultural policy debates, since 2010 the CBS has provided data on self-sufficiency in cereals (wheat, rye, and pork, barley, oat mixtures, corn, triticale, and other cereals), oilseeds (soybean grains, sunflower grains, and rapeseed grains), rice (raw, hulled, and rolled), sugar beets, and sugar and wine. Data are available for cereals, oilseeds, rice, and sugar for the period 2010-2020, and for wine for the period 2000-2020. Data for earlier periods and some other products can be found in the Annual Reports on the State of Agriculture [18, 19, 20, 21, 22], scientific papers and publications [6, 7, 13, 16, 27]. The

average self-sufficiency of selected products is shown in Table 1.

Table 1. Self-sufficiency of basic and processed agricultural products (%)

Product			
Average 1997-2020		Average 1997-2012	
Wheat	122.26	Pig meat	75.48
Corn	113.68	Beef meat	72.36
Sugar	98.83	Poultry meat	95.87
		Eggs	98.11
Average 2010-2020		Average 2000-2020	
Soybean grain	389.2	Wine	91.91
Sunflower grain	207.63		
Rapeseed grain	238.56		

Source: Own calculation on the basis of data from [2, 14].

In the period from independence (1991) to 1999, Croatia was self-sufficient only in the production of corn, wine and eggs, while wheat and potatoes were close to self-sufficiency [27]. In the production of animal products (meat, milk, and eggs), self-sufficiency was not achieved and a significant part of domestic demand is covered by imports [10, 16]. On average, during 1997-2020, self-sufficiency was achieved only for wheat, corn, and oilseeds, while for poultry meat, eggs, and sugar, self-sufficiency exceeded 95%. Research results [14] indicate that the self-sufficiency level decreased in all other observed products during the period 2011-2015, except for wheat, corn and sugar. Therefore, we can conclude that the policy goal of self-sufficiency was not achieved in the period studied.

Agricultural income

Securing a viable agricultural income is considered the most important goal of agricultural policy in countries. For the purposes of this paper, we measure it by the level of average monthly net income in legal entities in the agriculture, forestry, and fishing sector (Table 2). In the period from 2000 to 2020, this salary was 10-15% lower than the average net salary [16:52]. Except for 2012, 2013 and 2014, entrepreneurial income is higher than the average monthly net wage in agricultural and non-agricultural activities. According to the FADN data for only four years (2014-2017), net monthly business income was higher than wages in agricultural activities and entrepreneurial income in 2014 and 2017 [14].

Table 2. Average monthly net earnings in agricultural and non-agricultural activities (2001-2020) and entrepreneurial income (2006-2020) HRK

Period	Agriculture, employees in legal entities	Industry and service activities	Ratio of agricultural to non-agricultural income%	Entrepreneurial income
2001-2005	3,339.8	3,897.1	85.7	
2006-2010	4,526.2	4,954.5	91.36	6,318.2
2011-2015	5,000.8	5,405.6	92.52	5,294.8
2016-2020	5,550.8	5,920	93.76	7,379.014

Source: Own calculation on the basis of data from [2, 14].

However, national statistics do not provide information on the wages/salaries of the self-employed in agriculture, who make up the majority of the labor force. Consequently, wages and entrepreneurial income in agriculture are not a reliable indicator of the annual income of agricultural workers. Results of an empirical study conducted in 2009 [23] indicate that wages and salaries in agriculture are 40% below the average wage and that GDP per worker in agriculture (at current prices) grows more slowly than GDP per worker in the national economy.

Eurostat provides data on agricultural income in the form of indices (of the real income of factors in agriculture per annual work unit (AWU); of real net agricultural entrepreneurial income, per unpaid annual work unit (AWU), and net entrepreneurial income of agriculture). According to Eurostat, in the period 2005-2020, the index of real income of factors in agriculture has been growing steadily since 2015 (Table 3). In

2020, agricultural income is more than 40% higher than in 2010, which can be explained by the prediction [4] that the value of agricultural production will increase in the next decade. Net entrepreneurial income follows a similar pattern to agricultural income, and is 27% higher in 2020 than in 2010 (Table 3).

Table 3. Average monthly net earnings in agricultural and non-agricultural activities, 2010=100

Year	Index of the real income of factors in agriculture per annual work unit	Net entrepreneurial income of agriculture
2005	82.85	92.41
2006	96.43	109.24
2007	99.63	105.57
2008	114.62	120.53
2009	109.35	112.80
2010	100.00	100.00
2011	95.45	93.85
2012	81.72	78.08
2013	90.45	83.81
2014	78.26	69.14
2015	105.73	96.33
2016	117.60	104.40
2017	117.74	104.09
2018	125.20	111.05
2019	131.84	119.46
2020	143.96	126.72

Source: [3].

One-third of rural households earn income from nonagricultural activities. According to the 2009 results [23], income from non-agricultural activities predominates in most agricultural households (agricultural household incomes are lower than the national average and vary by household type and region, and are higher in peri-urban areas). Very small farms depend on agriculture, which is a complementary activity, and larger farms earn four times more income. Comparing farmers' incomes with those of non-farmers shows a high degree of inequality, which should be a signal to policymakers when choosing income support measures. This refers primarily to farmers who, in addition to small, fragmented, and technologically outdated farms, lack sufficient knowledge to apply new concepts and management tools [16:52-53].

Harmonization of domestic statistics with EUROSTAT in 2005 led to the collection of agricultural accounts data. Entrepreneurial income from agriculture increases until 2008, when it reaches its highest level, and then starts to decrease until 2014. In the period 2015-2020, entrepreneurial income increases again. There was also registered an increase in the income as well as its convergence with the non-agricultural income (Table 2) [14]. Income from agricultural activities recorded higher growth than income from non-agricultural activities and services on an annual basis.

According to the statistical data, the average monthly net earnings of legal persons in agriculture, forestry and fishing were only 10-15% lower than the average monthly net earnings in non-agricultural activities. Therefore, it can be concluded that the income as agricultural policy goal has been achieved.

CONCLUSIONS

Although recent international literature deals mainly with agricultural, environmental, and climate change issues, research in Croatia is thematically related to problems that the international scientific community dealt with fifteen years ago. However, such research is also important because, in the absence of official evaluations of agricultural policy, it reveals much about the Croatian agricultural sector.

A detailed analysis of the achievement of agricultural policy goals, in this paper self-sufficiency and agricultural income, prevents the lack of consistent statistics in the long run. This is most evident in the case of agricultural income. The results of the only empirical study from 2009 (farmers' income is about 40% lower than non-agricultural income) are contradicted by official statistics. Looking only at the statistics, without conducting empirical research, one can conclude that the Croatian agricultural policy is indeed "the most successful agricultural policy in the world". On the other hand, the same agricultural policy has not resulted in a competitive agricultural sector, developed

rural areas or sufficient production to meet the needs of the local population.

The analysis of the degree of self-sufficiency in the observed period allows us to draw conclusions about competitiveness and agricultural income. For example, a high degree of self-sufficiency in livestock, fruit or vegetable production also means a higher income for farmers, since these are products whose prices are higher than those of crops. In addition, it is difficult to expect exports of products and thus higher competitiveness if not enough is produced to meet the needs of the local population.

This study has shown that the self-sufficiency of agricultural production is not systematically monitored statistically, making it difficult to compare and evaluate data. According to the available data, the self-sufficiency level is reached in the production of wheat, corn, sugar, soybean grains, sunflower grains and oilseed rape. Close to the self-sufficiency level is the production of eggs and poultry meat.

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