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ECONOMIC RESULTS OF CROATIAN FARMS

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Abstract: The objective of the paper is to provide an overview of the situation and performance of Croatian farms. Croatian farmers rarely keep business books and therefore farm level business data are deficient. Croatian accession to the European Union in 2013 brought numerous innovations to agricultural sector. One is introduction of Farm Accountancy Data Network (FADN) which aims to determine the impact of the Common Agricultural Policy on national agriculture of EU member states. The sample of Croatian FADN comprises 1,250 commercial farms. The paper brings results of agricultural sector financial analysis for the period 2011-2013. Total farm output decreased, but since the stronger decrease trend occurred in total inputs, this led to positive trend of gross and net farm income in the year 2013. Positive results are also shown at efficiency and productivity of Croatian farms. In the years 2011 and 2012 farms operated below the efficiency level while in 2013 efficiency increased above the efficiency level. In the observed period there was a 70% increase in productivity. The analysis shows that the most efficient farms are those in vegetables and flowers type. It also has the highest debt ratio due to their capital intensiveness. The vegetable and floriculture farms have the largest gross farm income in all three analysed years, but with a large drop in 2013, while the farms in type pigs and poultry have largest increase of gross farm income in last observed year.

Keywords: FADN, Croatia, economic results

Introduction

Half of Croatian farms have less than 2 ha of arable land. The average economic size of the farm established on the basis of total production value and expressed as a standard output per farm amounts 9,065 €. Almost 40% of the farms belongs to the economic size class up to 2,000 €, while almost 23% belongs to the type mixed crop and livestock (Eurostat Pocketbooks, Agriculture, forestry and fishery statistic, 2013). Prices of agricultural products in 2013, in comparison to the previous year and observed for the average producer prices, declined by 6.2% while prices of goods and services for current use (inputs) in 2013, decreased by only 0.1%. The agricultural sector in Croatia participates with 4.3% in the GDP. Compared to the year 2012, the GDP of agriculture, forestry and fishery products in 2013 decreased by 1.6% (Ministry of Agriculture, 2014). In the EU, incomes differ between the various types of farming - granivores having the highest incomes, and mixed farms the lowest (Hill and Bradley, 2015). Average Farm Business Income is expected to fall or remain broadly similar across all farm types. This is due to lower prices for key outputs such as milk, cereals, eggs and meat, offset to some extent by lower input costs, particularly for animal feed, fuel and fertiliser (Forecast of Farm Business Income by type of farm in England – 2014/15, 2015). Despite the recovery from the low point in 2009, real factor income for EU agriculture is characterised by a long-term downward trend. (EC DG-AGRI, 2014). Total agricultural factor income in real terms deteriorates as production costs grow at a faster pace than output prices. Agricultural land in

the EU has seen a slight reduction over time. (EC DG-AGRI, 2014). The average size of farms covered by the FADN survey was 33 ha in 2012. However, it varied considerably across Member States, ranging from 521 ha per farm in Slovakia to 3 ha per farm in Malta. The EU-27 average farm net value added (FNVA) increased by 2.7 % from 2011 to 2012, mostly due to increase in agricultural output (especially in the value of animal output) and prices. Farms specialised in granivores had the highest output of all farm types in the EU-27. On the other end of the spectrum, farms specialised in permanent crops other than wine generated the lowest output. Grazing livestock farms recorded the highest average loss per farm (EUR -8,100). As concerns average direct payments per holding, farms specialised in field crops benefitted most from subsidies (EUR 15,300 per farm), followed by dairy and grazing livestock farms (EUR 15,200 and EUR 14,600 per farm). On the other hand, the horticulture sector received, on average, the lowest amount of subsidies (EUR 2,700 per farm). The most subsidised field crop farm received more than five times more subsidies than the least subsidised horticultural farm (EC DG-AGRI, 2015). The average amount of direct payments received in 2012 was EUR 9,140 per farm. The proportion of direct payments in total revenue (output value plus subsidies minus taxes) in the EU-27 decreased from 11.9 % in 2011 to 11.2 % in 2012 as total farm receipts increased. Irish, Greek and Finnish farms' total receipts were proportionately most dependent on subsidies. On the other hand, direct payments represented only 3.5 % of total receipts in the Netherlands. Farms specialised in granivores, dairy and horticulture had, on average, the highest total liabilities (EUR 206,500; EUR

96,700 and EUR 91,300, respectively), while permanent crop holdings recorded the lowest liabilities in 2012 (EUR 7,500). (EC DG-AGRI, 2015).

Methodology

The Farm Accountancy Data Network (FADN) was established in 1965 in the EU, when the Council decision 79/65 determined a legal basis for the organization of the system. FADN is based on an annual collection of production, economic and financial data from a sample of farms, classified into groups according to the criteria of economic farm size, type of agricultural production and region. With Croatian accession to the EU in 2013 the annual FADN survey by common FADN methodology and with the goal to determine the amount of agricultural producers income and the effect of CAP on them has become mandatory. The research involves commercial farms on voluntary basis. The first FADN survey in Croatia took place in 2008 when the FADN pilot sample counted 86 farms.

The analysis is based on FADN survey in the period from 2011 to 2013. The sample for the year 2011 was 754 commercial farms, for the year 2012 sample comprised 1,010 farms and for year 2013 there was 1,276 of them, representing approximately 85% of the used agricultural land, 89% of the value of agricultural production and 86% of the livestock units.

Production and farm business results at national level and at the level of farm type are analysed. Results for 7 farm types (Crops, Vegetable and flower, Permanent crops, Dairy cattle, Cattle, sheep and goats, Pigs and poultry and Mixed types) are presented. The following have been taken into consideration:

Total utilized agricultural area (UAA) which represents the total area of the property or the lease of holder and/or member of the farm in the observed period, in hectares. The UAA does not include the area covered by forests and other agricultural land (roads, ponds, economic yard, etc);

Total livestock units (LU) which is the total number of head in all categories of livestock in the observed period, expressed in conditional head of livestock. Conditional head of animal or group of same animals (eg. dairy cows) weighing 500 kg;

Stocking density (LU/ha) is the average number of livestock in the observed period per hectare UAA, calculated as the average number of livestock units of cattle, sheep and goats per hectare under forage crops and fallow;

Total output is the total average income of crop and livestock production, including products consumed on the farm to feed livestock in the observed period, in HRK;

Total inputs which represent the consumption of various goods (materials, time, money, and knowledge) required for the development of a product or service that will be realized from the sale at the market. Include average specific costs of crop and livestock production, depreciation, overhead costs, the amount of wages, paid rent and interest paid on debt, denominated in HRK;

Gross farm income is the average value of total sales plus paid support (without investment support) and minus intermediary consumption expressed in HRK;

Net added value is the average value obtained by subtracting the average depreciation expenses from gross income, expressed in HRK;

Farm net income is the average value obtained by summing the net value added and investment grants and less the average cost of wages, paid rent of land and facilities and interest payments denominated in HRK;

Efficiency coefficient (total output/total input) which represent the ratio between total revenue and total costs of production, and tells how many units of revenue can be produced with a unit of cost. The efficiency level is 1;

Productivity is gross farm income per hour of work. The labour input represents a total work on the family farm (holder and the members of the family farm) together with the paid and unpaid work, and permanent and temporary workforce in the observed period, expressed in hours of work;

Level of debt (%) shows which percentage of assets is purchased by borrowing, and represents the ratio of total liabilities and total assets. The value should be less than 50%;

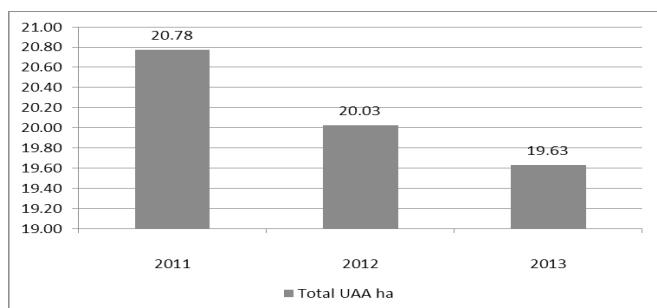
Total subsidies, excluding investment subsidies is the average total grant without investment support, including direct payments, rural development measures and other aid paid in the observed period in HRK;

Direct payments are the average total direct payments in crop and livestock production paid in the observed period in HRK.

Results and Discussion

The total utilized agricultural area per farm (UAA) from 2011 to 2013 was decreasing (6% less in the 2013 than in 2011). Decreasing is especially visible in cattle, sheep and goats type, where UAA decreased from 44.20 ha in 2011 to 23.35 ha in 2013.

Graph 1 The total utilized agricultural area in Croatia, ha/farm



Source: Croatian FADN Standard Results 2011-2013

Rented land per farm showed even more significant declining trend (20.31 hectares in 2011 to 16.16 hectares in 2013), resulting in a drop of 32%.

Number of cattle livestock units per farm is reduced and in 2013 compared to 2011 decreased by 44%. Stocking density, which increase in 2012, in 2013 decrease by 2% compared to 2011.

Table 1 Livestock units per farm in Croatia

Year	2011	2012	2013
Total livestock units	17.34	13.87	12.02
Stocking density (LU/ha)	1.84	1.92	1.80

Source: FADN Standard Results 2011-2013

The farm income from crop production accounted for more than 50% of total farm income, except in the year 2012 when it participated with 48%. Total farm output showed a decreasing trend, but with a simultaneous decrease in total inputs, which leads to a positive trends of gross and net farm income in the year 2013.

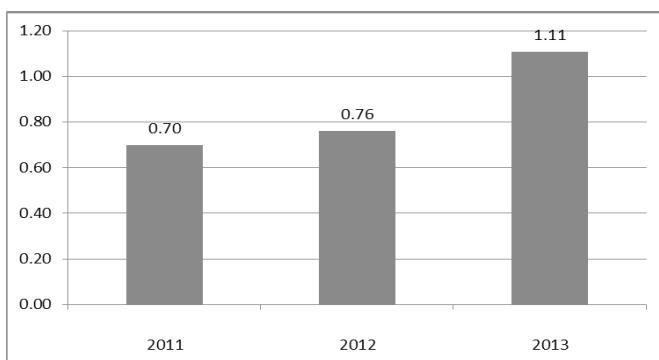
Table 2 Total output, inputs, gross and net income

Year	2011	2012	2013
Total output, kn	438,754.98	398,802.39	248,753.48
Total inputs, kn	627,996.78	523,565.99	224,555.21
Gross farm income, kn	88,485.19	86,174.63	133,988.98
Net added value, kn	40,820.22	46,135.70	89,209.11
Farm net income, kn	23,377.70	9,211.93	65,384.45

Source: FADN Standard Results 2011-2013

The efficiency coefficient on Croatian farms shows a positive trend. In the years 2011 and 2012 the farms were operated below the efficiency level, but with a slight increase in 2012. In the year 2013 there was a significant increase in efficiency to 1.11, which is above the efficiency level and indicates that farms operate with a certain profit.

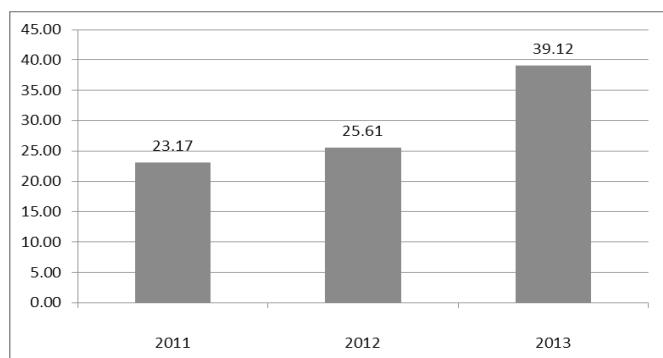
Graph 2 The efficiency coefficient on Croatian farms, 2011-2013



Source: FADN Standard Results 2011-2013

The trend in productivity on Croatian family farms is positive, showing a constant increase for the analysed period. In the period from 2011 to 2013 there was a 70% increase in productivity.

Graph 3 The trend in productivity on Croatian farms, 2011-2013, kn/hour



Source: FADN Standard Results 2011-2013

Regarding the number of farms observed for the given period, there is an increasing trend for the most of them, with exception of dairy, pig and mixed farms. In the years 2011 and 2012, 24% of farms are classified as mixed type, 20% of farms as dairy cattle and cattle, sheep and goat's type, while smallest share have vegetable and flower farms (only 1%). In the year 2013 the share of mixed farms fell to 21% and pigs and poultry farm from 7% to 1%. The highest increase was at crops farm (30%).

Usually the largest agricultural areas belong to a farms engaged in crop farming and cattle breeding, than sheep and goats breeding. The smallest utilized agricultural areas have farms with vegetable and flower production.

Rented land follows the trend of the total utilized agricultural area and largest are at a crop and cattle farms, sheep and goat farms (26 or 19 hectares), while the smallest are at vegetable and flower farms (an average of 2 ha).

Table 3 Total utilized agricultural area (ha/farm)

	Crops	Vegetable and flower	Permanent crops	Dairy cattle	Cattle, sheep, goats	Pigs and poultry	Mixed
2011	34.5	2.1	5.4	24.8	44.2	9.0	16.2
2012	32.3	2.0	7.2	25.2	25.6	9.6	12.4
2013	30.9	2.4	5.3	22.3	23.4	11.7	15.3
Average, ha	32.5	2.2	6.0	24.1	31.0	10.1	14.6

Source: FADN Standard Results 2011-2013

During the observed period the number of livestock units decreased in all farm types, with the exception of permanent crops and pigs and poultry type for the year 2012. Since the livestock unit presents the total number of animals for observed period, reduced to the weight of 500 kg, it has to be calculated from the number of animals, their weight and days at farm.

Table 4 Livestock units by farm type

	2011	2012	2013
Crops	4.58	3.89	2.98
Vegetable and flower			
Permanent crops	2.55	3.91	1.92
Dairy cattle	24.20	22.57	19.65
Cattle, sheep and goats	23.44	17.39	15.85
Pigs and poultry	56.86	57.39	49.42
Mixed	11.91	8.24	7.46

Source: FADN Standard Results 2011-2013

In the year 2011 the vegetable and floriculture farms operated with a largest gross farm income, while pigs and poultry farm have smallest gross farm income. Dairy farms generated smallest gross farm income in 2012 while vegetable and flower farm type earned the highest one. In the year 2013 vegetable and floriculture farms together with pig and poultry farms have largest gross farm income.

Table 5 Total output, inputs and gross farm income by farm types (in 1000 HRK)

	2011			2012			2013		
	Total output	Total inputs	Gross farm income	Total output	Total inputs	Gross farm income	Total output	Total inputs	Gross farm income
Crops	434.5	599.9	171.5	524.5	517.4	248.9	336.8	300.6	170.2
Vegetable and flower	1,237.5	500.1	1,045.9	921.4	376.2	811.1	579.4	561.1	210.3
Permanent crops	229.7	271.5	152.0	250.8	279.2	177.2	156.2	132.3	112.5
Dairy cattle	509.0	728.8	93.2	498.8	680.1	64.4	319.3	296.1	171.8
Cattle, sheep and goats	342.2	471.2	120.6	261.8	353.6	68.5	166.9	151.1	91.1
Pigs and poultry	716.6	1,038.1	15.1	728.6	851.8	151.3	774.3	790.0	201.1
Mixed	315.6	451.7	125.4	246.5	322.4	105.0	173.7	157.6	100.7

Source: FADN Standard Results 2011-2013

The largest level of debt has a vegetable and floriculture type of farms, which is expected since it is a capital intensive production. Cattle, sheep, goats and mixed types of farms are the least creditworthy burdened. For the year 2013 the coefficient can't be presented due to the lack of data.

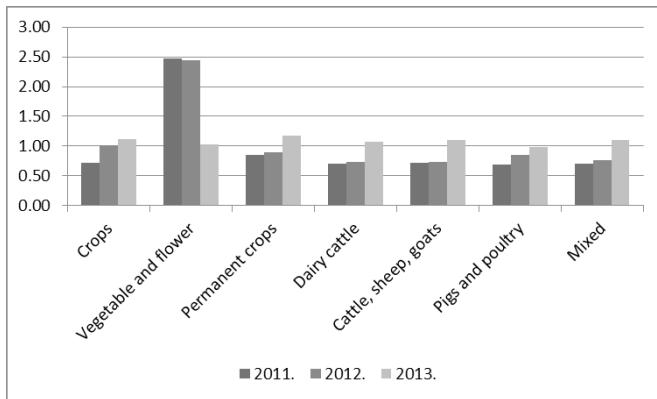
Table 6 Level of debt by farm types

Farm type	Year	
	2011	2012
Crops	31%	52%
Vegetable and flower	249%	70%
Permanent crops	30%	30%
Dairy cattle	23%	26%
Cattle, sheep and goats	15%	16%
Pigs and poultry	100%	23%
Mixed	21%	24%

Source: FADN Standard Results 2011-2013

Efficiency coefficient shows a trend of growth at all farming types for the analysed years, except for the vegetable and floriculture farms where the trend is declining. The most of farm types are efficient (coefficient more than 1) only at year 2013, with exceptions at crop farms (at efficiency level for the years 2012 and 2013) and vegetable and floriculture farms (above the efficiency level for all analysed years).

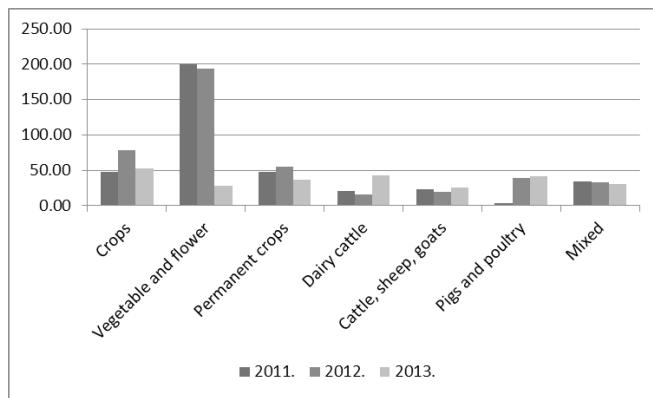
Graph 4 Efficiency coefficients by type of farms, 2011-2013



Source: FADN Standard Results 2011-2013

The highest productivity is observed at floriculture and vegetable type of farming for the years 2011 and 2012, with a sudden and very large drop registered in 2013. The average productivity ranges from 24 HRK/hour (for cattle, sheep and goats types of farming) to 140 HRK/hour at the vegetable and floriculture type of farming. When comparing these two opposite sides it means that cattle, sheep and goats types are at level of 17% of productivity at vegetable and floriculture type.

Graph 5 Productivity by farm types in HRK/hour, 2011-2013



Source: FADN Standard Results 2011-2013

The largest amount of total subsidies were recorded at crop farms (average 120.03 HRK) and dairy farms (average 109.96 HRK), while the lowest was recorded at vegetables and flowers (30.03 HRK). In the last observed year there were recorded smaller amounts of total subsidies in relation to the previous two observed years. The biggest fall in the amount of total subsidies is registered in permanent crops (average 78%), vegetable and flower (average 77%) and mixed (average 70%) farms.

Table 7 Total subsidies, excluding investment by farm types (HRK)

	2011	2012	2013	2013/2011	2013/2012
Crops	186,516.71	114,358.37	59,212.98	-68%	-48%
Vegetable and flower	30,419.16	50,777.88	8,894.48	-71%	-82%
Permanent crops	52,388.50	66,727.39	12,889.26	-75%	-81%
Dairy cattle	156,422.18	103,761.45	69,712.41	-55%	-33%
Cattle, sheep and goats	105,369.27	71,494.59	43,197.08	-59%	-40%
Pigs and poultry	109,797.59	58,918.80	27,281.07	-75%	-54%
Mixed	158,201.83	99,369.88	36,935.00	-77%	-63%

Source: FADN Standard Results 2011-2013

The largest amount of direct payments were recorded at crop farms (average 79.18 HRK) and dairy farms (average 65.58 HRK), while the lowest was recorded at vegetables and flowers (9.88 HRK). The largest fall in the amount of direct payments is registered at pigs and poultry farm (average 60%), cattle, sheep and goats farm (average 39%) and crops farm (average 39%). This decrease in direct payments is smaller than decrease in total subsidies.

Conclusion

Regarding the number of farms observed for 3-year period (2011-2013), there is an increasing trend for the most of them, with exception of dairy, pig and mixed farms. More than 50% of observed Croatian farms have less than 2 ha of arable land. The total utilized agricultural area per farm (UAA) from 2011 to 2013 was decreasing from 20.78 to 19.63 ha per farm. In average, the largest areas have crop farms (32.5 ha), cattle, sheep and goats farms (31 ha), while the smallest areas are registered at vegetable and floriculture farms (2.2 ha).

As for the land, the declining trend is also registered for the livestock units (LU) – for the year 2013 LU was 44% lower than for the year 2011. This downward trend is transferred to the farms total revenue and costs, so farms were below the efficiency level for the years 2011 and 2012 and starts to recover in the year 2013. The efficiency coefficient shows a positive trend at almost all farming types, while the biggest drop was at vegetable and floriculture farms.

The efficiency and productivity trends are positive, and the only indicators that show constant growth for the 3-year period. The most of farm types are efficient (coefficient more than 1) only in the year 2013, while vegetable and flower farms are efficient in all three observed years. The average productivity ranges from 24 HRK/hour (cattle, sheep and goats rearing) up to 140 HRK/hour (vegetable and floriculture farms).

In average, the vegetable and floriculture farms have the largest gross farm income in all three analysed years (average 689.1 HRK), but with a large drop in 2013, while the farms in type pigs and poultry have largest increase of gross farm income in 2013.

The highest level of debt is registered at vegetable and floriculture farms due to their capital intensiveness, while the lowest is at cattle, sheep and goats farms.

Table 8 Direct payments by farm types (HRK)

	2011	2012	2013	2013/2011	2013/2012
Crops	116,948.15	68,221.85	52,379.98	-55%	-23%
Vegetable and flower	13,534.10	7,328.99	8,780.07	-35%	20%
Permanent crops	19,362.51	13,944.19	10,087.52	-48%	-28%
Dairy cattle	82,825.89	55,255.65	58,650.35	-29%	6%
Cattle, sheep and goats	62,626.04	37,616.79	28,677.48	-54%	-24%
Pigs and poultry	109,911.17	28,210.40	17,996.89	-84%	-36%
Mixed	37,818.95	27,357.44	32,176.19	-15%	18%

Source: FADN Standard Results 2011-2013

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