

Alboiu, Cornelia

**Conference Paper**

## Vegetable farm structure evolution by standard output

**Provided in Cooperation with:**

The Research Institute for Agriculture Economy and Rural Development (ICEADR), Bucharest

*Suggested Citation:* Alboiu, Cornelia (2018) : Vegetable farm structure evolution by standard output, In: Agrarian Economy and Rural Development - Realities and Perspectives for Romania. 9th Edition of the International Symposium, November 2018, Bucharest, The Research Institute for Agricultural Economy and Rural Development (ICEADR), Bucharest, pp. 147-150

This Version is available at:

<https://hdl.handle.net/10419/205099>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

# VEGETABLE FARM STRUCTURE EVOLUTION BY STANDARD OUTPUT

CORNELIA ALBOIU<sup>1</sup>

**Summary:** *The relationship between farm size and land productivity has been widely debated in literature for decades and several reasons and explanations for the inverse relationship between farm size and land productivity. The paper presents the evolution of areas under vegetables by size classes and regions according to standard output. The main methodological tool used is statistical analysis and comparisons among regions. The results reveal the perpetuation of the very small-sized farms, with low economic power, across regions, with a slightly decreasing trend of their number, under the background of increasing the cultivated areas under greenhouses and plastic tunnels.*

**Keywords:** *farm productivity, vegetable farm structure*

**JEL Classification:** *Q110, Q13*

## INTRODUCTION

Farm size and productivity is a topic largely discussed and there are several factors which affects their relationship among which the imperfect factor markets including failures in the land market, credit market [1], insurance market [2], and labour market [3, 4]. Malfunctioning or absence of these markets leads to suboptimal resource allocation at the farm level implying inefficiencies. An important cause of labour market imperfections in developing countries is labour supervision cost; as hired labour is assumed to be less motivated and effective, it takes more productive family labour to supervise hired labour which decreases overall labour productivity at farm level [5]. This would explain why labour and farm productivity are lower on large farms, which require more hired labour. Assunção and Braido [4] and Barrett et al. [6] argue that the imperfect market hypotheses imply the presence of unobservable variation between households that leads to differences in the input intensity levels which are correlated with farm area. Therefore, they add a set of household-specific characteristics such as household size, dependency ratio, and gender of the household head in testing the inverse relation between farm size and productivity.

Another important question is whether the land productivity between farm size and productivity emerges (or not) from omitted variables. Importantly, differences in soil quality lead to differences in soil productivity which clearly affect output with small farmers being more productive because of having plots of better quality. In addition, farming practices and production methods might vary according to farm size, leading to differences in yields and productivity [4, 7]. All these studies show a decrease in the severity of land productivity when controlling for soil quality [6, 8], but none has found that the land productivity declines. Lipton [5] used differentiation in farm management skills as an explanatory variable of farm productivity using panel data which allows for household-specific fixed effects. However, the evidence does not suggest that managerial skills explain land productivity.

All these studies [9] were reviewed when analysing the relationship between farm size and economic efficiency and the authors concluded in their findings that gains from improving technical efficiency exist in all farm categories but they appear to be much higher on large than on small farms. While small farms tend to use land more intensively in an attempt to alleviate land constraints, the study suggests that the relatively higher level of technical efficiency observed on small farms is largely attributable to the adoption of traditional land saving techniques rather than the use of modern land saving technologies. Small scale farms are found to be more allocatively efficient than the larger farms.

---

<sup>1</sup>Dr. Cornelia Alboiu, Institutul de Economie Agrara, Academia Romana, e mail: coraalboiu@yahoo.com

## MATERIALS AND METHODS

Studying the economic size of the Romanian vegetable farm from the point of view of productivity and food security is an important objective and has a complex determination, being dependent on both the sectoral agricultural policies and the general macroeconomic framework, the prices on the branches, the income distribution policies, social, fiscal, commercial, etc. Specific statistical indicators such as: variation, mean referring to standard output will be used. These indicators will also be calculated regionally. The data source is represented by various databases such as tempo on-line INS, Eurostat, FAO.

## RESULTS AND DISCUSSIONS

Following the analysis of the number of farms by standard output, one can notice that in all regions, in the categories of holdings whose standard output is lower than 2000 euro, 2000-3999 euro, 4000-7999 euro and 8000-14999 euro respectively, the number of farms decreased in the period 2005-2013. In this size group, the largest number of holdings that cultivate vegetables is found in the region South-Muntenia. The eligibility of getting funding from the National Rural Development Program NRDP 2014-2020 is based on the gross standard margin of holding “SO” (Standard Output). The economic size of farm is the criterion that determines whether a holding is eligible to get funding under NRDP 2014-2020 and how much money it can get.

Table 1. Number of farms by size classes according to standard output

Farms no	less then 2000 euro		2000-3999 euro		4000-7999 euro		8000-14999 euro		15000-24900 euro	
	Variation	Mean	Variation	Mean	Variation	Mean	Variation	Mean	Variation	Mean
Romania	-64%	134488	-64%	84953	-54%	67530	-10%	24.393	45%	6548
North-Wes	-62%	25855	-58%	13100	-42%	9783	18%	3.240	43%	845
Centre	-60%	15395	-56%	6968	-57%	5385	-25%	2.043	53%	538
North-East	-72%	20258	-78%	15183	-70%	10473	-35%	2.985	-7%	798
South-East	-69%	12185	-62%	10100	-59%	10385	-41%	3.950	4%	<b>1118</b>
South - Mu	-67%	28438	-61%	15855	-59%	11883	-1%	4.238	<b>76%</b>	<b>1208</b>
Bucharest	-28%	1383	-22%	1125	-50%	1213	-31%	488	45%	153
South-Wes	-50%	17140	-61%	14498	-32%	10615	26%	4.280	<b>84%</b>	1150
West	-69%	13848	-60%	8122,5	-50%	7810	2%	3.173	80%	750

Source: calculations based on Eurostat data, 2018

In the category 25000-49900 euro, the number of vegetable farms significantly increased in all regions, at the highest level in the region South-West Oltenia, while their number decreased only in the region Bucharest-Ilfov (-50%) and Centre (-3%). In the category 50000-99990 euro, the number of vegetable farms mostly increased in the regions Vest, and Sud-Est, followed by the regions Nord-Vest, Centre and North-East, while the number of farms decreased in the regions Sud-Est, Bucharest-Ilfov and South West Oltenia.

The average number of farms throughout the investigated period was the highest in the region South East. In the category 100000-249000 euro, smaller increases in the number of farms were noticed, while the number of farms decreased in the regions Vest, Bucharest-Ilfov; the highest average number of farms was found in the region. In the category 250000-500000 euro, the variation is very low or the number of farms decreased, e.g. in the regions West, South-West and North-West. The highest average number of farms can be noticed in the region South-East. In the category over 500000 euro, no changes were noticed in four regions, the number of farms decreased in 3 regions and an increase was noticed only in the region North-East. The highest average number of farms was noticed in the region South-East.

Table 2. Number of farms by size classes according to standard output across regions

-continued-

Farms no	less than 2000 euro		2000-3999 euro		4000-7999 euro		8000-14999 euro		15000-24900 euro	
	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean
Romania	43%	2920	53%	878	12%	388	-16%	168	-26%	143
North-Wes	17%	403	75%	100	<b>50%</b>	25	0%	8	0%	8
Centre	-3%	303	25%	88	33%	33	0%	5	0%	0
North-East	37%	375	-27%	83	33%	40	0%	15	100%	15
South-East	11%	560	<b>72%</b>	263	21%	168	0%	73	-29%	55
South - Mu	<b>141%</b>	488	<b>100%</b>	105	-17%	60	0%	40	-50%	48
Bucharest	-50%	37,5	-50%	13	-100%	5	0%	3	-100%	3
South-Wes	<b>265%</b>	420	-14%	135	50%	25	-100%	3	0%	8
West	21%	340	<b>250%</b>	98	-33%	30	-67%	18	0%	10

Source: calculations based on Eurostat data, 2018

Table 3. Number of hectares cultivated with vegetables by size classes according to standard output across regions

hectars	less than 2000 euro		2000-3999 euro		4000-7999 euro		8000-14999 euro		15000-24900 euro	
	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean
Romania	-73%	12593	-69%	15850	-70%	25343	-45%	19540	-5%	10485
North-Wes	-66%	1985	-57%	1862,5	-57%	2658	-40%	1835	-33%	1165
Centre	-72%	1260	-63%	1070	-66%	1175	-48%	788	48%	478
North-East	-84%	1898	-87%	3045	-84%	4428	-65%	3458	-69%	1860
South-East	-77%	1623	-66%	2220	-72%	4755	-67%	3743	-30%	2153
South - Mu	-76%	2903	-69%	3315	-79%	5640	-39%	3838	53%	1940
Bucharest	-80%	318	-67%	440	-79%	745	-79%	595	-48%	433
South-Wes	-54%	1460	-66%	2562,5	-46%	3890	25%	3485	102%	1683
West	-69%	1145	-57%	1327,5	-47%	2058	-13%	1800	93%	770

Source: calculations based on Eurostat data, 2018

The number of hectares under vegetables by regions significantly decreased in all categories up to the category 8000-149999 euro inclusively. In the category 15000-24900 euro, the number of hectares cultivated with vegetables increased in the regions West, South-West, South-Muntenia and Centre, the highest share of areas under vegetables being noticed in the region Sud-Est. In the category 15000-24900 euro, the number of hectares increased in the regions West, South-West, South-Muntenia and Centre and decreased in the regions North-West, North-East and South-East and Bucharest -Ilfov. The largest areas are found in the region South-East.

Table 4 . Number of hectares cultivated with vegetables by size classes according to standard output across regions

-continued-

hectars	less than 2000 euro		2000-3999 euro		4000-7999 euro		8000-14999 euro		15000-24900 euro	
	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean	Variation %	Mean
Romania	-18%	8308	-3%	4418	-26%	3760	-64%	3545	-67%	8845
North-Wes	-34%	1095	<b>23%</b>	483	<b>114%</b>	202,5	-38%	68	0%	50
Centre	-77%	688	-61%	368	91%	190	0%	18	0%	0
North-East	-61%	1485	-75%	535	-65%	445	-54%	260	-75%	313
South-East	-37%	1860	17%	1625	-28%	1927,5	-56%	1818	-57%	<b>4133</b>
South - Mu	<b>208%</b>	1215	<b>248%</b>	503	-31%	490	-60%	818	-81%	3115
Bucharest	-85%	145	-92%	48	-100%	22,5	0%	25	-100%	53
South-Wes	<b>655%</b>	1160	-11%	498	-37%	292,5	-100%	35	-51%	355
West	46%	658	<b>133%</b>	358	-40%	177,5	-100%	340	-51%	343

Source: calculations based on NIS data, Tempo on line

In the category 25000-49900 euro, the areas increased in the regions West, South-West and South-Muntenia, while the areas decreased in all the other regions. The largest number of hectares is found in the region Sud-Est. In the category 50000-99900 euro, the number of hectares under vegetables increased in three regions (West, South-Muntenia and North-East). The largest areas in this category are also found in the region South-East (1625 ha). In the category 100000-249000 euro, the number of cultivated hectares decreased in all regions except for the regions North-West and Centre. In all the other categories the average number of hectares decreased, the highest

average number of hectares cultivated with vegetables being found in the category over 5000000 euro in the region South-East.

## CONCLUSIONS

The analysis of the areas cultivated with vegetables per farm by farm standard output practically reveals the farm size in terms of standard output and their economic power. The number of farms records the largest share in the category 2000 euro and 4000 euros showing a weak potential for increased productivity and economic growth.

As regards the number of hectares cultivated with vegetables by regions, this decreased significantly in all categories up to the category 8000-149999 euro inclusively. In the category 15000-24900 euro, the number of hectares cultivated with vegetables increased in the regions West, South-West, South-Muntenia and Centre, the highest share of areas cultivated with vegetables being found in the region South-East. The evolution of farms by standard output indicates highest volatility in tomatoes, mainly in the regions North-East and Bucharest-Ilfov.

## BIBLIOGRAPHY

1. J. Assunção and M. Ghatak, (2003). *Can unobserved heterogeneity in farmer ability explain the inverse relationship between farm size and productivity*, Economics Letters, vol. 80, no. 2, pp. 189–194.
2. S. Dercon and P. Krishnan, (1996). “Income portfolios in rural Ethiopia and Tanzania: choices and constraints,” *Journal of Development Studies*, vol. 32, no. 6, pp. 850–875.
3. C. B. Barrett, (1996). *On price risk and the inverse farm size-productivity relationship*, *Journal of Development Economics*, vol. 51, no. 2, pp. 193–215.
4. J. J. Assunção and L. H. B. Braido, (2007). *Testing household-specific explanations for the inverse productivity relationship*, *The American Journal of Agricultural Economics*, vol. 89, no. 4, pp. 980–990.
5. M. Lipton, (2010). “From policy aims and small-farm characteristics to farm science needs,” *World Development*, vol. 38, no. 10, pp. 1399–1412. View at Scopus
6. C. B. Barrett, M. F. Bellemare, and J. Y. Hou, (2010), “Reconsidering conventional explanations of the inverse productivity-size relationship,” *World Development*, vol. 38, no. 1, pp. 88–97.
7. F. Byiringiro and T. Reardon, (1996). *Farm productivity in Rwanda: effects of farm size, erosion, and soil conservation investments*, *Agricultural Economics*, vol. 15, no. 2, pp. 127–136.
8. R. L. Lamb, (2003). *Inverse productivity: land quality, labor markets, and measurement error*, *Journal of Development Economics*, vol. 71, no. 1, pp. 71–95.
9. S. Mburu, C. Ackello Ogutu and R. Muluwa (2014). *Analysis of Economic Efficiency and Farm Size: A Case Study of Wheat Farmers in Nakuru District, Kenya*, *Economics Research International Volume 2014*, Article ID 802706, 10 pages