Is the agricultural sector playing a special role against the global crisis? or is it the rural setting?

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Summary

A substantial literature has addressed the many issues relevant to describe, analyse and assess the question of income distribution and its role vis-a-vis economic growth and its sustainability, as well as concerns about poverty and social exclusion in particular when age and gender related. Undoubtedly, building on the EU-SILC information, a much scarcer attention has been paid to the agricultural sector and the rural environment.
This paper aims at offering a contribution to fill this gap by presenting some reflections based on empirical data. Although putting forward the entire range of the results obtained defies the space limits posed by a paper, the focus of this contribute is directed to compare the agricultural incomes in two points in time: in 2006 before the Great Recession flared up and in 2011, at the most recent date available today, when the crisis is not yet over.
It is, of course, hard to prove that, having compared incomes in the agricultural sector as well as in the rural areas across countries and for two reference years, the observed outcome is certainly due to the financial crisis.
Being concerned with the effects following the financial crisis, the analysis looks in particular at those countries belonging to the Euro area and present in the survey at the earliest date. A more even platform across countries permits to better concentrate on the best survivors in the farm sector: those who seem to have suffered less offer a sure example of resilience. Indeed, we do not dare adventuring in any cause-effect relationship. We believe that the very comparison can provide some food for thought and somewhat new elements to be fruitfully added to the discussion.

Keywords: Agricultural incomes distribution, rural incomes distribution, EU-SILC

JEL Classification codes: D31, E24,J31, N50

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1. INTRODUCTION

The financial crisis, triggered by the US subprime mortgage disarray at the end of 2006 and culminated two years later with the Lehman bankruptcy, has spread its contagion in Europe, where its effects are lasting longer than expected. After a few years, it is common wisdom maintaining that the group which has been more severely hit everywhere is the middle class, although the precise definition of such a broad and heterogeneous group is somewhat flimsy.

This paper aims at evaluating the changes experienced by agricultural and rural incomes in several European countries by examining them in two points in time: just before the crisis broke in (2006) and while it was in full bloom (2011). By comparing the relative changes in agricultural and non agricultural incomes we try and answer such questions as: was agriculture more resilient than other sectors? In other words, did agricultural households' incomes suffer setbacks to a lesser extent as compared to the rest of the economy? Was it so throughout (almost) all countries? It is well-known that in some countries farmers tend to appear more frequently in the poorest deciles of their country's income distribution, while, on average, they get along quite a lot better in other countries (Croci Angelini and Sorana, 2011). Recent results published by OECD show that the heaviest burden of the financial crisis has been far too often put on the shoulders of the poorest deciles of the population: "Poorer households tended to lose more or gain less" (OECD, 2013: 4). What differences, if any, one could spot across countries from the vantage point of the end results (i.e. incomes and quality of living)? The European farm sector is far from being homogeneous in terms of production, yields, contracts, farm size, weight of the sector on a country's economy as well as farmers general conditions. However, this wide variety might have delivered different reactions to the crisis, which could turn out to be a clue for a more successful survival. At the same time, the agricultural sector is just a (perhaps major) part of the rural environment. Does it alleviate or contribute to rural poverty? Although rural poverty is basically believed to be mainly found in developing countries - "More than two thirds of [the 1.4 billion extreme poor people] reside in rural areas of developing countries" (IFAD, 2011: 9) – certainly to a different extent and with different characteristics, it may still be less rare than one would presume in industrialized countries, too: in the US, "poverty rates are highest in remote rural areas ... [and ... p]ersistent poverty counties are overwhelmingly rural" (Miller, Crandall, and Weber, 2003: 4).

The paper is organized as follows: in section 2 the methodology and data employed to calculate the relative income position of the farming sector is presented and in section 3 the picture emerging from these calculations for the year 2006 is discussed. Section 4 and section 5 focus on the income distribution changes in the agricultural sector and in the rural areas, respectively. Section 6 concludes.

2. METHOD

This section offers a quick view of the methodology and the data employed to calculate the results which will be discussed below.

2.1. Decile analysis

The analysis starts with the evaluation of European as well as national income distribution and detects where farmers, wherever they live, and individuals living in rural areas, whether or not employed in agriculture, are found within it.

The research methodology is based on the decile analysis, which involves the partitioning of the dataset into ten equal-sized contiguous groups (deciles) ranked according the variable under scrutiny in order to describe the matter and possibly test how a model would fit the data. In case regularities are found, the results will measure the probability of finding the respondents in a particular decile (based on the model) rather than by randomly select them.

In particular, since the aim of the paper is to look at the agricultural sector (i.e. at the changes in income and living conditions of those declaring to be employed in agriculture) as well as to reflect on what is going on into the rural areas (i.e. seeking whether non farmers, resident in the rural area, could fare better than farmers or viceversa) the variable the ranking was done on is household income. The respondents are either those identified as farmers or those identified as living in rural areas. The model would check whether regularities could be obtained so that farmers (or, in turn, individuals living in rural areas) are more likely to be found in a given decile than in another. In other words, we seek whether a randomly selected farmer would be most likely to belong to a given decile or could be equally found in any decile. In the latter case we would conclude that being employed in agriculture, (or living in rural areas) does not sum up to any particular (dis)advantage.

The deciles have been calculated for the (weighted) population of the European countries with data available for the year 2006, country by country, over the 432574 out of 434518 records having information about the kind of occupation, the area of residence and the equivalised income variable (HX090). Within each decile farmers have been identified according to two different definitions, and two dichotomic variables have been created separating farmers from non-farmers and agricultural workers from non agricultural workers. As we shall see below, neither variable is completely satisfactory.

2.2. Data

This paper is based on the evidence provided by the survey EU-SILC (European Union Statistics on Income and Living Conditions) issued by Eurostat. The dataset enquires into several aspects relevant to our analysis, although the relevant information is not always available for each member state. The somewhat scattered information is an obvious reason limiting the complete comparability of incomes across the EU countries in the two years (2006 and 2011). The informative gaps are presented in the following description of variables.

The agricultural sector is composed of those declaring to be employed in the agricultural sector and so classified in terms of two categorizations:

- the Statistical Classification Of Economic Activities: NACE (*Nomenclature statistique des activités économiques dans la Communauté européenne*) (REV 1.1) 01. Agriculture, hunting and related service activities.
- the International Standard Classification of Occupations ISCO-88 (COM):
    - Code 61 - Skilled agricultural and fishery workers
    - Code 92 - Agricultural, fishery and related labourers (within the code 9: "Elementary occupations")
    - Excluded code 83 - Agricultural and other mobile plant operators (within code 8: "Plant and machine operators and assemblers").

In order to evaluate the changes at the income level and the income distribution we have observed individuals active in the agricultural sector per income decile, in 2006 and 2011. In particular, we have split the European country's population into two groups (farmers and non-farmers on the basis of both NACE as well as ISCO) and the territory in three different areas (defined by Eurostat in three degrees of urbanization):

1. densely populated area: a contiguous set of local areas, each of which has a density superior to 500 inhabitants per square kilometre, where the total population for the set is at least 50,000 inhabitants.
2. intermediate area: a contiguous set of local areas, not belonging to a densely-populated area, each of which has a density superior to 100 inhabitants per square kilometre, and either with a total population for the set of at least 50,000 inhabitants or adjacent to a densely-populated area.
3. thinly populated area: a contiguous set of local areas belonging neither to a densely-populated nor to an intermediate area.

   We identify the rural population with those living in thinly populated areas.

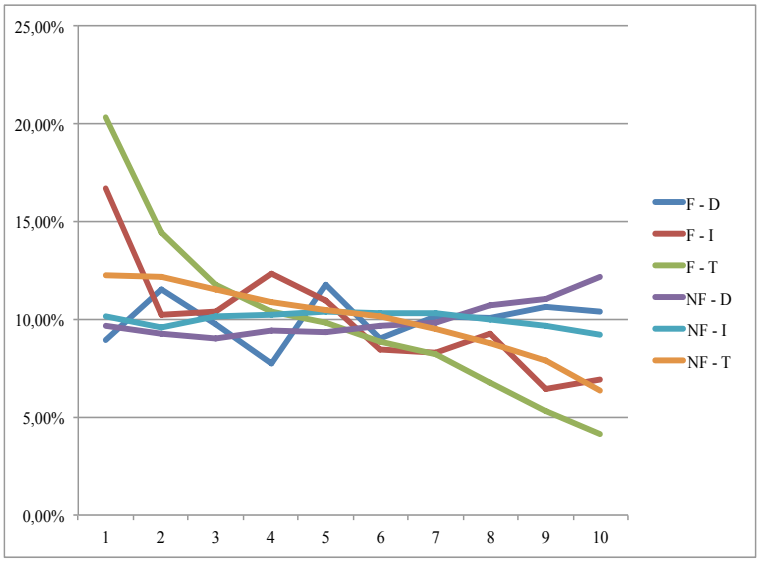
The income concept considered in this analysis is the equivalised disposable income (HX090) that is computed using the total disposable household income (HY020) multiplied by the within-household non-response inflation factor (HY025) and divided by the equivalised household size (HX050).

3. TWO SNAPSHOTS OF 2006

The analysis of the European population[1] in 2006 was performed for each country for which all data is available. As it will be reported later, a considerable heterogeneity is a distinctive characteristic of the European countries. Still, some common features can be unveiled. Figure 1 is calculated by adding the frequencies of the national deciles across countries. Its meaning resides in the representation of the national distribution in aggregate terms. It does not exactly reflect the distribution at the European level because the decile limits differ, sometimes substantially, across countries. Therefore, deciles computed on the European population as a whole, would not see every country's inhabitants represented in each decile. Figure 1 shows a greater presence of farmers in the first group (reflecting the sum of all first deciles) declining group after group, so that the chance to find a non-farmer in the richest group is minimal. In addition, if we look at the degree of urbanization, we can observe that farmers in thinly populated area, are also the least represented in the richest group. It appears that individuals employed in the agricultural sector, that live in rural area (the green line) earn a lower income compared to the non-farmers that live in the same place. Moreover, if we consider this evidence like a sort of area effect, the farmers are those most affected by its negative effect. Among non-farmers, those who live in rural area to a greater extent are still those found in the poorest group.

[1] At this stage the European population for which information is available includes 24 countries: Austria (AT), Belgium (BE), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Ireland (IE), Iceland (IS), Italy (IT), Lithuania (LT), Luxembourg (LU), Latvia (LV), , Norway (NO), Poland (PL), Portugal (PT), Sweden (SE), , Slovakia (SK), and the United Kingdom (UK).

Figure 1: farmers and non-farmers (NACE) EU per degree of urbanization in 2006



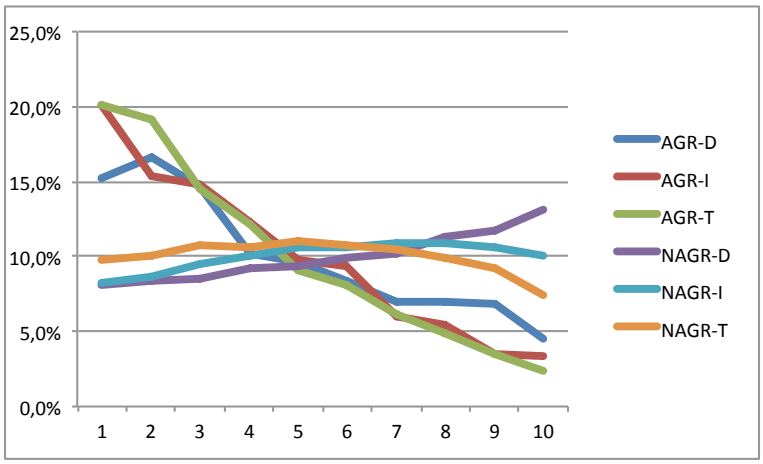
Source: own elaboration on EU-SILC 2006
Legend: F-D: farmers in densely populated areas; F-I: farmers in intermediate areas; F-T: farmers in thinly populated areas; NF-D: non farmers in densely populated areas; NF-I: non farmers in intermediate areas; NF-T: non farmers in thinly populated areas

If we analyze every single country, others specific characteristics emerge. In particular, we can observe that in 14 countries out of 24, the presence of farmers in the first decile is higher than the European average: however each country differs from each other by having a larger number of poor farmers in correspondence of specific type of territory. For example, some countries such as Denmark, Luxembourg and Norway show the majority of poor farmers in densely populated areas. Others countries, like France, Italy, Poland and Portugal have the majority of poor farmers in correspondence of intermediate and rural areas. This first difference, indicates that, at the European level, different types of farmers coexist. The second one highlights the role played by the characteristics of the territory and by the agricultural areas. Another element to point out is the different presence of the farmers of the in the poorest and richest decile based on the degree of urbanization. We can note, for example, that in northern European countries such as Denmark, Norway and Sweden, the poorest farmers live in densely populated areas, while for most of the other European countries, the poorest farmers reside in thinly populated areas. If we look at the richest decile, the majority of the farmers live in densely or intermediate areas while in only two countries (Belgium and Denmark) we find the richer farmers in rural areas.

The same analysis based on the ISCO classification shows that the agricultural workers are those most represented in the first group (computed by adding all first deciles), and less in the richest. The non-agricultural workers, being the overwhelming majority, non surprisingly are spread more evenly in all groups. We can look at this evidence in figure 2. In particular it is possible to note that all lines related to farmers are decreasing with income. Meanwhile, also the line related to non-agricultural workers of the thinly populated areas decreases and puts in light the role played by the rural areas in their impoverishment.

Analyzing country by country in relation to the European evidence, we can observe that more or less all of them follow the same trend. The agricultural workers are those who are most represented in the poorest group, in every kind of degree of urbanization. Conversely, it is much more probable to find non-agricultural workers in correspondence to the richest group, in every country considered.

Figure 2: agricultural workers and non-agricultural workers (ISCO-88) EU per degree of urbanization in 2006



Source: own elaboration on EU-SILC 2006
Legend: AGR-D: agricultural workers in densely populated areas; AGR-I: agricultural workers in intermediate areas; AGR-T: agricultural workers in thinly populated areas; NAGR-D: non- agricultural workers in densely populated areas; NAGR-I:non-agricultural workers in intermediate areas; NAGR-T: non-agricultural workers in thinly populated areas

Figure 1 and Figure 2 show a coherent story: the number of individuals employed in agriculture and living in thinly populated areas decreases as income increases. Though rather similar, the two figures do not always agree. The NACE-based evidence shows declining numbers for all, farmers and non farmers, if living in thinly populated areas, so that the disadvantage factor seems to reside in the rural areas, while the ISCO-based evidence tends to attribute the disadvantage to the fact of being employed in agriculture: all farmers, no matter where they live, are found in decreasing numbers as income levels go up.

Yet, on the basis of figure 1 and 2 it should be wrong to infer that in all countries the same downwards strictly monotonic inclination is common as shown by farmers – so defined in terms of both ISCO and NACE classification - living in thinly populated areas.

Actually, strict monotonicity in terms of NACE and at the country disaggregation level is only found for non-farmers living in thinly populated areas in Denmark and Slovakia, (while in Poland is almost strict) and, of course at the aggregate level together with farmers living in thinly populated areas, as previously mentioned, while in terms of ISCO strict downwards monotonicity appears at the aggregate level for all farmers (as well as for those living in both intermediate and thinly populated areas) while at the country level it is found in Hungary for the rural farmers. Upwards strict monotonicity is found in Spain for those living in densely populated areas, a result holding at the European aggregate level, too. Strict monotonicity would be, of course, much more common should the analysis be conducted on quintiles, rather than on deciles: among farmers living in thinly populated areas according to the NACE criterion over 30% are found in the first quintile in Denmark, Estonia, France, Greece, Hungary, Iceland, Italy, Lithuania, Norway, Poland, Portugal and the UK, while in Germany, Cyprus, Norway and Sweden. Finally, in 2006 one can spot only few countries where at least some farmers, irrespectively of where they live, can be found in every decile (e.g.: France, Italy, Poland, Spain).

Although the relative income condition is very heterogeneous at the country level, and the two data sources offer a somewhat different point of view, one can observe that in many countries finding a farmer in the poorest decile got the highest probability (e.g.: Cyprus, Finland, France, Iceland, Italy, Poland and the UK for both employment classifications).

However, the paper tries and answers the question about which changes came about during the Great Recession, and whether being employed in agriculture or living in a rural area happen to be a (dis)advantageous factor.

4. CHANGES IN THE FARM SECTOR

If we look at what happened in five years, from 2006 to 2011, we can observe what changes occurred to income distribution in the farm sector. In particular, the comparison between the European countries on the ISCO-based evidence shows that in some cases the agricultural workers have improved their economic condition or, sometimes, it has deteriorated. For example, 10 countries out of 20 (those countries[2] for which the comparison is possible between the years considered) have augmented their percentage in the poorest decile, often in every three degree of urbanization. Moreover, if we observe the countries in which the poorest agricultural workers augmented, we can note that, at least one half of them are the most economically rich countries within Europe.

The opposite occurred to the richest decile, where the presence of the agricultural workers has decreased in almost 10 case out of 20. But, also in this case, it is important to underline that in a few countries the percentage of agricultural workers in the richest decile increased, particularly in countries that have recently joined the European Union.

4.1. Positive changes (improvements)

In particular, among the positive changes, we can emphasize that in some countries, such as Belgium, Hungary, Poland, and the United Kingdom, the percentage of farmers, in the richest decile, has increased in correspondence of the densely populated areas.

If we look at the intermediate areas, we can observe that the agricultural workers that have improved their presence in the richest decile, in particular live in Cyprus, Luxemburg, Poland, Portugal and Slovakia.

Finally, in the rural areas, only three countries are increased the numbers of farmers in the richest decile: Hungary, Iceland and Slovakia.

On the basis of these evidence we can underline that the farmers who live in the intermediate area have improved their condition in a larger number of countries compared to the other levels of urbanisation.

4.2. Negative changes

If we pay attention to changes occurred in the densely populated areas, we can note that in some countries, such as Austria, Czech Republic, Germany, Estonia, Spain, Luxembourg, Latvia, Portugal and the United Kingdom the agricultural workers have increased their numbers in the poorest decile.

In the intermediate area the farmers in the first decile have increased in five countries: Austria, Germany, Luxemburg, Slovakia and the United Kingdom.

After all in rural areas, the number of farmers in the first decile has increased in the Czech Republic, Germany, Luxembourg, Lithuania, Portugal and Slovakia.

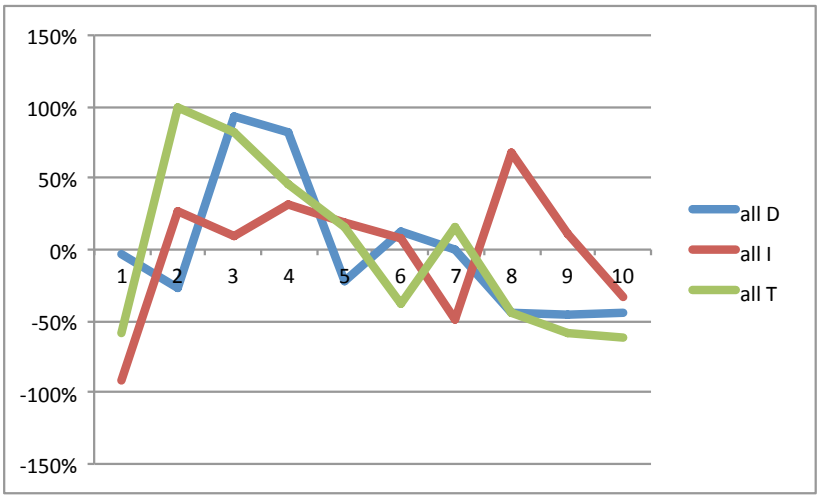
[2] Austria (AT), Belgium (BE), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Greece (GR), Hungary (HU), Iceland (IS), Lithuania (LT), Luxembourg (LU), Latvia (LV), Norway (NO), Poland (PL), Portugal (PT), Sweden (SE), Slovakia (SK), and the United Kingdom (UK)

Finally, relatively to the negative changes observed in the farm sector, it is necessary to emphasize that, between 2006 and 2011, three countries such as Austria, Germany and Luxembourg have seen an increase of the number of farmers in the first decile, in each level of urbanization considered.

5. CHANGES IN THE RURAL AREAS

If in section 4 we pay attention at the changes occurred in relation to the farm sector, in this section we wish to emphasize the changes in relation to rural areas. In particular, it is necessary to highlight that some positive or negative changes are related to the characteristic of the agricultural workers and to the role that they have in their home country, while others are related to the characteristics of the territory. In Figure 3 we can observe how a specific characteristic like the degree of urbanisation describe a different distribution of the individuals on the basis of income deciles. Figure 3 reflects a concept similar to that explained above for the previous Figures. The changes which occurred between 2006 and 2011 have been recorded and added up per decile so to calculate how many variations have occurred and in which direction. Therefore in the diagram the space ranges between -100 and + 100. The extreme values: a) 100 for the resident in thinly populated areas in the second poorest income group, and nearly 100 for the resident in densely populated areas reflects the fact that in many countries in these income groups variation were considerable and consistently went in the same direction, and b) -100 experienced by the resident in the intermediate areas for the first income group. The results depicted in Figure 3 show what kind of change has been more common and/or more intense per income group. The values obtained show that opposite changes affected the income groups: more similar for the densely and thinly populated areas than for the intermediate.

Figure 3: agricultural workers and non-agricultural workers (ISCO-88) EU per degree of urbanization in (2006-2011)



Source: own elaboration on EU-SILC 2006-2011
Legend: all-D: agricultural workers and non- agricultural workers in densely populated areas; all-I: agricultural workers and non-agricultural workers in intermediate areas in intermediate areas; all-T: agricultural workers and non-agricultural workers in thinly populated areas.

5.1. Positive

Through the analysis of rural areas (allT) it is possible to observe that, between 2006 and 2011, the percentage of individuals, agricultural workers and non-agricultural workers, in the first decile, was

significantly reduced. In particular we can note this evidence at intermediate areas and at thinly populated areas.

5.2. Negative

If we look at the richest decile, the minor reduction of individuals is that relating to the intermediate areas, while in other two categories we can observe and higher reduction. An additional element to emphasize is the increasing of the numbers of individuals in correspondence of the second poorest decile, in the rural areas. This two evidences put in light the existence of a general process of impoverishment that has affected most urban and rural areas. However, as we can see in figure 3, the changes between 2006 and 2011, have determined a concentration of the population, both agricultural workers and of the other, towards the poorest decile, at least for urban areas and rural areas.

6. CONCLUSIONS

The analysis carried out for the European countries for which EU-SILC data were available so far cannot definitively answer to the questions we endeavoured to scrutinize. In other words, the heterogeneity across countries is very high and a single model has not emerged. However, it does not seem to emerge that rural areas, nor farming activities were more resilient to the crisis. A tentative result could be that neither reside in rural areas nor in densely populated areas appears to be an advantage, the intermediate areas appear more resilient. As to the farm sector, a tentative conclusion is even harder, probably also due to the small percentages of farmers and agricultural workers.

There is still room to inquire and compare in a more subtle way.

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