SOCIETA' ITALIANA DEGLI ECONOMISTI

60.ma RIUNIONE SCIENTIFICA ANNUALE

Università di Palermo

24-26 Ottobre 2019

Economie, Idee e Politiche

OS by Associazione Italiana Economia Agraria Applicata (AIEAA): - Agricultural policies, farmer livelihood, environmental challenges and sustainable evidences

Conditional income differences between farm and non-farm households in the European Union and the role of the CAP direct payments: a panel analysis

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The format of the full paper shall follow the style of the European Review of Agricultural Economics. https://academic.oup.com/erae/pages/General_Instructions

Abstract

The present work aims to offer a longitudinal systematic assessment on the gap between farm and non-farm units in European Union using the EU-SILC dataset. We take into consideration farm households and compare them with the rest of the population and with a more restricted sample of self-employed households accounting for households' heterogeneity. Moreover, we offer a preliminary policy assessment on the role of the Common Agricultural Policy (CAP) in the income determination of farm households focusing on decoupled direct payments. Insights are drawn on whether the CAP is effective to "ensure a fair income to farmers" in terms of reducing or eliminating the gap with non-farm households.

Keywords: Agricultural Households, Income, Panel estimates, EU-SILC, European Union, Common Agricultural Policy

JEL Code: *D31, I31, Q12, Q18*

1. Introduction

In 2018, the European Commission proposed a set of amendments to the Common Agricultural Policy (CAP) but confirmed its political will to "*ensure a fair income to farmers*" by supporting agriculture. Government interventions in such direction has been historically justified, among other reasons, by the claim that the level of farm income is systematically lower than non-farm income (see Gardner 1992 for a systematic review). Nevertheless, the issue is controversial given that many recent studies have empirically found evidence that the income disparity between farm and non-farm comparison groups is disappearing over time (Mishra et al. 2002; Katchova 2008; Marshall and Peake 2009). While some researchers claim that this is due to the effectiveness of public interventions (Mishra and El-Osta 2008; Mishra et al., 2009), others instead point to more structural economic and social changes, including the increasing role of off-farm incomes (Ahearn 1986; Findeis and Reddy 1987; Mishra and Goodwin 1997; Mishra and Sandretto 2002). The latter phenomenon, in particular, motivates Hill's recommendation (Hill, 2012) to analyse the farm/non-farm income disparity having not the firm but the household as unit of analysis. Focusing on the income condition of farm households is puzzling considering that results may vary according to the definitions adopted of farm households and of the comparison group. Generally, two definitions of farm households (FH) are employed in the literature (United Nations. 2012): the *broad* definition includes all households having some farm income; the *narrow* definition refers only to those households whose farm income accounts for at least half of the whole household income. The comparison group, the non-farm households (NFH), may also vary ranging to all the rest of households in the population or to households living on self-employed incomes only. The latter comparison is motivated by the fact that farming is indeed a self-employed activity.

The income differential between FH and NFH has been studied mostly in the United States. Only few studies investigate the farm/non-farm income disparity in the European Union, despite a large share of the EU budget being used for the CAP that offers extensive support to EU farmers (de Frahan et al. 2017; Rocchi 2014; Stefani et al. 2012; Rocchi et al. 2018). For this reason, the present work offers a systematic EU-wide assessment of the income differential between the income of farm and non-farm households and answers the following three main research questions: Does a significant disparity in the income level between farm and non-farm households still exist in the EU after controlling for observable and unobservable characteristics? Does the level of income disparity depend on how farm households and control groups are defined? How do CAP decoupled direct payments affect income disparities between farm and non-farm households?

The analysis adds to the current literature in two ways. First, we tackle several empirical challenges affecting the estimation of the income disparity between farm/nonfarm unities. In particular, we achieve such aim by exploiting EU-SILC (EU Statistics on Income and Living Conditions), a longitudinal micro-level dataset representative of the European population. Through it, we are able to i) employ the household as unit of analysis; ii) create several comparison groups to represent non-farm households, since we rely on a general and not a sector survey; iii) go beyond monetary income by also considering sources of non-monetary income that may potentially affect the relative position of the farm population; iv) control for observed and unobserved heterogeneity, which may plague the analysis on income disparity between groups, through a fixed effect estimation with complex survey weights; v) develop the analysis not only on the whole EU, but also within the Old Member States and the New Member States, to control for differentials in terms of timing of the entry in the EU and for the fact that CAP is implemented differently in these two areas.

Second, the analysis assesses the role of the CAP in enhancing the income of EU farm households. The "first pillar" of the CAP provides a large amount of support directly going to EU farmers (Matthews, 2019) mostly by direct payments which are decoupled from production (DDP) and represent a relevant share of the farm income (European Commission 2011). A numerical simulation is developed to investigate what would happen to the income differential between farm and non-farm households if DDP

were deducted from the reported incomes. This allows insights to be drawn on whether a decrease of DDP would threaten the economic welfare of farm households. In particular, this provides empirical evidence on the current importance of DDP as a policy measure to support the income of agricultural households. This issue seems very relevant from a policy perspective, given that the Multiannual Financial Framework proposed by the European Commission in May 2018 proposes a reduction in the CAP budget and consequently of the DDP (European Commission, 2018).

The paper is organised as follows. Section 2 contains a brief review of the literature on the farm income disparity and the role of policy intervention. Section 3 proposes an empirical strategy to deal with some of the main challenges explained above. Section 4 presents the data and how farm and non-farm households are defined. Section 5 comments the results of our estimations. Some conclusions and suggestions for further studies get the paper to a close in Section 6.

2. Background on farm – non-farm income disparity and the role of CAP

Gardner (1992) sheds light on the "farm income problem" both from a theoretical and empirical perspective. With such expression, the literature generally refers to the fact that when one compares a farm with a non-farm unit, the former is more likely to be worse-off than the latter from a multidimensional perspective (e.g. income, expenditure, factor productivity). After showing the presence of a farm income problem, Gardner (1992), among others, has also pointed out that there has been a general convergence between farm and non-farm income levels around the late 1980s in the United States. In some cases, farm units result to be even richer than non-farm units. These findings have been confirmed by other studies (Mishra et al. 2002; El-Osta et al. 2007; Katchova, 2008; Marshall and Peake, 2009). A similar trend of convergence has been detected also in the European Union (EU) (e.g. Eurostat 2001; De Frahan et al. 2017) although the phenomenon has been much less analysed with respect to United States.[1]

Empirical analyses on the farm income problem have been plagued by several problems. First, there has been a certain disagreement on which farm units to consider (firm or households). Nevertheless, a consensus is emerging in recent years that the most suitable way to approach the farm/non-farm income disparity is to consider households, since they have a greater command over the consumption of goods and services, accumulate wealth and can adopt diversification strategies to cope with increasing instability and risks on the sector (Mishra et al. 2002; Hill 2012; Hill and Bradley 2015). Within this framework, the difference between the *broad* and the *narrow* definition of farm households has been stressed since it allows considering all households engaged in farming (including those who do not manage farming as primary economic activity) or only households "living on farming" (i.e. farm income being the main source of income) respectively. Moreover, to assess the income disparity, it is also important to specify which is the comparison group. The literature uses to compare farm households both with the whole population and/or with households which mainly derive their income from self-employed work (Mishra et al. 2002; Hopkins and Morehart 2004; Marshall and Peake 2009). The latter approach is motivated by the fact that farmers are indeed self-employed.

Second, farmers' wellbeing has been generally assessed using sector specific surveys (such as the Farm Accounting Data Network (FADN)) that do not allow assessing income disparity between farm and non-farm units. Today, general surveys are more often employed in this strand of the literature despite their well-known potential limitations: for example, the farm sample might not be entirely representative of the corresponding population; data on self-employment income might be inaccurate; information on farm benefits or land ownership are missing, comparability among countries might be constrained by the use of different accounting systems (Hill 1999, 2012; Hill and Bradley 2015). However, general surveys are so far the only tool to assess if farm households lag behind both the rest of the population and non-farm units living on self-employed income. These two comparisons shed light on two relevant and different policy issues (Mishra et al. 2002): in the first case, we look at social gaps between all households

[1] Some works however have analyzed the farm income problem in single countries of the European Union (Stefani et al., 2012; Rocchi et al. 2012).

somehow involved in farming, which is often considered a potential disadvantaged group, and the rest of the population; while in the second case, we consider how productivity gaps among sectors (agriculture vs. other industries) affect the relative welfare of households with a similar composition of income.

Third, methodologies to test differences between farm and non-farm units have generally relied on parametric and nonparametric tests (Katchova 2008; Marshall and Peake 2009; Mishra and Moss 2008) or simple regression analysis (El-Osta et al., 2007; Pender and Gebremedhin 2006). Despite the crucial importance of the above studies, some scholars have started to refine the empirical analysis by implementing quasi-experimental methods like matching techniques or Oaxaca-Blinder decomposition or longitudinal analysis (Stefani et al., 2012, De Frahan et al. 2017; Marino et al., 2018). These empirical strategies would allow facing some of the classical problems of the inter-sectorial wage gaps literature (e.g. public-private; formal-informal) like unobserved heterogeneity (Bargain and Kwenda, 2011; Nguyen et al., 2013; Lausev, 2014; Christopoulou and Monastiriotis, 2014; Hospido and Moral-Benito, 2016). In particular, while some characteristics affecting income might depend on observable variables, many other characteristics remain unobserved such as, motivations, attitudes, individual skills and productivity. This is relevant also in the case of farmers because these factors have been found to determine both income level and the decision of working in the agriculture sector (e.g.Gasson 1973; Gorton et al., 2008; Berkhout et al., 2010; Howley and Dillon 2012).

Finally, some scholars extend the empirical analysis to take into account the role of governments since public programmes provide income support to the farm sector, especially in developed countries (Oecd, 2003; Hill 2012). In the European Union, most of the support is provided by the CAP that nowadays pursues a large set of objectives because farmers are also asked to provide public goods related to the environment, biodiversity, climate and landscape features. However, ensuring "a fair income" to farmers is one of the Treaty's CAP objectives and remains among the nine specific objectives of the legislative proposal on the CAP beyond 2020 recently delivered by the European Commission (European Commission, 2018). Indeed, in the period of 2014-2020, the European Union has allocated around €45 billion per year to support farmers, €42 billion of which is through direct payments (European Commission, 2017).

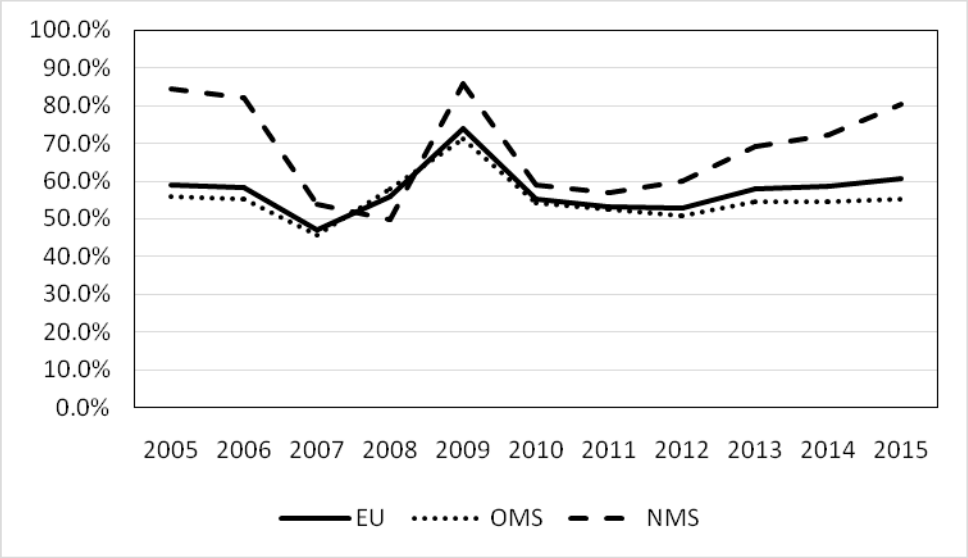
It is also important to stress that direct payments are distributed differently between EU Member States (MS). The 2003 CAP reform has decoupled a large share of CAP support from production introducing the single farm payment (SFP) and the Single Area Payment Scheme (SAPS). The SFP replaced most of the existing direct aid payments. Belgium, Denmark, Germany, Ireland, Italy, Luxembourg, Austria, Portugal, Sweden and the United Kingdom introduced the SFP in 2005, while Spain, France, the Netherlands, Finland and Greece introduced it one year later. The SAPS were designed for the new Member States (NMS) that joined the EU in 2004 or 2007, except for two countries (Malta and Slovenia). The SAPS provides a uniform level of payment for each unit of land available to farmers within each country. In these countries direct payments have been introduced according to a phasing-in schedule that has increased their levels up to 2013 (2015 in Bulgaria and Romania). Furthermore, with the aim of pursuing a more equitable distribution among Member States, starting from 2015, the levels of direct support per hectare have been progressively adjusted by means of the so-called *external convergence* mechanism (European Commission, 2018). This has determined a reduction of direct payments in MS whose direct payments was above the EU average and an increase in the other MS. Among the latter, we find those that have joined the EU more recently (i.e. the NMS) such as Estonia, Latvia, Lithuania, Romania, Bulgaria and Slovakia (European Commission, 2018). Hence, such policy decision is favouring this group of countries while negatively affecting the old Member States (OMS), on average.

The relative importance of direct support provided by CAP to individual farms in the EU can be evaluated using several sources of data including the Farm Accountancy Data Network (FADN)[2]

[2] Details on the FADN can be found at: http://ec.europa.eu/agriculture/rica/database/database_en.cfm (Accessed on April 2019).

(Matthews, 2019). Accordingly, the overall direct budget support (i.e. including not only direct payments but also the direct support from the Rural Development Policy measures, such as Agri Environmental or Less Favored Areas payments) accounts for around 60% of the Farm Net Income of EU farmers (Figure 1). Note that, since 2011, the importance of CAP has been increasing especially in the NMS as result of the pashing-in of direct payments and, later on, of the external convergence mechanism previously mentioned.

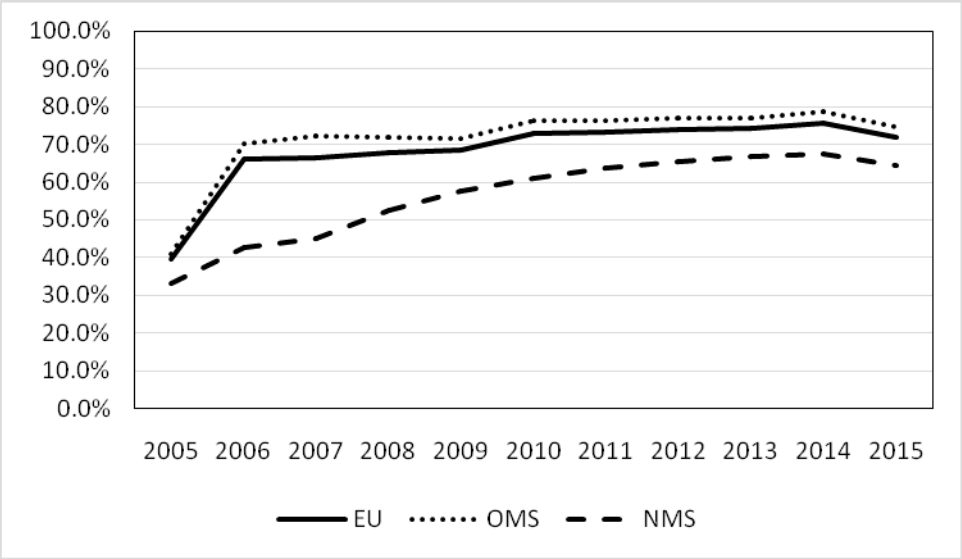
Figure 1: Importance of the overall direct support provided by CAP to individual farmers in comparison with their Farm Net Income.
Whole EU, Old Member States (OMS) and New Member States (NMS). Years 2005 - 2015.



Source: Own elaboration on FADN public database.

Most of the support is channelled through direct decoupled payments (DDP) that, according to FADN data, account for around 70% of the direct support provided by CAP to individual farmers (Figure 2). The role of DDP has increased with the 2003 CAP reform that has been gradually implemented in the EU up to 2015. Moreover, it has increased steadily especially in the NMS again because of the pashing-in of direct payments and the external convergence mechanism.

Figure 2: Importance of Decoupled Direct Payments (DDP) as a share of the overall direct budget support provided by CAP to individual farmers.
Whole EU, Old Member States (OMS) and New Member States (NMS). Years 2005 - 2015.



Source: Own elaboration on FADN public database.

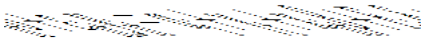
The above evidences provide a rational for focusing on DDP to assess the role of the CAP in ensuring a "fair income" to farmers, since such payments are most relevant policy measure aimed at enhancing farm income.

3. Methodology

The present Section describes our contribution in the estimation of the income differential between farm and non-farm units. As above stressed, we consider the household as unit of analysis . In so doing, we rely on EU-SILC, a dataset that has never been used for well-being comparison between farmers and non-farmers but it could serve our purpose. Moreover, the longitudinal nature of the EU-SILC dataset can be conveniently exploited also to control for unobserved heterogeneity that in such type of inter-sectorial analysis could bias estimates. Unobserved factors can affect both selection into the farm sector and income level (e.g.Gasson 1973; Gorton et al., 2008; Berkhout et al., 2010; Howley and Dillon 2012). For example, unobservable household preferences or constraints might determine the sorting of households into the farm sector. Similarly, unobserved household characteristics, such as personal skills, might affect incomes. These unmeasured factors may generate endogeneity issues in cross-sectional estimates resulting in biased estimates of the conditional income differences. We address this issue as in cognate literature estimating conditional income disparities (e.g. Bargain and Kwenda, 2011; Nguyen et al., 2013; Lausev, 2014; Christopoulou and Monastiriotis, 2014; Hospido and Moral-Benito, 2016), relying on fixed effect regressions and exploiting the rotating panel nature of the EU-SILC.[3]

More specifically, denote with y_{it} the income of households i at time t. We can estimate a standard Mincer income equation:

3 When fixed effects are employed, only time variant unobserved heterogeneity still affects estimates.



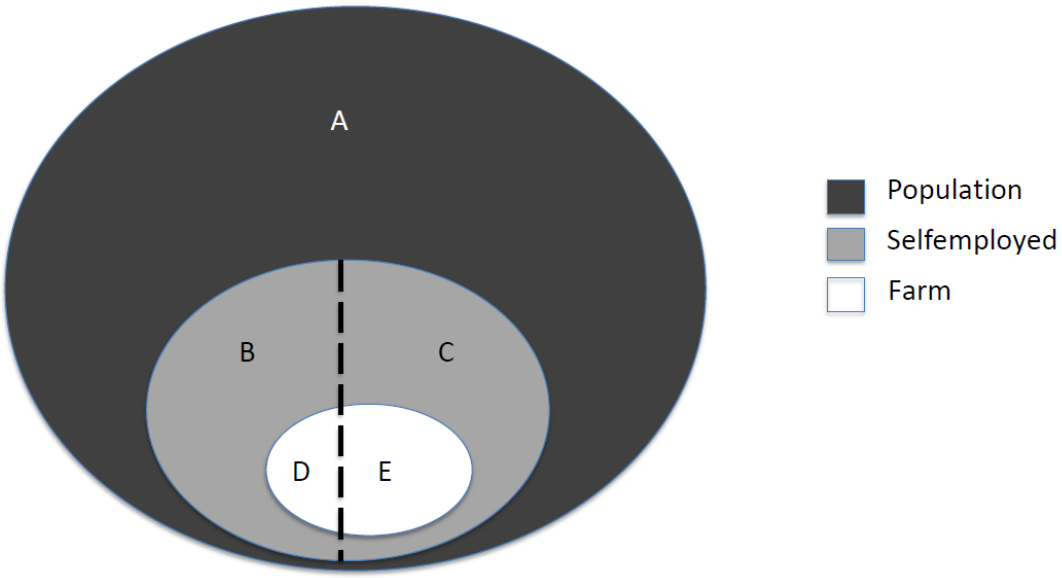
[1]

where α_i is the household fixed effect; γ_t are year fixed effects; x_{it} are the control variables, F_{it} represents a dummy taking value one if the *i*th observation at time *t* is a farm household and ε_{it} are idiosyncratic errors. The estimated coefficient δ on F_{it} is the focus of our analysis and quantifies the conditional income disparity between farm households (FH) and non-farm households (NFH), with the latter group representing our base category.

The interpretation of δ depends on the base category which is representing non-farm households. To better understand, Figure 3 shows how the sample of the entire population (black circle) is divided. Please note that within it, we first identify self-employed households, which have at least one self-employed member (grey circle). Then, inside this group, we identify farm households (FH), which have at least one member engaged in the agricultural sector (white circle). Note that the self-employed sample is divided by a dotted line, which separates households whose main source of income is coming from self-employed work (more than the half of the household income: B) from households which have at least one member working in the self-employed sector but not having self-employed income as the main source (D). In the case of the FH, such line allows to discriminate between broad (D+E) and narrow farm households (D) as previously defined. NFH are identified in different ways according to the sample employed (population or self-employed only) and the definition of FH (broad and narrow).

The empirical analysis refers to four models. Model I compares broad farm households (D+E) with a specific sample of the general non-farm population (A+B+C). Model II compares narrow farm households (D) with the general non-farm population but considers a slightly larger sample (A+B+C+E) including also households for which farming is only a secondary source of income. Finally, we restrict our attention to the self-employed sample only (grey circle) and estimate Model III that compares broad farm households (D+E) with non-farm self-employed households (B+C). Finally, Model IV compares narrow farm households (D) with non-farm households whose main source of income comes from self-employed work (B). Given that, according to the four models, the base category changes as well as the samples, it should now be clear that the estimated coefficient δ on F_{it} has a different meaning: in Model I and II it tells us how much (broad and narrow) farmers are better or worse off with respect to the general living standards of the society. In contrast, in Model III and IV, the coefficient δ provides an estimate of the income disparity between farm and self-employed households. Moreover, in Model IV, it can also be interpreted as pure sector effect provided that the comparison is between two groups including only households where (farm or non-farm) self-employed income is more than a half the overall household income.

Figure 3: Description of farm and non-farm households.
Groups defined according to different definitions of the sample and farm households.



To conclude, we also analyse the income disparity between farmers and non-farmers without state intervention. As such, we simulate a scenario where estimated CAP decoupled direct payments are detracted from the income of FH, as explained in the following Section. Equation (1) is again re-estimated according to the four models with the coefficient δ representing now the income disparity of the farm with respect to the non-farm households once CAP payments are excluded from farm income.

All regressions considered above account for complex survey design by estimating these through the inclusion of weights. Note that the failure to do so generally results in serious underestimation of standard errors (Kish 1995; Lohr 2000). Moreover, Kott (1991) shows that weighted estimates are more robust to omitted variable problems and to heteroscedasticity that normally characterises sample survey data. Since using simple weights does not help overcoming the problem of outliers, we also recalibrate weights adopting the Van Kerm's rule of thumb (Kerm and Philippe 2007) and using the approach proposed by Alfons and Templ (2013)[4]. Moreover, we take into account the problems of zero (or negative) values as well as the skewness of the distribution. We do so by using as the dependent variable the inverse hyperbolic sine (IHS) rather than the more traditional log of earnings because the former has the desirable property of being defined for zero incomes while the estimated coefficients can be interpreted in the same way as with a log transformed dependent (Burbidge et al., 1988).

Beside its many advantages, it is also important to stress the limits of fixed effects regression. In particular, it does not allow taking into account time-varying unobservables. However, assuming that most of the unobservable factors are time invariant (a reasonable assumption in the case of income differential), we believe it represents a good estimation strategy

[4] Outlier observations are detected against a fitted Pareto distribution of the variable of interest. The weights of non-representative outliers are set to 1 while the weights of the remaining observations are adjusted accordingly by calibration. To implement the recalibration of weights we used the R package *laeken*.

to estimate the income differences between farm and non-farm households.

4. Data

Our main data source is EU-SILC (EU Statistics on Income and Living Conditions), which is a micro-level dataset of a representative sample of the European population. It has a longitudinal design from 2004 to 2015 with a rotating structure that covers the same individuals over 4 years.

Despite the EU-SILC including all European countries, our analysis is limited to countries belonging to the European Union.[5] Before defining farm households, we need to identify who are the self-employed individuals since farm income is generated by self-employment work.[6] Among them, we look for those working in agriculture using the ISCO-88 classification used at EU-level to identify the individual main occupation.[7]

Once farmers are identified, the broad definition of farm households is created by selecting those households in which there is at least one farmer. The narrow definition considers farm households only those earning a total farm income that is at least the half of the total disposable household income.[8]

We report in Table 1 the number of observations and the population size represented.

Table 1 Sample size and represented households per group.
Farm households according to the broad and narrow definition

	Sample size		Represented households	
	Broad	Narrow	Broad	Narrow
Farm Households (FH)	43,516	15,344	65,708,939	22,243,826
Non-farm Households (NFH)	1,293,649	1,321,821	2,276,334,259	2,319,797,728
- of which:				
*Non-farm Self-employed (restricted sample)**	*136,156*	*67,510*	*258,289,473*	*132,083,756*

*Non-Farm self-employed narrow refers to only those where self-employed income is at least 50% of the whole household income.
Source: Own elaborations on EU SILC data.

[5] Because of data availability related to EU-SILC or important variables to define farm households which are missing, not all countries of the European Union are included. Our sample includes: Austria, Belgium, Bulgaria, Cyprus, Check Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Spain, Sweden, Slovakia and United Kingdom.

[6] We used the EU-SILC variables PL030 (before 2008) and PL031 (after 2008) to define self-employed individuals. In particular, those reporting to work as part-time and full time self-employed are considered.

[7] Among the self-employed, individuals are classified as farmer if they respond to variables PL050 (before 2011) and PL051 (after 2011) that they are Market-oriented Skilled Agricultural Workers (61); Subsistence Farmers, Fishers, Hunters and Gatherers (63) and Agricultural, Forestry and Fishery Labourers (92). Note that in the cross-section version of the data, additional information can be employed to identify farmers. In particular, we refer to the sector NACE (Rocchi et. al., 2018). However, the difference between farm statistics in the cross-section and in the longitudinal structure are negligible.

[8] The last figure, total disposable household income (variable HY020) is computed summing not only incomes, but also pensions, benefits and allowances.

The income dependent variable of (1) is the level of equivalised disposable income.[9]

Alternatively, we consider another definition of income which adds also the income deriving from non-monetary sources, namely the imputed rents from property or land and the in-kind incomes from self-consumption of produced goods. As it is standard in the literature on income differences across countries, the income variable is adjusted to take into account purchasing power parities (PPPs). More specifically, we consider the real values of the income variable from the price level indices and real expenditures for the European Standard of Accounts (ESA) (2010 aggregates -Eurostat).[10]

As the EU-SILC survey does not provide information on the amount of CAP decoupled direct payments (DDP), we constructed a proxy measurement using data on the average incidence of DDP on farm incomes taken from the FADN public dataset. In particular, we compute the share of DDP over the Net Farm Income (DDP/NFI). The latter is defined by the difference between Gross Farm Income, Wages and Rent paid, plus the balance of interests paid and received (European Commission, 2018). Such ratios are identified for each year and region and differentiated by classes of farm income.[11]

The potential value of DDP received by each observed farm households is computed by multiplying such ratios by the farm income earned by each household.[12] Once these values are computed, we detract them from our main two dependent variables, creating two new income dependent variables purged from DDP. Appendix (Table 3A and Table 4A) reports the means of the DDP/FNI coefficients and the ratio among the amount of DDP received by the households and their total income by year and definition of farm households.

Finally, to take into account observable heterogeneity, we include a standard set of controls generally employed among the determinants of household income (de Janvry et al. 2001; Mendola 2007; Becerril and Abdulai 2010). Some of them define the characteristics of the householder (age, age squared, education, marital status, gender, health)[13], while others define household's features (number of components and region of living).[14]

All dependent and independent variables average means are reported in Table 2.

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9 The variable refers to the total disposable household income divided by the equivalized household size (HX090). The equivalence scale used in the EU-SILC survey is equal to 1 for the reference person, 0.5 for other adult members (14 years old or elder) and 0.3 for members up to 13 years old.

[10] We take these data from the Eurostat statistics (http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=prc_ppp_ind&lang=en . Accessed on 14/05/2019.

[11] We used the dataset with standard results by region and economic size (EU typology). Within each region, the original size classes have been merged to create new classes defined by equal intervals of FNI. Regions in EU-SILC are classified according to NUTS2 so when using FADN regions, which are often not the same as EU-SILC, we had to merge some territorial units or re-arrange them in order to let them be comparable. The dataset of coefficients applied to EU-SILC data obtained after merges and re-arrangements is available upon request.

[12] Note that our estimates assume that the relative importance of DDP on farm income is homogeneously distributed among farms regardless their production orientations. While this is a safe assumption in many MSs, this may not be the case in those that applied the so-called historical mechanism of definition of payment entitlements (Matthews, 2019). However, to reduce potential errors, our approach accounts for possible differences in the relative importance of DDP among single regions and among farms with different size.

[13] The householder is defined using the following criteria: first, he/she must be responsible of the accommodation; second, if there are two responsible of the accommodation, the one earning the greatest income is considered; finally, if still no householder is identified, we consider the eldest.

14 We test for the presence of multicollinearity using the variance inflation factor, but we do not detect such problem in our data.

Table 2 Descriptive statistics and definition of dependent and independent variables. Whole sample. Means estimated by complex survey weights (Standard Errors in parentheses).

Variable name	Mean	Description
Dependent variables:		
Income	14388.64 [20.5362]	Real Equivalised Disposable household income
Extended income	16126.71 [21.2882]	Real Equivalised Disposable household income + inkind and imputed rent
Independent variables:		
agehead	50.7183 [0.0227]	Age of the household holder
eduhead	2.9637 [0.0019]	Education of the household holder: 0 =pre-primary education; 1 =primary education; 2= lower secondary education; 3 = (upper) secondary education; 4 = post-secondary non tertiary education5 = tertiary education
malehead	0.6117 [0.0006]	Sex of the household holder: 0=female; 1= male
healhead	1.5429 [0.0009]	Self-reported health of the household holder: 0=bad and very bad; 1=fair; 2= good and very good
marriedhead	0.5068 [0.0007]	Civil status of the household holder: 0=not married; 1= married
hhurbanization	1.8041 [0.0011]	Degree of urbanization: 1= densely populated area; 2 = intermediate area; 3 = thinly populated area
hhsize	1.7324 [0.0013]	Number of individuals living in the household (quintiles)

Source: Own elaborations on EU SILC data.

5. Results

5.1. Income levels and characteristics of the households

According to the raw (i.e. unadjusted) average income levels computed on the EU-SILC data, farm households are always worse-off than the other groups (Table 3). In particular, they have an income which is much below the half of the NFH group when considering the monetary income. However, when considering also the non-monetary incomes (Extended income), the situation relatively improves but farm households are still worse-off than NFH.

Table 3 Equivalised income levels in the whole EU sample (Euro).
Average mean estimated by complex survey weights (Standard Errors in parentheses).

	Broad			Narrow		
	Farm Households	Non-farm households		Farm Households	Non-farm households	
		All	Only SELF		All	Only SELF
Income	9403.182	17244.7	20800.35	10365.35	17094.8	21829.65
	(69.3875)	(19.4419)	(94.3415)	(133.0350)	(18.6655)	(138.2280)
Extended Income	10886.7200	19319.80	22936.74	12033.59	19166.09	24141.65
	(73.4139)	(19.8665)	(86.9076)	(140.9965)	(20.6443)	(178.9001)

Source: Own elaborations on EU SILC data.

The comparison of raw income means can be misleading because part of this gap might be due to differences in observable and unobservable characteristics of the households. Indeed, FH and NFH groups deeply differ when considering observable characteristics (Table 4). In particular, FH are less educated, are more likely to live in rural areas, have larger family size and it is more likely that the household head is male.

We test these differences and most of them are statistically significant.[15] We also test that there exist income differences stratified according to observable characteristics and type of households (farm and non-farm) and we do find that there is an income disparity statistically significative between these groups in almost all cases.[16]

Table 4 Mean of the independent variables by group estimated by using complex survey weights (Standard Errors in parentheses)

	Broad			**Narrow**		
	Farm households	Non-farm households		Farm households	Non-farm households	
		All	Only SELF		All	Only SELF
agehead	45.2886	50.8749	44.2678	45.7181	50.7662	44.7302
	(0.0892)	(0.0232)	(0.0474)	(0.1315)	(0.0228)	(0.0604)
eduhead	2.5676	2.9751	3.3069	2.4667	2.9685	3.1926
	(0.0076)	(0.0019)	(0.0055)	(0.0120)	(0.0019)	(0.0075)
malehead	0.7388	0.608	0.6992	0.8702	0.6092	0.7927
	(0.0029)	(0.0007)	(0.0019)	(0.0037)	(0.0007)	(0.0023)
healhead	1.6663	1.5393	1.7731	1.7197	1.5412	1.7704
	(0.0038)	(0.0009)	(0.0019)	(0.0060)	(0.0009)	(0.0027)
marriedhead	0.661	0.5024	0.6584	0.7092	0.5049	0.6657
	(0.0033)	(0.0007)	(0.0020)	(0.0057)	(0.0007)	(0.0028)
hhurbanization	2.7388	1.7771	1.7939	2.7489	1.795	1.8117
	(0.0041)	(0.0011)	(0.0033)	(0.0072)	(0.0011)	(0.0046)
hhsize	2.4618	1.7113	2.1511	2.3136	1.7268	2.0725
	(0.0080)	(0.0013)	(0.0043)	(0.0136)	(0.0013)	(0.0059)

Source: Own elaborations on EU SILC data.

[15]The only exception is when considering the difference in being married among broad farm and nonfarm self-employed households.

[16] Results of the tests are not reported for space reasons, but they are available upon requests to the authors. There is no statistically difference in income only when we consider narrow FH and NFH in the age of 66-80 years old and among the low educated.

5.2 Conditional farm/non-farm income differences

The presence of the above statistically significative differences suggests the importance of controlling for observables. However, as explained in the previous Section, it is also crucial to take unobservable (time invariant) characteristics of the households into account in order to get consistent estimates of the income differentials. In this Section, we consider our four model specifications with fixed effects regressions that estimate the coefficient δ in the sample of the whole population and in the sample of the self-employed households only.[17] Table A1 and A2 in the Appendix report the estimation results: most coefficients on the independent variables are with the expected sign and confirm the importance of variables such as the level of education or the health of the householder.

Table 5 reports only the coefficient of interest δ, in order to investigate the conditional farm/non-farm income differences. When considering broad FH, there is no income disparity between farm and all non-farm households (Model I). Such results confirm the hypothesis that, on average, farm households filled the income gap with the rest of society. Moreover, it confirms previous empirical findings going in such direction both in the US and other developed countries (Gardner 1992; Hill and Bradley 2015; De Frahan et al. 2017). The same result holds also when considering Model III, where broad farm households are compared with self-employed households only. Note that the finding of a convergence between broad FH and other households holds also when considering non-monetary sources of income.

Table 5. Income disparity between farm and non-farm households (δ coefficient in (1)). Broad and narrow definitions of Farm Households. Whole EU. (Standard Errors in parentheses)

	Farm Households vs. All Non-farm households		Farm Households vs. Non-farm Self-employed households	
	Broad (MODEL I)	Narrow (MODEL II)	Broad (MODEL III)	Narrow (MODEL IV)
Income	-0.0362	0.5584***	-0.0597	-0.1261**
	(0.0252)	(0.0563)	(0.0740)	(0.0562)
Extended Income	-0.0244	0.3815***	-0.0312	-0.1002***
	(0.0165)	(0.0475)	(0.0388)	(0.0370)

* p < 0.10, ** p < 0.05, *** p < 0.01.
Source: Own elaborations on EU SILC data.

When exploring the income disparity between narrow FH and non-farm households, the picture changes drastically. In particular, when narrow farm families are compared with the rest of the population (Model II), they are better-off on average. Such results are in line with Eurostat (2001) but partly contradict the last evidence in De Frahan et al. (2017), although the latter focuses on OECD countries only. The picture, however, turns to change again when focusing on the more restricted sample of the self-employed households (Model IV). In this case, narrow FH are worse-off than their counterpart. This holds also when considering non-monetary income,

[17] The Hausman test has been used to verify the assumption of the fixed effect model that time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics. If the error terms are correlated, then FE is no suitable and another model like random effects should be considered. We perform the test comparing fixed and random effects in all our specifications and in all our samples, and the null hypothesis that the errors are not correlated is always strongly rejected.

although the magnitude of the difference is reduced.

The comparison of narrow farm against non-farm self-employed households is quite unusual in the literature despite providing important insights. First, it reduces the differences in terms of observable characteristics and possibly unobservable characteristics related to the choice of a self-employed work. Moreover, it gives a much clearer picture on the difference in the returns between agriculture and other industries generating self-employed income (see, for example, Mishra et al. 2002; Marshall and Peake 2009 for similar works). In particular, Model IV reveals that a sectorial gap exists between agriculture and other sectors when the comparison is reduced to households living on self-employment. Rocchi (2014) finds a similar result for the Italian case and Mishra and Moss (2008) for the United States but considering consumption levels.

Nevertheless, the analysis reported so far refers to the whole EU sample. Disregarding differences among Member States can be misleading. For such reason, we distinguish between two groups of countries according to the time of entry in the European Union: New and Old member states (NMS and OMS). This is to capture potential differences in average income level, amount of CAP support and its implementation existing between these two groups of countries.

Table 6 reveals interesting differences when controlling for differences in the time of entry the EU. In the case of broad farm households the results obtained at the European level are confirmed only for OMS while in NMS farm households show a negative income gap, both when compared to the whole population (Model I) and to self-employed households only (Model III). Conversely, results obtained for models II and IV at the European level are on the whole confirmed both in the NMS and OMS. Narrow FH are better-off than the rest of the whole population (Model II) in the two groups of countries. In the comparison with self-employed households only (Model IV), however, we find a negative income gap between FH and NFH but with less striking statistical evidence: the *p* value for the δ coefficient is under 0.05 only for OMS and in the case of the comparison of incomes extended to non-monetary components.

Table 6 Income disparity between farm and non-farm households (δ coefficient in (1)). Broad and narrow definitions of Farm Households. New and Old Member States (Standard Errors in parentheses)

	Farm Households vs. All Non-farm households		Farm Households vs. Non-farm Self-employed households	
	Broad (MODEL I)	Narrow (MODEL II)	Broad (MODEL III)	Narrow (MODEL IV)
	New Member States			
Income	-0.0608***	0.3021***	-0.0878**	-0.0832*
	(0.0185)	(0.0262)	(0.0432)	(0.0444)
Extended Income	-0.0482***	0.2118***	-0.0789**	-0.0654*
	(0.0159)	(0.0205)	(0.0400)	(0.0395)
	Old Member States			
Income	-0.0260	0.7507***	-0.0601	-0.1480*
	(0.0424)	(0.0970)	(0.1020)	(0.0885)
Extended Income	-0.0164	0.5046***	-0.0214	-0.1220**
	(0.0266)	(0.0823)	(0.0518)	(0.0546)

* p < 0.10, ** p < 0.05, *** p < 0.01.
Source: Own elaborations on EU SILC data.

To conclude, the above results highlight that broad farm households are worse-off than the general standard in the population only in the NMS: this suggests that families who, to some extent, rely on farming income, in these countries are still disadvantaged, even if a not negligible share of their income comes from off-farm activities. A different picture emerges when considering narrow farm households. Both in NMS or OMS, families mainly living on agricultures have a positive and strongly significative advantage with respect to the rest of the population (including households for which farming is only a secondary source of income).

When farm households are compared only with self-employed households, we find again a different situation in the two groups of countries in the case of broad FH, with a negative income gap present in NMS only. Conversely, a clear statistical evidence of the existence of a negative income gap between narrow farm households and their self-employed counterpart is present only for OMS and when also non-monetary sources of income are taken into account.

5.3 Role of CAP decoupled direct payments

The present Section repeats the above estimation but changing the dependent variable in (1) to simulate a scenario without Direct Decoupled Payments (DDP). In order to show in which way, these policy measure affect farm income, we report in Table 7 the (broad and narrow) farm household income and extended income before and after the elimination of the DDP. We also report the share of direct payments on the income figure to offer a quick evidence of their impact on our data. Note that their impact is larger when considering the narrow definition of farm households with respect to broad one, since the former group earn a larger share of farm income than the latter. Moreover, there is no great difference between New and Old MS unless we consider the broad definition, where the direct payments have a greater impact in the OMS.

Table 7 Farm Household income before and after the elimination of the DDP. Broad and narrow definitions of Farm Households. EU, New and Old Member States. (Standard Errors in parentheses)

	EU		New Member States		Old Member States	
	Broad	Narrow	Broad	Narrow	Broad	Narrow
Income	9 403.18	10 365.35	4 826.94	5 113.26	15 197.74	15 648.87
	(69.3875)	(133.0350)	(32.9485)	(74.6046)	(125.5610)	(214.4507)
Income excluding DDP	8 317.20	8 107.87	4 385.34	3 995.63	13 295.84	12 244.72
	(60.9996)	(106.8453)	(28.9789)	(54.4414)	(113.3262)	(180.0451)
DDP/Income	*13.1%*	*27.8%*	*10.1%*	*28.0%*	*14.3%*	*27.8%*
Extended Income	10 886.72	12 033.59	5 897.92	6304.277	17 203.67	17797.18
	(73.4139)	(140.9965)	(37.1341)	(84.9953)	(130.1122)	(222.6760)
Extend. Inc. excluding DDP	9 823.41	9 813.91	5 458.64	5 189.44	15 350.20	14 466.04
	(64.8724)	(114.2448)	(32.9355)	(64.8002)	(117.3953)	(186.6541)
DDP/Extended income	*10.8%*	*22.6%*	*8.0%*	*21.5%*	*12.1%*	*23.0%*

Source: Own elaborations on EU-SILC and FADN data.

Finally, Table 8 reports the same coefficients discussed in Section 5.2 but now considering incomes net of DDP. The estimated coefficients highlight important results for policy consideration. First, when considering broad FH, in all specifications, subtracting DDP would cause farm households to experience a drop in income level generating a significant increase of the income disparity with respect to all other groups (both the rest of the population and self-employed households only, Model I and III). This is true both when considering the European average and NMS and OMS separately.

When instead we restrict the sample and turn to narrow farm households only, they are still better-off than the rest of the population even without DDP (Model II) both in NMS and OMS. This is a relevant and unexpected result given the relative importance of farm income and, within it, of DDP.

Finally, considering Model IV, the elimination of DDP would negatively affect the relative position of narrow FH in comparison with the reference group of other self-employed households.

Table 8 Income disparity between farm and non-farm households (δ coefficient in [1]) Income net of CAP decoupled direct payments. Whole EU and New and Old member states (Standard Errors in parentheses)

	Farm Households vs. All Non-farm households		Farm Households vs. Non-farm Self-employed households	
	Broad (MODEL I)	Narrow (MODEL II)	Broad (MODEL III)	Narrow (MODEL IV)
	Whole EU			
Income (No Ddp)	-0.1387***	0.2999***	-0.2083***	-0.4163***
	(0.0262)	(0.0581)	(0.0776)	(0.0771)
Extended Income (No Ddp)	-0.1027***	0.1859***	-0.1407***	-0.3155***
	(0.0171)	(0.0488)	(0.0416)	(0.0599)
	New Member States			
Income (No Ddp)	-0.1580***	0.1132***	-0.2000***	-0.2678***
	(0.0207)	(0.0310)	(0.0448)	(0.0496)
Extended Income (No Ddp)	-0.1144***	0.0792***	-0.1659***	-0.2047***
	(0.0168)	(0.0226)	(0.0409)	(0.0412)
	Old Member States			
Income (No Ddp)	-0.1319***	0.4382***	-0.2216**	-0.4962***
	(0.0436)	(0.0995)	(0.1066)	(0.1229)
Extended Income (No Ddp)	-0.1034***	0.2607***	-0.1388**	-0.3815***
	(0.0274)	(0.0842)	(0.0557)	(0.0949)

* p < 0.10, ** p < 0.05, *** p < 0.01.
Source: Own elaborations on EU SILC data.

6. Conclusions

The present analysis has evaluated the income disparity between farm and non-farm households in the European Union using data from the European Union Survey on Incomes and Living Conditions (EU-SILC) in the period 2004-2016. In comparison with previous studies, the analysis refers to the whole EU as well as to two sub-groups of countries (Old and New Member States), identifies farm and non-farm households according to different criteria and considers not only monetary income but also nonmonetary sources of income. Furthermore, differing from previous studies referring to the EU, the use of EU-SILC data allowed to condition the estimates of the income disparity to differences both in observables and unobservable characteristics of households that are likely to affect the income level.

The results answer to the research questions that motivated our analysis. First of all, the analysis shows that the level of income disparity depends on how farm households and control groups are defined. According to our results, on average at the whole Europe level, farmers can no longer be considered as a homogeneous social group and a relevant difference exists between

broad and *narrow* farm households. When considering the broad definition, we confirm the elimination of the income gap between farm households and the rest of the non-farm population in the European Union, including the restricted sample of self-employed households only. In other words, once the observable and unobservable characteristics of families that are likely to affect the income level are controlled, farm households show an average income level comparable with the rest of the population. These results show that simple comparisons of raw income means between groups could be misleading because of different characteristics among the groups considered in the analysis. In general, the result extends to Europe what has been already observed in the USA and confirms the partial evidence of a substantial reduction of the farm/non-farm income gap found by previous studies in the European Union. Furthermore, when considering the narrow definition of farm households, we find that they have an average income level above the total population conditional average, even though below the average income self-employed families.

Second, some countries differences are important to really have the last word on the conditional income differential between farm and non-farm households. In particular, *broad* farm households on average experience a disadvantage with respect to the rest of the population when considering only countries that accessed the EU more recently, where the CAP has been introduced only starting from 2005. When considering the *narrow* farm households compared with non-farm families for which self-employed income is the main (i.e. >50%) source of income, the negative gap found at the European level is confirmed only in the Old Member States when also the non-monetary sources of income are considered.

A further policy relevant result of the analysis refers to how CAP decoupled direct payments affect income disparities between farm and non-farm households. Such payments still represent an essential measure for ensuring to *broad* farm households an income level comparable with that of the rest of the population. The elimination of direct payments would reduce the income of these households resulting in a negative income gap between *broad* farm households both in the New and Old Member States and whatever the measure of income considered (with and without non-monetary incomes). The current design of the policy, however, shows a relevant problem of targeting. In fact, in contrast with the case of *broad* farm households, *narrow* farm households would still be better-off than the rest of the population, even after a hypothetical elimination of such payments. At the same time, the current CAP framework seems unable to fill the income gap between farmers (both *broad* and *narrow*) and their self-employed counterpart. Being self-employed in agriculture instead of in other industries still represents a relative disadvantage across the EU countries.

The results of the analysis allow to draw relevant policy implications. First, a generalised disparity in the income level between broad farm and non-farm households does not exist anymore in the EU after controlling for observable and unobservable characteristics. Our findings suggest that the main goal of CAP is achieved but with a relevant problem of targeting provided that the support of the income of *broad* farm households (including also families for which farming is only a secondary source of income) seems achieved at the cost of generating an income advantage to the richer, *narrow* farm families. Accordingly, it seems that the current policy should be better targeted to reach equity goals at a lower cost. By contrast, the negative income differential existing between farmers and the non-farm self-employed households at the European Union level seems to justify policies aiming at filling the efficiency gaps negatively affecting the income of self-employed labour in agriculture. These results raise a question about the link between the intended nature of CAP direct payments and the coherence between policy

goals and design. The separation of the "efficiency" and "equity" goals may help the design of better targeted "socially-driven" direct payments.

To conclude, the analysis presented here shows some limitations that are worth being highlighted. EU-SILC is a survey representative of the totality of households in the EU but farm households represent only a limited group. Consequently, it may be under-represented in the sample or biased towards households for which farming is only a secondary source of income (United Nations 2012: 588). This suggests our results should be considered only as preliminary evidence which needs to be confirmed by further analysis on more reliable data, when available. A further limitation refers to CAP payments. In fact, this part of the analysis is based on figures derived by the FADN public database that, even if accounting for differences among regions and farm size, may not correctly represent the actual situation of every single household. Again, the future availability of harmonised and reliable information on the total income and its different components of representative sample of agricultural households (Hill et al. 2015: 102) as in the case of the ARMS dataset produced by the US Department of Agriculture, may allow a robust verification on our results. Finally, our analysis focuses on average values only. However, the use of alternative definitions of the farm households (*broad* vs. *narrow*) and the comparison with alternative groups of non-farm households (whole population vs. self-employed households only) shows that considering the heterogeneity existing within the population can provide policy-relevant insights. Future extensions, aimed at exploring the whole distribution of the sample could provide additional insights on equity and targeting issues that should be addressed when supporting agricultural incomes.

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Appendix

Table A1. Fixed effect regression with complex survey weights.
Dependent variable: INCOME.
Whole European Union(Standard Errors in parentheses)

	Farm Households vs. All Non-farm households		Farm Households vs. Non-farm Self-employed households	
	Broad (MODEL I)	Narrow (MODEL II)	Broad (MODEL III)	Narrow (MODEL IV)
farm	-0.0362	0.5584***	-0.0597	-0.1261**
	(0.0252)	(0.0563)	(0.0740)	(0.0562)
agehead	-0.0018	-0.0028	0.0441***	0.0101
	(0.0019)	(0.0019)	(0.0088)	(0.0113)
agehead2	-0.0000**	-0.0000*	-0.0005***	-0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0001)
educhead	0.0199***	0.0207***	-0.0088	0.0116
	(0.0050)	(0.0050)	(0.0227)	(0.0194)
malehead	0.1804***	0.1770***	0.3471***	0.0890*
	(0.0088)	(0.0088)	(0.0311)	(0.0474)
healhead	0.0115***	0.0111***	0.0304	0.0234
	(0.0041)	(0.0041)	(0.0229)	(0.0191)
marriedhead	0.0787***	0.0778***	0.0053	-0.0297
	(0.0126)	(0.0126)	(0.0508)	(0.0500)
hhurbanisation	0.0163*	0.0162*	0.1214*	0.0131
	(0.0090)	(0.0090)	(0.0633)	(0.0414)
hhsize	-0.0069	-0.0059	-0.0095	-0.0597***
	(0.0066)	(0.0066)	(0.0232)	(0.0153)
years dummies	yes	yes	yes	yes
Observations	1,337,181	1,337,181	179,673	82,854

Source: Own elaborations on EU SILC data.

Table A2. Fixed effect regression with complex survey weights.
Dependent variable: EXTENDED INCOME
Whole European Union(Standard Errors in parentheses)

	Farm Households vs. All Non-farm households		Farm Households vs. Non-farm Self-employed households	
	Broad (MODEL I)	Narrow (MODEL II)	Broad (MODEL III)	Narrow (MODEL IV)
farm	-0.0244	0.3815***	-0.0312	-0.1002***
	(0.0165)	(0.0475)	(0.0388)	(0.0370)
agehead	0.0013	0.0006	0.0307***	0.0044
	(0.0014)	(0.0014)	(0.0067)	(0.0097)
agehead2	-0.0001***	-0.0001***	-0.0003***	-0.0000
	(0.0000)	(0.0000)	(0.0001)	(0.0001)
educhead	0.0143***	0.0148***	-0.0190	0.0076
	(0.0042)	(0.0042)	(0.0205)	(0.0179)
malehead	0.1488***	0.1465***	0.2840***	0.0850**
	(0.0069)	(0.0069)	(0.0266)	(0.0433)
healhead	0.0105***	0.0102***	0.0334*	0.0200
	(0.0032)	(0.0032)	(0.0201)	(0.0171)
marriedhead	0.0274***	0.0268***	-0.0026	-0.0075
	(0.0097)	(0.0097)	(0.0401)	(0.0431)
hhurbanisation	0.0092	0.0092	0.0985	0.0002
	(0.0080)	(0.0079)	(0.0610)	(0.0361)
hhsize	-0.0382***	-0.0376***	-0.0409**	-0.0890***
	(0.0057)	(0.0057)	(0.0196)	(0.0125)
years dummies	yes	yes	yes	yes
Observations	1,337,181	1,337,181	179,673	82,854

Source: Own elaborations on EU SILC data.

Table 3A. Relative incidence of CAP decoupled direct payments on farm income (DDP/FNI)
Broad and narrow definition of farm households.
2005-2015 - Whole EU and groups of Member States.

	Broad Farm Households		Narrow Farm Households	
	Mean	Std. Err.	Mean	Std. Err.
		Whole EU		
2005	0.2292	0.0056	0.2451	0.0100
2006	0.1942	0.0027	0.2021	0.0051
2007	0.2028	0.0042	0.2211	0.0060
2008	0.2761	0.0042	0.2916	0.0069
2009	0.2338	0.0026	0.2444	0.0049
2010	0.2386	0.0022	0.2506	0.0039
2011	0.2445	0.0026	0.2589	0.0046
2012	0.3038	0.0035	0.3005	0.0061
2013	0.2983	0.0041	0.2967	0.0065
2014	0.2882	0.0042	0.3081	0.0081
2015	0.3020	0.0054	0.3099	0.0107
		New Member States		
2005	0.1188	0.0025	0.1191	0.0038
2006	0.1094	0.0012	0.1140	0.0022
2007	0.1203	0.0010	0.1310	0.0025
2008	0.2252	0.0025	0.2460	0.0054
2009	0.1864	0.0021	0.2080	0.0053
2010	0.2146	0.0017	0.2378	0.0037
2011	0.2114	0.0019	0.2356	0.0038
2012	0.2743	0.0024	0.2748	0.0045
2013	0.2752	0.0025	0.2710	0.0048
2014	0.2677	0.0028	0.2706	0.0042
2015	0.3081	0.0037	0.2974	0.0060
		Old Member States		
2005	0.3036	0.0083	0.3079	0.0135
2006	0.2555	0.0038	0.2485	0.0068
2007	0.3028	0.0082	0.2992	0.0099
2008	0.3443	0.0087	0.3401	0.0123
2009	0.3078	0.0047	0.2885	0.0074
2010	0.2761	0.0045	0.2675	0.0076
2011	0.2935	0.0053	0.2856	0.0084
2012	0.3476	0.0072	0.3319	0.0119
2013	0.3340	0.0093	0.3300	0.0129
2014	0.3215	0.0094	0.3561	0.0157
2015	0.2923	0.0129	0.3274	0.0236

Source: Own elaborations on EU SILC and FADN data.

Table 4A. Relative incidence of CAP decoupled direct payments on the whole farm household income (DDP/FHI).
Broad and narrow definition of farm households.
2005-2015 - Whole EU and groups of Member States.

	Broad Farm Households		Narrow Farm Households	
	Mean	Std. Err.	Mean	Std. Err.
		Whole EU		
2005	0.1034	0.0055	0.2139	0.0142
2006	0.0794	0.0023	0.1663	0.0048
2007	0.0829	0.0026	0.1849	0.0067
2008	0.1103	0.0032	0.2378	0.0067
2009	0.1274	0.0298	0.3025	0.0911
2010	0.0998	0.0023	0.2160	0.0047
2011	0.1058	0.0028	0.2211	0.0057
2012	0.1255	0.0030	0.2479	0.0053
2013	0.1256	0.0035	0.2484	0.0062
2014	0.1468	0.0097	0.2992	0.0242
2015	0.1344	0.0056	0.2587	0.0081
		New Member States		
2005	0.0437	0.0019	0.1020	0.0041
2006	0.0381	0.0014	0.0938	0.0027
2007	0.0458	0.0013	0.1085	0.0028
2008	0.0862	0.0030	0.1980	0.0052
2009	0.1250	0.0488	0.3496	0.1662
2010	0.0885	0.0024	0.2059	0.0050
2011	0.0910	0.0025	0.2040	0.0046
2012	0.1104	0.0028	0.2293	0.0048
2013	0.1115	0.0033	0.2314	0.0058
2014	0.1130	0.0037	0.2332	0.0049
2015	0.1301	0.0057	0.2577	0.0068
		Old Member States		
2005	0.1437	0.0089	0.2698	0.0203
2006	0.1095	0.0036	0.2044	0.0066
2007	0.1279	0.0054	0.2509	0.0115
2008	0.1427	0.0060	0.2803	0.0121
2009	0.1311	0.0051	0.2455	0.0091
2010	0.1174	0.0044	0.2294	0.0087
2011	0.1275	0.0058	0.2407	0.0108
2012	0.1478	0.0060	0.2707	0.0100
2013	0.1476	0.0071	0.2705	0.0118
2014	0.2016	0.0245	0.3839	0.0544
2015	0.1411	0.0111	0.2602	0.0169

Source: Own elaborations on EU SILC and FADN data.