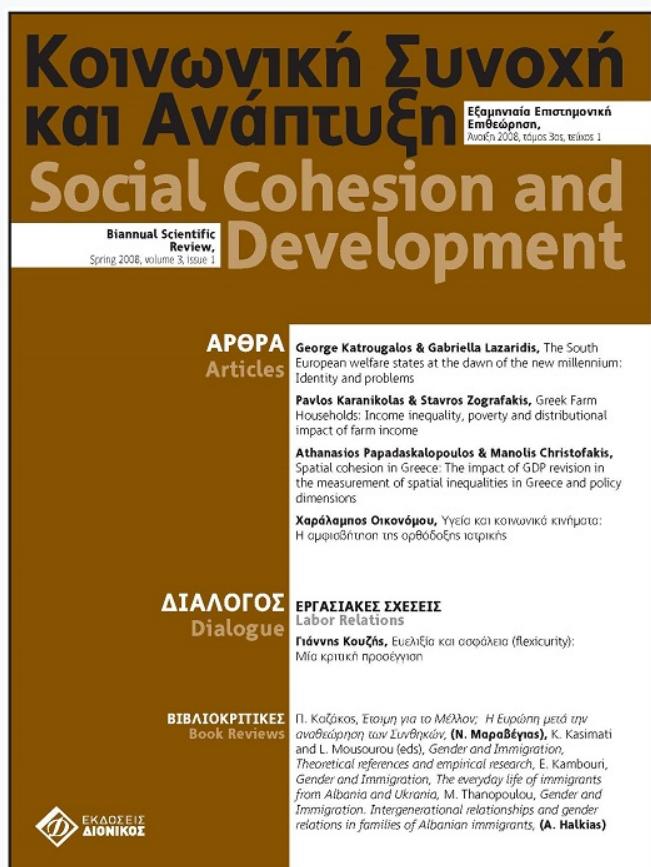


## Social Cohesion and Development

Vol 3, No 1 (2008)



**Κοινωνική Συνοχή και Ανάπτυξη**  
**Social Cohesion and Development**

Biannual Scientific Review, Spring 2008, volume 3, issue 1

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ΕΚΔΟΣΕΙΣ ΑΙΓΑΙΝΙΚΟΣ

**Greek farm households: income inequality, poverty and distributional impact of farm income**

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doi: [10.12681/scad.8898](https://doi.org/10.12681/scad.8898)

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### To cite this article:

Karanikolas, P., & Zografakis, S. (2016). Greek farm households: income inequality, poverty and distributional impact of farm income. *Social Cohesion and Development*, 3(1), 27–44. <https://doi.org/10.12681/scad.8898>

# **Greek farm households: Income inequality, poverty and distributional impact of farm income**

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## **Ελληνικά αγροτικά νοικοκυριά: Εισοδηματικές ανισότητες, φτώχεια και διανεμητικές επιπτώσεις του γεωργικού εισοδήματος**

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### **ABSTRACT**

This paper examines the incidence of income inequality and poverty, and the impact of farm income on inequality. A detailed typology of farm households (FHs) is developed, based on Household Budget Survey micro-data. Research findings reveal enormous variations among households with respect to income inequality and poverty. While Marginal- and Pluriactive- FHs do not seem to have an income problem, this is not the case for Farm Households. Poverty is a widespread phenomenon among Retired FHs. Farm income and non-farm income generate a combined stabilization effect, mitigating the overall inequality within households. Policy implications of these findings are discussed in the context of welfare aspects of agricultural policy.

### **ΠΕΡΙΛΗΨΗ**

Η εργασία αυτή εξετάζει τις εισοδηματικές ανισότητες και τη φτώχεια μεταξύ των αγροτικών νοικοκυριών, καθώς και την επίδραση του γεωργικού εισοδήματος στην εισοδηματική ανισότητα. Αναπτύσσεται μια λεπτομερής τυπολογία των αγροτικών νοικοκυριών (AN) βάσει των μικροοικονομικών δεδομένων της Έρευνας Οικογενειακών Προϋπολογισμών. Τα αποτελέσματα δείχνουν πολύ σημαντικές διαφοροποιήσεις μεταξύ των νοικοκυριών. Ενώ τα Οριακά και τα Πολυαπασχολούμενα Αγροτικά Νοικοκυριά δεν φαίνεται να αντιμετωπίζουν εισοδηματικό πρόβλημα, δεν συμβαίνει το ίδιο και για τα «κατ' εξοχήν» Αγροτικά Νοικοκυριά. Η φτώχεια είναι ιδιαίτερα διαδεδομένη μεταξύ των νοικοκυριών με αρχηγό συνταξιούχο του ΟΓΑ. Το γεωργικό, μαζί με το εξωγεωργικό εισόδημα, δημιουργούν ένα συνδυασμένο σταθεροποιητικό αποτέλεσμα, μετριάζοντας τη συνολική ανισότητα εντός των νοικοκυριών. Στο άρθρο, συζητούνται επίσης οι επιπτώσεις των ευρημάτων αυτών για την άσκηση πολιτικής, στο πλαίσιο της «κοινωνικής» πτυχής της αγροτικής πολιτικής.

**KEY WORDS:** farm households, income inequality, poverty, distributional impact

**ΛΕΞΕΙΣ-ΚΛΕΙΔΙΑ:** Αγροτικά νοικοκυριά, εισοδηματικές ανισότητες, φτώχεια, διανεμητικές επιπτώσεις

## **1. Introduction**

Income inequality is typically defined as inequality of welfare distribution, which is usually approached through current consumption and/or current income. Many empirical studies of economic

inequality have been conducted at the level of various socio-professional groups of population, among which, farmers are a distinct case, due to the special features of agriculture. The incomes of farmers and their households have been a prime concern of both academic and wider public discourse for quite a long time.

Agricultural activities may be practised on a full-time, seasonal or part-time basis. Hence, the notion of an agricultural household is a multifaceted one, since many households depend on agriculture for their livelihoods, though at a varying degree. Thus, income-related matters in agriculture have never been one-dimensional, as the basic unit of analysis in agriculture – the farm operation – is intertwined with consumption and social units (the farm household and farm family, respectively). This complex situation necessitates a measurement of household members' income which will cover the return from farming, as well as from any other activity (self-employment or waged), social transfers, pensions, etc.

It has been sufficiently documented in the literature that inequalities within agriculture surpass inequalities among non-agricultural households. Also, agricultural inequalities and poverty differ structurally from those in the rest of society (Pauw, 2007; Commins, 2004; Frawley *et al.*, 2000). Taking into consideration, not just farming but all income sources available to farm household members, noteworthy intra-household variations are revealed. For example, Mishra and Sandretto (2002) examining the US agricultural sector from 1933 to 1999, find that the variability in real net farm income has not diminished and that non-farm income has contributed to the reduction of variability in total farm household income.

Farm income also constitutes the main element of the famous 'farm problem', in the sense that, firstly, income from farming lags persistently behind the income generated by the other sectors of the economy and secondly, it presents a remarkable temporal and spatial variation (Gardner, 1992). These two factors render farm households one of the most vulnerable and low-income groups in society (Hill, 1999; 2000). The elimination of this income gap between persons employed in agriculture and in other gainful activities has been the focal point of agricultural policies in developed countries for the most part of the 20<sup>th</sup> century (Schmitt and Boruse, 1996; OECD, 1987).

Thus far, farm households are considered a rather homogeneous category in the relevant literature, usually being compared with non-farm households. Consequently, the multiple forms of agriculture's integration with the (farm) household, as well as intra-farm household characteristics and differences, are insufficiently depicted. Furthermore, any aggregate analysis tends to obscure serious distributional issues, such as the distribution of income within agriculture (Sarris and Zografakis, 1996). Also, an examination of farm households in an undifferentiated manner does not facilitate an evaluation of likely impacts of various policy measures at the holding/household level. This is especially relevant now, given the profound changes in Common Agricultural Policy (CAP) and the renewed interest in the welfare aspect of CAP. This aspect, once expressed through the objective of ensuring 'a fair standard of living for the agricultural community', is an evergreen topic, as unequal distribution of incomes and subsidies in agriculture are continuously considered an essential reason for CAP's reduced effectiveness (Fennel, 1997).

In this context of farm and non-farm income interplay, critical issues arise, concerning the income levels achieved by farm households, the incidence of low income and poverty among them, the income and welfare inequalities within the agricultural sector and within farm households, the identification of specific groups of farmers or farm households who don't have a real income problem, etc.

This paper aims, firstly, at identifying income inequality and poverty incidence in Greek households. Secondly, critical distributional issues are explored, such as the contribution of farm and non-farm income in the overall inequality of households. Households are classified according to their relation to agriculture, on the basis of the professional status of the head of the household and the contribution of agriculture to family income. Consequently, four different types of farm households are discerned, which are then compared with non-farm households.

This study is comprised of five parts. Part 2 briefly reviews previous studies on income inequality and poverty in Greek farm households. In the 3<sup>rd</sup> part, the data source and methodology are outlined, including the creation of a typology of households which is used in the remainder of the study. The results then follow, referring to income inequalities, the distributional effects of farm income and the decomposition of inequality and poverty. Part 5 concludes by summarizing the results and discussing some of their policy implications.

## 2. Income inequality and poverty in Greek farm households

**M**ost of the evidence on income disparities and poverty in Greece emanate from Household Budget Surveys (HBS) data. Mitrakos and Tsakloglou (2003; 2006) found that in relative terms, inequality and poverty declined significantly between 1974 and 1982 whereas the changes in the period after 1982 were smaller in size and, sometimes, contradictory. In absolute terms, poverty declined substantially between 1974 and 1982 and, most probably, this change continued after 1982 too, but at a much slower rate.

According to Sarris and Zografakis (1996) income distribution within farm households is much more skewed compared with income distribution of non-farm households, and this pattern does not seem to change over time. Some other interesting findings indicate that the bulk of inequality in Greece is due to disparities within, rather than between, groups, even when the population is grouped into a large number of small homogeneous groups (Mitrakos and Tsakloglou, 1998). The same conclusion is drawn in the case of farm households, when they are grouped according to various criteria, such as place of residence, age, household size, educational qualifications etc. (Mitrakos and Sarris, 2003). Moreover, employment in the agricultural sector, along with old age, residence in rural areas, low educational qualifications and, to a lesser extent, lack of employment have been identified as closely associated with acute poverty. This conclusion is drawn irrespective of the welfare indicator, the level of the poverty line, or the size of the equivalence scales used in the analysis (Tsakloglou and Panopoulou, 1998).

It ensues then, from all available HBS, that farm households in Greece are among the low-income groups in society. Nonetheless, after a decade of relative stability of inequalities (1988-1999), a decrease in the income and well-being discrepancy between farm and non-farm households takes place over the period 1999-2005. Thus, while the number of farm households rapidly decreased, their per capita income converged at the same time, to non-farm households by nine percentage points, from 74% to 83% (Mitrakos and Sarris, 2003; Karanikolas *et al.*, forthcoming).

Another source of information on total incomes of agricultural households originates from a special project devoted to the Incomes of the Agricultural Household Sector (IAHS). This project was launched by Eurostat in mid-1980's and ceased in 2002. According to these data, income from independent agricultural activity accounted for 61.6% of the total income of Greek agricultural households in 1982, a percentage which dropped to 58.3% in 1998 (Eurostat, 2002).

### 3. Data and methodology

Our analysis is based on the micro-data of the most recent Household Budget Survey, which was carried out by the National Statistical Service of Greece in 2004-2005. To accomplish the aim of this paper, two criteria are used for the grouping of population. The first is the occupational status of the household's head (employed in agriculture or in other activities). Secondly, the magnitude of various components of farm income in the total income of a household is employed, that is, income from the market, subsidies plus compensations for natural disasters, and the value of imputed agricultural production.

Retired farmers comprise an additional distinct group, on account of their importance within the total farm population and the totality of poor people in Greece. As is well known, a large part of the farm population is aged; according to Eurostat 37 percent of heads of Greek agricultural holdings have an age of more than 65 years (Eurostat, 2007). An additional reason for their separation is that most of them still work on agriculture after their retirement, operating an agricultural holding. Therefore the resultant typology is as follows:

**Table 1: Types of Households**

	Description
All Households	National Average Household
Farm Households (FHs)	Household head reports an occupation in agriculture or fishing
Pluri-active Farm Households (PFHs)	Household head has a non-agricultural job; household income includes either: i) some income and subsidies from agriculture, or ii) some income from agriculture
Marginal Farm Households (MFHs)	Household head has a non-agricultural job; household income includes some subsidies from agriculture
Retired Farm Households (RFHs)	Household head gets a pension from Farmers Security Organization
Non-Farm Households (NFHs)	Household head has a non-agricultural job; no incomes or subsidies from agriculture are reported

In pursuing the aim of this paper, the analysis is undertaken at the level of the abovementioned typology of households. After the examination of the composition of household income, inequality is scrutinized through the calculation of income inequality indexes based on the distributions of both per capita equivalent expenditure and per capita equivalent income. Also, some critical distributional effects of farm income are explored, such as the concentration of farm income across the spectrum of the income distribution in absolute terms and the contribution of farm income in the reduction of the overall inequality within various types of households. Finally, overall inequality is decomposed to its constituent parts and poverty incidence is estimated with alternative definitions of poverty lines.

## 4. Results

### 4.1 Income inequalities

Table 2 shows that all types of farm households sum up to 22 percent of all households in Greece. It is interesting to note that their total sum (877,836) does not deviate substantially from the total number of agricultural holdings in Greece, which for 2005 were found to be 833,590

(Eurostat, 2007). Farm households are only one quarter of them, or 5.5 percent of all households. Marginal farm households represent only 2.3% of all households, comprising the smallest category of all. As far as the household size is concerned (members per household) farm households rank first, exceeding the national average by 0.72 members, followed by pluri-active farm households. It is also worth noting that FHs are double the size of RFHs.

**Table 2: Households: basic data**

	N	%	Household size
Farm Households (FHS)	217,698	5.5%	3.45
Pluri-active Farm Households (PFHS)	302,433	7.6%	3.15
Marginal Farm Households (MFHS)	90,725	2.3%	2.78
Retired Farm Households (RFHS)	266,980	6.7%	1.72
Non-Farm Households (NFHS)	3,115,129	78.0%	2.73
All Households	3,992,964	100.0%	2.73
FH+PFH+MFH+RFH	877,836	22.0%	

The examination of relative well-being and income levels reveals important between-households variations (table 3). Retired farm households are the most extreme case since they seem to compare unfavourably with the rest of society in terms of their equivalent income (50.4% of the average) and equivalent expenditure (56.0% of the average). Note that those indicators are expressed in equivalent terms, using the 'modified OECD scales', which have been used in a number of empirical poverty studies (Hagenaars et al., 1994) and assign weights of 1.0, 0.5 and 0.3 to the household head, each of the remaining adults and each child in the household respectively.

At the other end of the scale, the most prosperous category seems to be non-farm households, surpassing both national averages by 5.5 and 4.7 percentage points. Marginal farm households revolve around the all-households average, slightly higher for equivalent income and slightly lower for equivalent expenditure. Pluri-active farm households are on a par with average equivalent income, but not so for equivalent expenditure. Despite their convergence trends during the last few years, farm households still fall short of the all-households average by 9.1 points in terms of equivalent income and by 15.9 points in terms of equivalent expenditure.

**Table 3: Equivalent household expenditure and income (amounts in €)**

	Equivalent Expenditure	Equivalent Income	
Farm Households (FHS)	1,019	84.1	1,075
Pluri-active Farm Households (PFHS)	1,137	93.8	1,181
Marginal Farm Households (MFHS)	1,199	98.9	1,246
Retired Farm Households (RFHS)	679	56.0	596
Non-Farm Households (NFHS)	1,279	105.5	1,238
All Households	1,212	100.0	1,182
			100.0

Another essential difference among types of households refers to the composition of household income and, more specifically, the share of various components of agricultural income in household income (table 4). The picture is quite heterogeneous. Agricultural income's share in total income of various types of households varies from 55.0% in FHs to

3.5% in RFHs. As expected, the highest share is found in FHs. This means that a significant part of their total income is derived by non-agricultural sources, a clear indication of serious changes that have taken place within FHs. Obviously, there's a strategy of diversification of activities on behalf of household members, even in the case of FHs, where farming remains the main source of income. But even in this type of household, only 36.8% of total income is derived from the market, whereas 13.2% comes from subsidies and 5.0% from consumption of own production. Our results conform to Eurostat's findings on total income of agricultural household sector (Eurostat, 2002). It also has to be noted that in 20 OECD countries, the percentage share of farm income in total income of farm households ranges from 6% in USA through 72% in the Netherlands (OECD, 2004).

Moreover, in PFHs 23.0% of total income is drawn from agriculture, of which 14,4% is farm income from the market, 5.1% from subsidies and 3.5% from agricultural consumption of own production. Much lower is the contribution of farm income to the total income of the other two household types. In the case of MFHs, this amounts to 6.7%, consisting of subsidies and consumption of own production. Recall that those households produce just tiny quantities of agricultural products exclusively for own-consumption, for which they get some subsidies. Finally, in RFHs the only element of agricultural income is the value of consumption of own production that represents only 3.5% of total income.

**Table 4: Income composition**

	Household Income	Farm Income (without Subsidies)	Agr. Subsidies and Compensations	Value of Agr. Consumption of own production	Total Farm Income	Non-Farm Income
Farm Households (FHs)	100,0	36,8	13,2	5,0	55,0	45,0
Pluri-active Farm Households (PFHs)	100,0	14,4	5,1	3,5	23,0	77,0
Marginal Farm Households (MFHs)	100,0	0,0	3,9	2,8	6,7	93,3
Retired Farm Households (RFHs)	100,0	0,0	0,0	3,5	3,5	96,5
Non-Farm Households (NFHs)	100,0	0,0	0,0	0,4	0,4	99,6
All Households	100,0	3,3	1,3	1,0	5,5	94,5

As already mentioned, across the period 1998-2005 a convergence of well-being and income levels between farm and non-farm households has taken place, as well as a steadiness in the contribution of farm income to the total income of farm households (Karanikolas et al., 2008). Obviously, the former depends on the latter.

For the measurement and decomposition of inequality, the well known indexes from the literature are deployed, such as G (Gini Coefficient), T (Theil Index) and N (Mean Log Deviation) (see Annex for definitions of the indexes). The overall inequality as measured by G, T and N indexes is found to be 0.295, 0.146 and 0.141 respectively, according to per capita equivalent expenditure distribution (table 5). Relatively higher is the overall inequality, if the distribution of per capita equivalent income is used (0.300, 0.153 and 0.149, respectively).

**Table 5: Income inequality indexes by type of household**

	Income Inequality based on the distribution of:					
	Per capita equivalent expenditure			Per capita equivalent income		
	Gini Coefficient (G)	Theil Index (T)	Mean Log Deviation (N)	Gini Coefficient (G)	Theil Index (T)	Mean Log Deviation (N)
Farm Households (FHS)	0.277	0.133	0.124	0.339	0.210	0.191
Pluri-active Farm Households (PFHs)	0.265	0.114	0.113	0.262	0.122	0.113
Marginal Farm Households (MFHs)	0.292	0.142	0.143	0.304	0.150	0.149
Retired Farm Households (RFHs)	0.250	0.111	0.100	0.213	0.089	0.078
Non-Farm Households (NFHs)	0.292	0.143	0.137	0.292	0.145	0.142
All Households	0.295	0.146	0.141	0.300	0.153	0.149

RFHs exhibit the lowest inequality of all types of households (table 5). Their inequality is much lower than the respective all-households inequality, by 29% on the basis of per capita equivalent expenditure and by 48% according to per capita equivalent income. Thus, RFHs are placed at a very low well-being and income level, although their inequality is the smallest of all other types of households. On the other hand, from the households with an economically active head, PFHs exhibit the lowest inequality which is almost the same for the two distributions employed, yet it lags behind the national average by 10% or 24%. Interestingly, inequality of MFHs is almost identical to all-households inequality and highest among all agricultural households by per capita equivalent expenditure.

Of particular importance is the case of FHS. On the basis of per capita equivalent expenditure distribution, their inequality is lower than all-households inequality, a possible indication of converging consumption patterns of FHS. Yet, at the same time, their income inequality exceeds the average all-households inequality by 37%. Of course, this could be accounted for by the high sectoral and geographical variation of FHS, following the highly heterogeneous production specialization of farm holdings and their diverse economic performance. Hence, inequality of FHS is the highest among all types of agricultural households. Finally, inequality of NFHs is slightly lower than the average inequality of all households.

## 4.2 Distributional effects of farm income

It is interesting to examine to what extent the various types of households are concentrated mainly at the bottom, the middle or the top of the income distribution. Table 6 provides an answer. Households are split into deciles on the basis of per capita equivalent income, so that each decile contains 10 percent of all households. In comparison to all households and non-farm households, farm households are much more concentrated in the lowest deciles, followed by MFHs and PFHs. Hence, the stronger the engagement of a household with agriculture on a 'professional' basis, the highest the possibility of it being a low income household. On the other hand, 86 percent of RFHs are found in the three lowest deciles, a clear indication of the especially low income level of this type of household.

**Table 6: Allocation of households by type and deciles (%)**

	All Households	Farm Households (FHs)	Pluri-active Farm Households (PFHs)	Marginal Farm Households (MFHs)	Retired Farm Households (RFHs)	Non-Farm Households (NFHs)
Decile 1	10.0	16.2	5.0	9.9	45.0	7.1
Decile 2	10.0	15.0	10.0	11.6	25.6	8.3
Decile 3	10.0	11.1	8.8	10.8	15.7	9.5
Decile 4	10.0	8.0	12.8	7.1	4.4	10.4
Decile 5	10.0	10.5	12.8	6.8	3.8	10.3
Decile 6	10.0	7.1	11.9	12.7	2.2	10.6
Decile 7	10.0	9.4	12.2	4.3	1.8	10.7
Decile 8	10.0	8.9	8.6	10.0	0.9	11.0
Decile 9	10.0	6.1	9.4	13.4	0.2	11.1
Decile 10	10.0	7.7	8.6	13.3	0.5	11.0

The next issue to be addressed concerns the concentration of farm income across the band of the income distribution. The absolute value of farm income and subsidies per decile is quite dissimilar, especially in the case of farm households (Annex Table 1). In absolute terms, farm households of the top four deciles obtain much higher farm income and subsidies compared with the lower six deciles. Quite dissimilar is also the distribution of farm income across deciles in PFHs and MFHs.

On the other hand, the relative contribution of farm income to total household income varies across deciles (table 7). For example, in the case of FHs, farm income share in household income ranges from 41.6% to 64.7%; the highest percentages are found in 10<sup>th</sup> and 6<sup>th</sup> deciles, however in most cases this index is distributed rather evenly. Furthermore, in the case of PFHs, farm income share tends to decline as we move from low to high deciles. As far as the subsidies' share to farm income is concerned, it doesn't seem to follow a clear pattern of distribution across deciles; an exceptional case is the 70.2 percent in the 9<sup>th</sup> decile of FHs.

**Table 7: Farm income and subsidies by type of households and deciles (%)**

		All Households	Farm Households (FHs)	Pluri-active Farm Households (PFHs)	Marginal Farm Households (MFHs)
Decile 1	farm income/household income	5.9	44.1	23.4	7.0
	subsidies/farm income	39.0	38.0	23.8	
Decile 2	farm income/household income	7.0	44.4	23.2	5.0
	subsidies/farm income	25.2	21.9	25.3	
Decile 3	farm income/household income	5.5	44.9	23.7	5.0
	subsidies/farm income	30.4	29.2	23.2	
Decile 4	farm income/household income	4.9	46.2	22.5	3.3
	subsidies/farm income	34.6	34.5	31.9	
Decile 5	farm income/household income	5.3	47.3	18.9	5.0
	subsidies/farm income	40.7	40.9	34.5	
Decile 6	farm income/household income	4.0	52.6	18.4	4.8
	subsidies/farm income	45.9	42.5	39.6	

Decile 7	farm income/household income	4.6	46.9	20.1	12.3
	subsidies/farm income	36.3	27.0	41.7	
Decile 8	farm income/household income	3.8	46.8	17.6	4.6
	subsidies/farm income	44.2	36.0	48.9	
Decile 9	farm income/household income	3.4	41.6	21.7	3.8
	subsidies/farm income	52.0	70.2	30.2	
Decile 10	farm income/household income	4.4	64.7	15.0	1.3
	subsidies/farm income	37.7	34.5	43.8	

Apart from the estimation of various inequality indexes for each type of household, another prime issue is the identification of some distributional effects of the main income sources. Therefore, the analysis focuses on the contribution of farm and non-farm income in the overall inequality within various types of households.

As already noted, the Gini coefficient for the total income of farm households is 0.339 (table 5). However, the Gini coefficient for their farm income is 0.488. Of course, this could be explained by the highly heterogeneous conditions of agriculture which result in an astounding sectoral and geographical variation of farm income. At the same time, the income from sources other than farming undoubtedly contributes to the reduction of the overall income inequality, as has already been documented in many countries (for the USA see Mishra and Sandretto, 2002).

As expected each component of the total farm income of farm households is more unequally distributed than their sum. Gini coefficients for agricultural compensations, subsidies and income from farming are 0.959, 0.703 and 0.511 respectively. Subsequently, despite unequal distribution of each component of farm income, the resulting inequality is lower when they are summed up to form total farm income. Evidently, this is, to a large extent, due to technical reasons, as the smaller the number of farm households having one source of income, the higher the respective Gini coefficient.

The next question to be addressed is whether farm income raises or reduces the overall income inequality in each type of household. One would expect that the contribution of farm income to the reduction of inequality is positively correlated to its share in the total income of various types of households. Table 8 shows that three main findings can be drawn. Firstly, FHs exhibit the highest inequality on the basis of equivalent household income. Secondly, non-farm income is distributed more unequally within FHs than in any other type of households. Thirdly, both farm income and non-farm income are distributed unequally within each type of household; for example, within FHs, Gini coefficients are 0.514 and 0.417, respectively. Nonetheless, the sum of those two components of income, that is total income of FHs, is distributed less unequally as is evident from its Gini coefficient (0.339). This is due to the fact that there are FHs with either low farm income coupled with high non-farm income or vice versa. Thus, adding farm income to non-farm income reduces inequality from 0.417 to 0.339 in FHs, whereas the same coefficient is reduced from 0.311 to 0.262 in the case of PFHs.

Consequently, farm income and non-farm income complement each other, generating a combined stabilization effect at the level of the total household income, the effect being analogous to farm income share in total household income. Although someone could claim that this finding could not be attributed to farm income alone as it also holds for other types of income, it nevertheless has an obvious significance for the subject examined here.

**Table 8: Income inequality indexes  
(Gini Coefficient) by type of household**

	Equivalent Farm Income (1)	Equivalent Non-Farm Income (2)	Equivalent Household Income (3)
Farm Households (FHs)	0.514	0.417	0.339
Pluri-active Farm Households (PFHs)	0.520	0.311	0.262
Marginal Farm Households (MFHs)	0.625	0.313	0.304
Retired Farm Households (RFHs)	-	0.213	0.213
Non-Farm Households (NFHs)	-	0.292	0.292
All Households	0.926	0.320	0.300

### 4.3 Decomposition of inequality

The decomposition of inequality indices is another valuable attribute that enables the estimation of each component's contribution to the overall inequality. Of particular importance is the decomposition of the total inequality in 'within-groups' and 'between-groups' inequality. After splitting our population in the abovementioned five groups of households, by using the same criteria as before, the within-groups component accounts for almost 88%-90% of the overall inequality, whereas the between-groups share is 10% to 12% (table 9). This holds irrespective of the index (T or N) and the distribution of inequality employed - per capita equivalent expenditure or per capita equivalent income.

**Table 9: Decomposition of inequality**

	Components of Inequality based on:			
	Per capita equivalent expenditure		Per capita equivalent income	
	Theil Index (T)	Mean Log Deviation (N)	Theil Index (T)	Mean Log Deviation (N)
Within-groups	90.1%	88.2%	87.9%	90.2%
Between-groups	9.9%	11.8%	12.1%	9.8%

### 4.4 Poverty

RHs are by far the poorest households in the total population (table 10). In most cases of the distributions employed, poverty rates in RHs are more than double the respective rates in the other types of households. Taking as an exemplary case the 60% poverty line, the most commonly used threshold for poverty, 56.5 percent or 62.9 percent of RHs fall below this line, while the respective rates for the total population are 17.1 and 16.4. RHs are one of the poorest social categories, not only among pensioners but also within the total Greek population. From households with an economically active head, FHs present the highest poverty rates. At least one quarter of FHs are classified as poor if poverty is set at 60% of the mean equivalent expenditure or the mean equivalent income. These results confirm previous findings on poverty in Greece (Mitrakos and Sarris 2003; Tsakloglou and Panopoulou, 1998). For PFHs and MFHs poverty rates seem to be close to, or higher than, the all-household average. Also, in all poverty lines, non-farm households have a slightly lower poverty incidence than all-households.

**Table 10: Poverty rates (percentage of households below the poverty lines)**

	Poverty line (% of mean equivalent expenditure)			
	40%	50%	60%	70%
Farm Households (FHS)	5.5	13.9	25.1	33.5
Pluri-active Farm Households (PFHS)	2.5	7.2	18.3	26.3
Marginal Farm Households (MFHS)	4.6	10.4	18.5	25.2
Retired Farm Households (RFHS)	15.2	35.4	56.5	69.1
Non-Farm Households (NFHS)	1.8	5.9	13.0	21.2
All Households	3.0	8.5	17.1	25.6
	Poverty line (% of mean equivalent income)			
	40%	50%	60%	70%
Farm Households (FHS)	10.0	15.6	26.6	38.0
Pluri-active Farm Households (PFHS)	1.2	4.1	10.7	19.4
Marginal Farm Households (MFHS)	2.3	9.9	16.8	26.2
Retired Farm Households (RFHS)	15.4	42.1	62.9	80.0
Non-Farm Households (NFHS)	2.8	6.6	12.2	20.9
All Households	3.9	9.3	16.4	25.8

## 5. Conclusions

This paper has examined the incidence of income inequality and poverty as well as the impact of farm income on inequality and poverty in Greece, using data from the most recent Household Budget Survey. A typology of households was developed with a special focus on both the agricultural holding operated by a household and the share of farm income in the composition of household income.

The results show large variations among households with regard to composition of their total income. The share of farm income in total income varies from 55.0% in FHS and 23.0% in PFHS to 6.7% in MFHS and 3.5% in RFHS. Thus, even in farm households, a significant part of their total income is derived from non-agricultural sources.

It has been argued that the 'farm problem' – in the sense of income gap between agriculture and other activities – does not exist any more (Gardner, 1992). The disaggregated approach to household structure adopted here allows testing the validity of this argument. As we have seen, two household types, marginal- and pluriactive- farm households, do not seem to have a real income problem. Whether in terms of equivalent expenditure or in terms of equivalent income, they seem to compare favourably with the rest of society. Nevertheless, this is not the case for farm households, which, as a group, still lag behind the all-household average income, though they exhibit converging trends over the last few years. The case of retired farm households, which have almost half the average national income and constitute one of the poorest social categories of the entire population, is somewhat different.

Farm income presents a stable share in total income of farm households over time (Karanikolas *et al*, 1998). This way, it contributes to the reduction of temporal variation of household income, as well as to the convergence of income levels between farm and non-farm households. However, the larger the share of farm income to total income of a household type, the more it augments income inequality within these households. This observation holds more in the case of subsidies than farm income derived from market.

The share of farm income in household income is also positively correlated with the possibility of this household having a low income. Almost three quarters of RFHs are found in the three lowest deciles, a clear indication of the especially low income level of this type of household. As far as the concentration of farm income across the band of the income distribution is concerned, the absolute value of farm income and subsidies per decile is quite dissimilar, especially in the case of farm households. Yet, the relative contribution of farm income to total household income varies, though without following a clear pattern across deciles. Furthermore, farm household inequality is the highest among all types of agricultural households, whereas retired farm households exhibit the lowest inequality.

Research findings indicate that, although every component of household income is very unequally distributed, the distribution of their sum – total income of household – is less unequal. Consequently, farm income and non-farm income complement each other, generating a combined stabilization effect at the level of the total household income, the effect being analogous to the share of farm income in total household income. If this is also true for other types of income, even so, it is an interesting finding for our analysis.

Besides, decomposition of inequality reveals that the within-groups component accounts for almost 88%-90% of the overall inequality, whereas the between-groups' share is 10% to 12%. This means that the elimination of all expenditure or income differences between groups of households will not reduce total inequality by more than 12%. Accordingly, policies aiming at the reduction of inequalities within each household category will contribute much more to the reduction of total inequalities. Thus, previous findings on the decomposition of inequality seem to be confirmed, though those previous studies had used different criteria for the grouping of the population (Mitrakos and Sarris, 2003).

Poverty is a major characteristic of some types of households. Retired farm households are one of the poorest social categories, not only among pensioners, but also within the total Greek population, with 56% of them falling below the 60% poverty line. From households with an economically active head, farm households present the highest poverty rates. At least one quarter of FHs are classified as poor if poverty is set at 60% of the mean equivalent expenditure or the mean equivalent income. These results are in line with previous findings on poverty in Greece.

Therefore, those results raise serious distributional and re-distributional issues and also have some obvious policy implications. If welfare considerations, along with public goods provision from agriculture, constitute a sound legitimating basis for agricultural policy in the near future, the abovementioned findings could prove useful.

It is known that CAP has always had an explicit welfare aspect expressed through the objective of 'a fair standard of living of the agricultural community'. On the other hand, welfare and distributional considerations have been at the forefront of criticisms against CAP. Ever since the late 1980's, unequal distribution of agricultural subsidies and income disparities within European agriculture have been used as a legitimative basis for radical CAP reforms. In this context, increased effectiveness has been pursued through decoupling of payments to farmers, and an overall reduc-

tion in support and protection of European agriculture. Payments decoupled from the production and delivered on the basis of 'historical entitlements' of farmers allegedly address more effectively the problems related with income disparities between farmers, types of production systems, etc.

Our results indicate that the unequal distribution of farm income or subsidies is not a problem per se. At least from a welfare and distributional point of view, the combination of farm and non-farm income could lessen household income inequalities, pointing to an additional positive role of farm income and its constituent parts. Of course the pursuit of the highest degree of effectiveness of agricultural policy, as well as the choice of the policy instruments most appropriate to fulfill its goals, remain open.

Finally, the high rates of poverty incidence among retired farm households implies that a social policy aiming at the reduction of poverty in the whole population could benefit by targeting this specific category of households.

Further research is needed to extend the abovementioned findings in a longer time period especially before and after the major CAP reform of 1992. Even more interesting is a similar examination henceforth, so that the most recent review of CAP (in 2003-2004) will be taken into consideration.

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## ANNEX

### INEQUALITY AND POVERTY INDICES

#### Variables:

$E$  = Total per capita expenditure of all households

$E_i$  = Total per capita expenditure of household  $i$

$H$  = Number of households in HBS

$h_i$  = Number of household's  $i$  members

$\pi$  = poverty line

$N$  = Number of HBS households' members

$N_p$  = Number of poor people in HBS

$n_p$  = Number of poor households in HBS

Households have been ranked by per capita total expenditure in ascending order

$$E_1 \leq E_2 \leq \dots \leq E_{n_p} \leq \pi \leq E_{n_p+1} \leq \dots \leq E_H$$

where  $\pi$  is the poverty line. The above inequality automatically denotes the number of poor households  $n_p$

Variable  $E$  is defined as:

$$E = \frac{\sum_i^H h_i E_i}{\sum_i^H h_i} = \frac{\sum_i^H h_i E_i}{N}$$

## Indexes:

i=1,2,3, ..., H for all households in the sample

j=1,2,3, ..., n<sub>p</sub> for all poor households in the sample

**Theil Index (TI):**  $TH = \sum_{i=1}^H \left( \frac{h_i}{N} \times \frac{E_i}{E} \times \ln\left(\frac{E_i}{E}\right) \right)$  (1.2)

**Mean Log Deviation (MLD):**  $MLD = \ln\left[\frac{1}{N} \sum_{i=1}^H h_i E_i\right] - \frac{1}{N} \sum_{i=1}^H \left(h_i \times \ln(E_i)\right)$  (1.4)

Where the number of poor households n<sub>p</sub> is defined by  $E_{n_p} \leq \pi = \frac{1}{2} \times \frac{\sum_{i=1}^{n_p} h_i E_i}{N} < E_{n_{p+1}}$

**Gini Coefficient (G):**  $G = \sum_{i=1}^N (x_i - x_{i-1}) \times (x_i - y_i + x_{i-1} - y_{i-1})$  (1.7)

where:  $x_i = \frac{\sum_{j=1}^i h_j}{\sum_{j=1}^H h_j}$  ,  $y_i = \frac{\sum_{j=1}^i h_j E_j}{\sum_{j=1}^H h_j E_j}$  ,

**ANNEX TABLE 1: Mean Monthly Incomes by type of household and decile (€)**

	All Households	Farm Households (FH)	Pluri-active Farm Households (PFH)	Marginal Farm Households (MFH)	Retired Farm Households (RFH)	Non-Farm Households
Decile 1						
non-farm income	690	489	673	703	553	797
farm income without subsidies	31	280	166	0	0	0
subsidies	12	106	40	53	0	0
Decile 2						
non-farm income	941	734	948	933	747	1018
farm income without subsidies	56	480	228	0	0	0
subsidies	14	105	58	49	0	0
Decile 3						
non-farm income	1163	878	1108	1350	1012	1207

farm income without subsidies	52	554	279	0	0	0
subsidies	16	162	65	71	0	0
Decile 4						
non-farm income	1408	946	1301	1466	1278	1449
farm income without subsidies	54	605	287	0	0	0
subsidies	19	209	92	50	0	0
Decile 5						
non-farm income	1582	987	1634	2008	1360	1617
farm income without subsidies	63	628	283	0	0	0
subsidies	26	257	98	106	0	0
Decile 6						
non-farm income	1821	911	1705	1710	1520	1886
farm income without subsidies	52	710	276	0	0	0
subsidies	24	302	109	86	0	0
Decile 7						
non-farm income	2218	1268	2004	1732	2019	2308
farm income without subsidies	78	880	356	0	0	0
subsidies	28	238	149	244	0	0
Decile 8						
non-farm income	2539	1568	2303	2690	2365	2608
farm income without subsidies	70	1013	331	0	0	0
subsidies	31	365	162	130	0	0
Decile 9						
non-farm income	3033	2039	2775	3283	1922	3086
farm income without subsidies	71	853	590	0	0	0
subsidies	37	599	178	129	0	0
Decile 10						
non-farm income	4677	2171	4085	4673	4839	4843
farm income without subsidies	156	2957	502	0	0	0
subsidies	59	1020	220	63	0	0