TARGETING "REAL FARMERS" WITH REFORMED CAP PAYMENTS: AN ANALYSIS FOR ITALY

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della Commissione Europea

Abstract

A multi-sector model is used to assess the targeting of CAP payments in Italy, according with alternative definitions of the "real farmers" institutional sector. The model is based on a Social Accounting Matrix of the Italian economy, properly adapted to represent the process of income formation and distribution in agriculture. The accounting framework has been integrated with a set of microeconomic information from the Farm Business Survey, a sample of agricultural holdings representative of the whole industry in Italy. The effects of changes in CAP payments have been assessed through a process in which impacts moves from the micro to the macro module of the model and return, in an iterative way. A vector of final income increase for each household included in the survey is obtained and used to reclassify impacts according to alternative definition of the real farmer sector. Results show that the distributive structure of the Italian agriculture as well as the way the policy is implemented are likely to affect the targeting of payments under alternative definitions of the beneficiary group.

Introduction

The issue of *targeting* in supporting farmers is relevant in the current context of decreasing resources for agricultural policy. First of all there is a problem of efficiency in transferring the money spent for policy to the beneficiaries: the proportion of expenditure able to reach farmers strictly depends on the nature of support, with decoupled payments showing higher transfer efficiency (OECD, 2003). Furthermore, the ongoing changes in the public opinion about the role of CAP indicate that the European Citizen no longer consider supporting income from farming as an objective to be pursued *per se*, but together with more general purposes such as "respect for the environment and the welfare of the farm animals" and "supply healthy and safe food" (Eurobarometer, 2007). In this context the support given to agriculture needs to be reshaped by increasing its financial transparency and re-tuning its policy justification. From this point of view the targeting issue is likely to become a relevant theme in the public debate.

The current negotiate under the so called Health Check (HC) of the CAP seems to confirm an increasing attention to targeting problems. As long as an increasing share of financial resources are expected to be moved from the first to the second pillar through modulation, the actual destination of the (reduced) direct payments become more and more a relevant issue. After the substantial improvement in the "degree of decoupling" (OECD, 2001) of CAP payments realized by Fischler reform in 2003, the focus of reforming process is now directed towards the simplification of the Single Payment Scheme and the redistribution of support. A renewed emphasis on distributive features of payments can be found both in the explanatory memorandum and in the impact assessment annexed to the Commission's legal proposals adopted after the consultation of stakeholders and other European Institutions (Commission 2008). Among the objectives of a reformed implementation of Single Payment Scheme (SPS) is explicitly included the possibility to "address concerns about the equity and distribution of payments among farmers" (Commission, 2008: 19). The underlying targeting problem clearly emerges from the analysis of alternative scenarios of reformed payments. However the issue cannot be identified only with the bias in the distribution of support in favour of larger (and more competitive) farms, a well known feature of the past CAP (Harvey, 1997; Tracy, 1997). Starting the HC with its Communication last November, the European Commission brings out yet another facet of the targeting problem by recalling the need to direct support only towards "real farmers" (Commission, 2007: 5). Such a distinction recognizes the existence of an area of "farming" that should be preferentially targeted by agricultural policy and demands suitable (operational) criteria in order to define this area. Talking about "real farmers" the Commission seems to intend people mainly living on agricultural income (agricultural households); but alternative criteria may be proposed taking into account the economic nature of farming itself (only professional farms) or the institutional nature of entrepreneurship (only direct farming). The assessment of targeting crucially depends on the adopted criterion.

In this paper a multi-sector model will be used to assess the targeting of CAP payments in Italy, according with alternative definitions of the "real farmers" sector. The model is based on a Social Accounting Matrix of the Italian economy, properly adapted to represent the process of income formation and distribution in agriculture. The accounting framework has been integrated with a set of microeconomic information from the Farm Business Survey, a sample of agricultural holdings representative of the whole industry in Italy. The effects of changes in CAP payments have been assessed through a process in which impacts moves from the micro to the macro module of the model and return, in an iterative way. Adopting such an approach, after each simulation a vector of final impacts for each household included in the survey has been obtained and used to reclassify impacts according to alternative definition of real farmer sector.

The targeting power of CAP payments resulting from Fischler Mid Term Review (MTR) has been used as a "baseline" to be contrasted with those from alternative scenarios of reform of Single Payment Scheme, including regionalization, the introduction of upper and lower limits to individual payments and different rates of modulation.

The paper is organised as follows. The model is presented in the next paragraph. The definition of "real farmers" sector is discussed in paragraph 3. In paragraph 4 the Commission's proposals for SPS reform are assessed according to the results of simulations.

The model

The original SAM of the Italian economy used in the analysis was estimated by the Regional Institute for Economic Planning in Tuscany (IRPET). The reference year (2002) can be considered as representative for Italian agriculture of the first half of the decade in terms of level and composition of productions and prices. Moreover, 2002 is included in the reference period for the determination of SPS entitlements under the MTR. The original structure includes a total of 101 accounts: besides a production block accounting for 30 industries and 5 factors of production, a detailed description of consumptions (12 private plus 11 collective consumption functions) and a highly disaggregated institutional sector block (10 household groups by deciles of per-capita equivalent income, 3 group of firms, and 9 government branches at the national and local level) represents the most interesting feature of the accounting scheme. Separate capital accounts for each institution and ROW accounts assure the overall balancing of the matrix.

The SAM was adapted for analytical purposes. A reduction of the SAM dimensions was carried out aggregating the accounts for institutions. The original accounts for households were aggregated into five groups, given that the aim of the analysis was the inclusion of a second dimension (farmers vs. non farmers) to be crossed with income level in the classification of families. Also the different branches of public administration have been consolidated into a single government account.

A second major adaptation of the SAM was the inclusion of an account to explicitly represent the process of income formation and distribution at the farm level. In the adapted SAM the inflows of agricultural holdings account are the valued added from agriculture gross of depreciations and the transfers from the government. On the relevant column agricultural holdings pay taxes on production, and distribute income to factors of production such as employed labor and capital[1]. In table 1 are displayed the entries of the agricultural holdings account. The value added from production amounts to 27 783 M€, representing more than 90% of total inflows. The largest part of these inflows is distributed as mixed income form farming to self employed labour (21 272 M€, 69,6%).

Besides accounts for production units in the model were included as endogenous the accounts for production activities, factors of production and private institutions (households' consumption and income accounts, firms current accounts). The focus on income distribution suggested the opportunity to also include in the model a consolidate account for the national Government. Indeed, the aim of the model is to analyse at the national level the short run impacts on income distribution of a sectoral policy defined at the European level (payments to farms). Conversely all accounts for capital formation and for flows to/from the rest of the world were considered as exogenous.

From the adapted SAM a matrix of accounting (column) coefficients for endogenous accounts was derived. To increase the quality of simulation, following the "fixed price" approach proposed by Pyatt and Round (1979) the accounting coefficient for private consumption functions were replaced with estimates of marginal propensities (by income quintile) based on data from Households Budget Survey carried out by ISTAT. A second change was made on the entries of the submatrix representing transfers from Government to production units. Even though payments to farms depend for the most part from decisions taken at the European level, positive coefficients in this block would lead to a level of transfers endogenously determined in a national model. To avoid this controversial effect the relevant coefficients were set to zero. As a consequence the endogenization of the Italian government account affects income distribution only through general fiscal policies defined at the national level (represented in the submatrix of transfers among endogenous *institutions*).

The inclusion of an account for agricultural holdings is an essential passage in the integration of available microeconomic information in the model. In fact the Farm Business Survey is a sample of more than 13 000 agricultural holdings representative of the whole industry carried out by the Italian National Institute of Statistics (ISTAT: see Rocchi e Pizzoli, 2007). Being carried out to provide information for national accounting purposes, the definitions of economic variables are completely consistent with those on which the structure of the original SAM was grounded. The most interesting feature of the survey is that, even if designed following an "industry" approach (i.e. a sample of farms), it also provides useful information on the *institutions* managing production activities. More precisely, the FBS

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[1] For simmetry reasons an account for "other production units" was included too.

sample is representative both for farms *and* for the institutional sector of households earning some incomes from farming activities. Using data on sources of income other than farming (by type and by income class) collected with FBS an estimate of the total household income for each observation was carried out. Each observation was then assigned to the relevant quintile of *total* population. Finally, according to information included in the original SAM, five "artificial" observations were included in the dataset to represent all other Italian households without income from farming that are included in each quintile of population. Data from FBS where then calibrated to exactly replicate the aggregate entries of the agricultural household account.

Simulations are carried out as follows[2]. Using available micro information a vector of changes in CAP payments received by each (weighted) observation due to a particular hypothesis of reform is calculated. The subsequent changes in income distributed to factors and, through factors, to institutions (households by income level and others) are calculated as well. During the micro-simulation the incomes accruing to households and other institutions are corrected to account for inter-institutional transactions (according with SAM average coefficients) At the end of this first round of micro-simulation, a weighted vector of exogenous impacts on accounts for institutions is composed summing data for households by income quintile.

In the macro module of the simulation the vector of impacts on institutions is transformed into additional increases in the value added distributed by production units using the accounting framework of the SAM. The matrix of direct (column) coefficients calculated on the adapted SAM is used:

- to transform income increases into expenditure increases classified by consumption function;
- to transform expenditure increases into increases in the final demand directed towards industries.

The resulting exogenous increases in final demand are then transformed into a total output increases by industry using the (leontievian) multipliers derived from the input-output block of the original table. Finally, using again direct coefficients, output increases are transformed into increases of gross value added distributed to factors by production units (agricultural households and other production units). These further increases in value added are distributed among observations of the microeconomic dataset, starting up a new round of micro-simulation. The process is repeated till additional increases in incomes of institutions become irrelevant. Given the "leakages" of the model towards exogenous accounts, simulations converge to a acceptable result after few iterations. In figure 1 is represented for exemplificative purposes the cumulative impact estimated after each round in the simulation of SPS under the Mid Term Review. After the fifth round the total impact increases for less than 1% in each subsequent iteration.

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[2] The program to carry out the simulation has been implemented using MATLAB.

Despite the integration of the SAM with a source of microeconomic information, results can be considered of the same nature of those that could be obtained from a standard linear model. No additional behavioural assumptions have been included in the model through the micro-simulation module: incomes are linearly distributed among production units, factors and institutions according with weighted sample shares. The main result of the micro-to-macro integration is the possibility to assess impacts of policy under alternative definitions of the beneficiary group. In fact after each simulation a vector of final impacts for each household included in the survey is obtained and can be used to reclassify impacts according to alternative definition of real farmer sector. A secondary positive effect is the reduction of the bias of aggregation that is implicit in all model based on multisectoral accounting frameworks.

Defining real farmers

As stressed above, the main objective of the analysis was to assess the targeting power of possible, alternative changes in the SPS. It is clear that the results of such an analysis strictly depend on the adopted definition of beneficiary group. In the current framework of CAP Italian beneficiaries are basically chosen according to a double condition of eligibility:

- they had to be beneficiaries of CAP payments during the "reference period" (2000-2002);
- they have to manage an area of eligible land corresponding to the assigned "historical" entitlements.

In this way the SPS payments are directed towards a number of different institutions (households, corporations, branches of public administration and so on) and, within the household sector (which accrues for the largest part of payments) towards very different institutional units.

The analysis has been focused on the households sector. According to the available microeconomic information three alternative criteria of classification of households earning at least some income from farming (being or not current beneficiaries of SPS) have been defined. All criteria can be considered an alternative way for identifying "real farmers" to be preferentially supported within the first pillar of the CAP. Each criterion focuses on a particular aspect of the relevance that farming activity can assume for a given household.

- Agricultural households. According to this definition the targeted group should include households for which income from farming is more than 50% of total household income. This can be considered a "narrow" definition of the institutional sector according to standard for national accounts (Eurostat, 1996). The interpretation

of farmers as "agricultural households" is suitable for supporting analysis on living standards and/or income strategies associated with farming activities (Unece, 2007). In this analysis the available microeconomic information allowed to directly apply the proposed criterion.

- Direct farmers. According to this definition the targeted group should include farmers managing agricultural production activities using for the largest part family labour. This definition of beneficiaries assumes a correspondence between the way the factors are organized in each production unit and the belonging of farming household to a specific socio-economic group. In other words farms can be classified by types reflecting different goals achieved through farming by institutions. Direct farming is the prevalent management form in Italy: in the largest part of agricultural holdings at least some labour is supplied by the farmer's family. In the proposed analysis a prevalence criterion has been applied including in the group of direct farmers only households managing farms in which wages paid to employees were less than 50% of the mixed income accruing to the farmer[3].

- Professional farmers. According to this definition the targeted group should include only households managing "professional" farms, i.e. production units with economic dimensions allowing for a entrepreneurial management of farming business. This targeting criterion can be considered coherent with a vision of agriculture as a branch of productive system and a "industry" vision of agricultural policy. In the analysis the 'professional' criterion has been applied including in the group all households managing farms with an economic size greater than 7 European Size Units, according to the FADN system of classification.

Simulation results

Even if leaving the beneficiary free to choose if and how much produce, the payments under the current CAP cannot be considered as completely decoupled. In the case of area based payments "…current conditions attached to payments, such as … requiring minimum maintenance activities on the land or imposing cross compliance condition may create incentives to change production patterns" (OECD, 2005: 8), even in the absence of an obligation to produce. This seems to be the case of SPS, a form of support directed towards active production units, which have to comply with minimum requirements (such as Statutory Management Requirement and Good Agricultural and Environmental Condition). Moreover, the quantification on a historical basis chosen for Italy reinforced till now the "compensatory" nature of payments. This sort of support could be represented as a payment positively affecting the income distributed at the farm level to the factors of production, without any direct effect on the output level (and on intermediate costs). In a SAM model this is

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[3] The ratio between mixed incomes and wages has been used as a proxy of the ratio between employed and family labour used in farming for which micro-information was missing.

equivalent to generate an exogenous injection towards the account of agricultural holdings. The first round of the iterative process described in paragraph 2 reproduces at the micro level the same mechanism to start the simulation. A set of alternative distributions of payments under different hypotheses of application of the SPS were calculated and used to generate different first impact scenarios. The resulting vectors of total increase in the households' incomes generated at the micro level were then used to compare the targeting power of alternative policy options.

A first group of simulations were carried out to analyse the "pure" impact of exogenous injections towards the income of different groups of targeted beneficiaries. This exercise allows understanding the distributive features emerging from the structure of Italian agriculture as represented by the SAM.

Table 2 displays the nominal income multipliers for exogenous increases in the value added distributed by farms managed by different group of farmers, such as a policy driven payment directed towards production units. For example, an exogenous increase of 1 M€ of value added distributed by professional farms generates through the circular flow of the economy a final increase of households' income of 2.37 M€. This total increase is distributed among *all* Italian households, including both targeted beneficiaries and other households. The final distributive profile is represented by values in the column, showing income multipliers for targeted and non targeted families divided by income level. In the case of professional farms the impact on incomes increases moving from lower to higher quintiles and doesn't show a different profile between targeted and non targeted households. The result is a lower targeting power in supporting professional farms: only 36.4% of total final impact (including indirect and induced impacts through the circular flow) accrues to the targeted families, i.e. households managing professional farms. By contrast, exogenous injections towards farming activities managed by agricultural households and direct farmers shows a targeting index equal to 51.3 and 55.4% respectively. The value of targeting index clearly depends on the extent by which indirect impacts change (and eventually reverse) the distributive profile generated by the initial injection. For a better assessment of the effect of circular flow on targeting, in table 3 have been displayed the percentage profiles of direct, indirect and total impacts on incomes. The initial shock in this simulation is by definition perfectly targeted, showing a distributive profile depending on the relative importance of holdings managed by each group in terms of value added distributed to factors[4]. A slight differentiation can be observed among the three groups of holdings with those managed by direct farmers distributing a higher share of direct impacts towards poorer households. The indirect impacts generated by the circular flow mainly affect non targeted groups of households in the highest quintiles of population: as a consequence the best index of indirect targeting, shown by support toward direct farmers, is only equal to 5.4%. On the whole the circular flow seems

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[4] In other terms, depending on distributive structural features of Italian agriculture.

able to spread the income increase in the rest of the population but without generating substantial changes in the distribution of incomes among quintiles.

So far simulations have been carried out to represent a hypothetical support directed only towards single groups of beneficiaries clearly defined using some criteria. The same classification can be used to assess the targeting power of actual form of support to agriculture under the current CAP. To each policy scenario can be assigned a different targeting score according to the chosen definition of the "real farmer" sector.

The distributive impact of CAP payments resulting from Fischler reform can be assessed using figures in table 4. The total impact on households' income is decomposed into direct and indirect effect. The total impact of more than 6 800 M€ corresponds to an income nominal multiplier of 2.142. The multiplicative impact increases moving toward richer households even if not in a monotonic way. More interesting is the *redistributive effect* associated with the total impact. The figures in the last column depict the changes in the relative position of each quintile in the income distribution. Their sum is equal to 0 as they expresses in percentage terms the redistribution among quintiles of the *initial* income (i.e. without the impact of the considered policy) necessary to exactly reproduce the *final* income distribution in relative terms (i.e. income distribution with policy). The redistributive profile shows controversial features, with a large negative effect in the second quintile and the largest share of positive effects for the first one.[5] However, the low level of disaggregation of the households sector hides the redistributive games *within* each group. Indeed, within each income quintile, the CAP payments are directed towards households that may or may not be included in the beneficiary group according to some classification criterion. As a consequence, for the impact assessment of a sector policy as the CAP payments are, a sector-related criterion is needed to classify households.

In table 5 the impact of four tools proposed by the European Commission with the aim of reforming the implementation of SPS are compared under alternative definitions of the "real farmers" sector. The columns correspond to alternative scenarios, built modifying the current distribution of CAP payments in Italy as follows:

- *regional flat rate*: new payment entitlements based on a regional flat rate per hectare applied to all eligible areas plus 5% of compulsory modulation over 5000€ of individual payments;
- *approximation*: historical payments approximated according to a regional flat rate plus 5% of compulsory modulation over 5000€ of individual payments;
- *minimum individual limit*: MTR payments with set-off of individual payments up to 500€;

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[5] Intuitively the positive or negative value of redistributive impact for a given group depends on the ratio between the share of income accruing to the group in the initial distribution and the percentage increase of its income due to the policy. A generalization of the analysis of redistributive impacts based on SAM multipliers is proposed by Roland Holst and Sancho (1992).

- *progressive modulation*: MTR payments with basic rate of modulation increased to 12% and progressive reduction of individual payments.

The introduction of a regional flat rate shows the higher multiplicative effect on households' incomes both in general (total multiplier) and considering the specific multiplier (unitary increase of incomes of *targeted* households for each euro of direct increase of targeted incomes due to payments). The total targeting index doesn't seem to be affected by the application of different instruments, with only the regional flat rate showing a value slightly lower. On the contrary, the use of alternative targeting criteria leads to quite different assessment: whatever the new instrument introduced, the CAP payments shows the better targeting towards direct farmers (more than 56% in all cases) followed by agricultural households and professional farmers. Policy instruments rather affect the level of *indirect* targeting: the introduction of a regional flat rate and of a system of progressive modulation seems more likely to strengthen the targeting of payments through the multiplicative process due to the circular flow of incomes within the economy. A higher indirect efficiency in targeting as well as a higher redistributive power[6] emerges when direct farming is chosen as a targeting criterion.

A further insight of the analysis can be carried out looking at figures in table 6 where the redistributive effects (as in the last column of table 4) of the proposed policy tools are assessed under alternative definition of beneficiaries. The distributive profile is mainly affected by the choice of the beneficiary group. The current structure of CAP, whatever the form of implementation considered, shows again a better targeting of the direct farmers group within which the positive redistributive effects are distributed among quintiles in a more homogeneous way. On the contrary CAP payments leads to a larger improvement in the relative position of the higher quintiles of the beneficiary group if the professional farming is assumed as the relevant classification criteria for policy analysis. Under this definition of beneficiaries, when a flatter rate of support is introduced (regionalization and approximation), indirect impacts are able to improve also the relative position of households of the first quintile of total population not included in the beneficiary group.

Till now the analysis focused on the impact of single measures included in the Commission's proposal for a new Regulation. The actual implementation of reformed SPS will result from a combination of them that could vary among member states, given the flexibility allowed in the application of optional measures (regionalization and approximation) and the pending negotiation on compulsory ones (minimum level and progressive modulation). In order to complete the analysis two alternative scenarios of application have been defined according to the main objectives pursued by Commission through the reform of SPS: the reduction of administrative costs and the move towards a more

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[6] The redistributive power is expressed as the percentage ratio between the absolute redistributive effect (i.e. euros of initial income that is necessary to redistribute among groups to exactly reproduce the *ex post* distributive profile) and the initial injection towards households' incomes due to the policy.

flat rate of support for equity reasons. Depending on the relative importance assigned to these objectives, two scenarios of implementation have been defined as follows:

- *redistribution*: application of a regional flat rate combined with progressive modulation;

- *simplification:* approximation of existing entitlements to a (regional) homogeneous average rate combined with the introduction of a minimum level of individual payments.

Both scenarios include a basic rate of modulation increased to 13%.

The two scenarios are contrasted with the current application of mid term review in table 7. The reform of payments seems able to improve the targeting of payments in both scenarios. Moreover, the "simplification" hypothesis reduces the differences between targeting index measured under different definitions of the beneficiary group: in other word could be considered the better "compromise" from a targeting point of view.

Again, all scenarios of application are better targeted towards direct farmers both in total and when only indirect impacts are considered. Finally a sort of trade off between direct and indirect targeting is shown by the two scenarios of reform: while the simplification scenario shows a higher total targeting, the redistribution one is more likely to positively affect incomes of targeted groups through indirect impacts.

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Table 1 - Agricultural holdings accounts

Italy 2002 - millions of €

	absolute value (M€)	% value
Gross value added at market prices	27 783	90.9
Transfers to productions	2 770	9.1
Total inflows of agricultural households	30 553	100.0
Taxes on production	1 886	6.2
Wages	7 116	23.3
Rents for land	902	3.0
Corporate farms mixed income	-623	-2.0
Agricultural self employed labour mixed income	21 272	69.6

Figure 1 - Impacts on households incomes of the MTR payments

Cumulative values
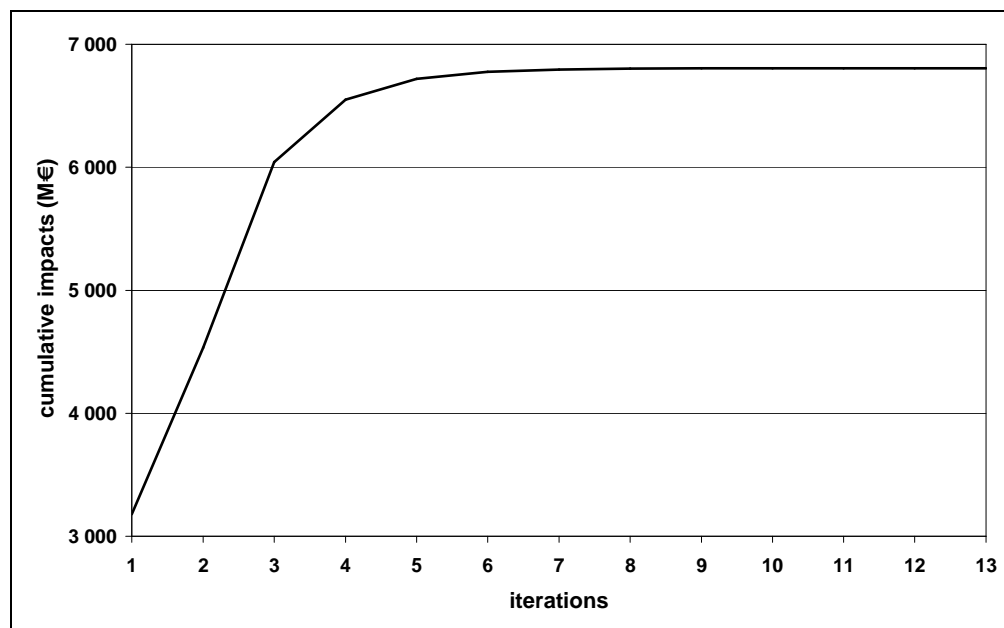
Table 2 - Household income nominal multipliers by targeted group of holdings and institutional sectors (€)

		holdings managed by		
		agricultural households	direct farmers	professional farmers
targeted hholds	1	0.09	0.13	0.03
	2	0.06	0.09	0.04
	3	0.14	0.21	0.11
	4	0.23	0.23	0.22
	5	0.49	0.43	0.47
non targeted hholds	1	0.06	0.05	0.08
	2	0.11	0.10	0.13
	3	0.16	0.13	0.20
	4	0.21	0.20	0.26
	5	0.42	0.40	0.48
total		1.98	1.96	2.37
total targeting		51.3%	55.4%	36.4%
indirect targeting		1.4%	5.4%	1.4%

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Table 3 - Direct and indirect impact of supporting different group of farms on households income

% values

		direct impact			indirect impact			total impact		
		agric hhs	dir farms	prof farms	agric hhs	dir farms	prof farms	agric hhs	dir farms	prof farms
targeted hholds	1	9.0	12.1	2.9	0.1	0.9	0.1	4.6	6.8	1.3
	2	6.0	7.5	4.2	0.1	0.9	0.1	3.1	4.4	1.8
	3	13.8	18.2	13.1	0.2	2.0	0.3	7.1	10.6	5.7
	4	22.7	21.2	25.2	0.3	0.8	0.3	11.6	11.6	10.9
	5	48.6	41.0	54.6	0.8	0.8	0.7	24.9	22.1	23.4
non targeted hholds	1	0.0	0.0	0.0	6.5	5.8	6.7	3.2	2.7	3.9
	2	0.0	0.0	0.0	11.3	10.5	11.6	5.6	5.0	6.7
	3	0.0	0.0	0.0	16.4	14.5	16.9	8.1	6.9	9.8
	4	0.0	0.0	0.0	21.6	21.1	22.2	10.7	10.0	12.8
	5	0.0	0.0	0.0	42.7	42.7	41.2	21.1	20.1	23.8
total to targeted		100.0	100.0	100.0	1.4	5.4	1.4	51.3	55.4	43.0

Table 4 - Distributive impact of the MTR payments

M€ and % values

quintiles	Impact of MTR payments				
	direct impact	indirect impact	total impact	multiplier	redistrib effect (%)
1	485	250	735	0.231	67.3
2	152	430	581	0.183	-92.8
3	520	626	1 145	0.361	11.8
4	682	819	1 501	0.473	20.9
5	1 338	1 503	2 840	0.894	-7.2
Total	3 176	3 628	6 804	2.142	

Table 5 - Impacts of alternative measures for reforming SPS under different definitions of beneficiaries

	Proposed instruments			
	regional flat rate	approximat. payments	minimum individual limit	progress. modulation
agricultural hholds				
total multiplier	2.054	1.984	1.997	2.010
specific multiplier	1.197	1.148	1.148	1.170
total targeting	46.5%	47.4%	47.9%	47.9%
indirect targeting	14.9%	12.3%	12.4%	13.9%
redistribution	0.92	0.90	0.92	0.92
direct farmers				
total multiplier	2.054	1.984	1.997	2.010
specific multiplier	1.220	1.174	1.176	1.196
total targeting	56.6%	56.6%	56.2%	56.5%
indirect targeting	19.9%	16.9%	16.8%	18.5%
redistribution	1.04	1.01	1.01	1.02
professional farmers				
total multiplier	2.054	1.984	1.997	2.010
specific multiplier	1.208	1.158	1.158	1.176
total targeting	41.6%	42.6%	43.6%	43.7%
indirect targeting	13.9%	11.7%	11.9%	13.0%
redistribution	0.82	0.82	0.83	0.84

Table 6

Redistributive effects of alternative measures under different definitions of beneficiaries

% values

		regional flat			approximated payments			minimum individual limit			progressive modulation		
		agric hhs	dir farms	prof farms	agric hhs	dir farms	prof farms	agric hhs	dir farms	prof farms	agric hhs	dir farms	prof farms
targeted hholds	1	7.5	10.2	1.5	7.5	10.6	1.0	6.8	9.5	1.0	6.3	8.9	1.2
	2	4.8	6.1	2.8	4.0	4.5	2.3	3.9	4.0	2.3	5.1	5.8	3.1
	3	13.3	16.6	12.2	13.1	15.4	12.4	12.8	14.8	12.3	13.0	15.1	12.5
	4	22.1	21.3	24.5	23.4	23.1	25.5	23.2	23.2	25.4	23.0	22.7	25.4
	5	52.2	45.7	58.5	52.0	46.4	57.5	53.4	48.5	59.1	52.4	47.4	57.9
non targeted hholds	1	-5.7	-8.7	0.5	-5.5	-8.7	1.3	-6.0	-8.8	-0.1	-6.1	-8.7	-0.9
	2	-11.2	-11.7	-10.0	-12.0	-11.7	-11.1	-12.3	-11.7	-11.7	-11.6	-11.7	-10.3
	3	-10.9	-14.5	-9.5	-12.0	-14.5	-11.3	-12.5	-14.5	-12.0	-12.4	-14.5	-11.7
	4	-21.2	-20.5	-23.5	-20.4	-20.5	-22.3	-20.2	-20.5	-22.0	-20.7	-20.6	-22.8
	5	-50.9	-44.6	-57.0	-50.0	-44.6	-55.3	-49.0	-44.5	-54.2	-49.2	-44.5	-54.3

Table 7

Targeting of alternative scenarios of implementation of SPS under different definition of beneficiaries

	agric hhs	dir farmrs	prof farmrs
	total targeting		
mid term review	39.1%	47.5%	35.2%
HC redistribution	46.4%	56.9%	41.4%
HC simplification	48.3%	56.4%	44.3%
	indirect targeting		
mid term review	1.4%	5.4%	1.5%
HC redistribution	14.9%	19.9%	13.8%
HC simplification	14.0%	18.5%	13.2%