Risk and Crisis Management in the Reformed European Agricultural Policy

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Currently there is ample discussion among EU Institutions (European Commission, European Parliament, and Member States' governments) on the opportunity for setting up a comprehensive EU-wide framework on risk and crises in agriculture. In the meantime, within the limits of the WTO rules on agriculture, national governments are allowed to intervene through direct compensation to farmers in case of exceptional events that cause damages to farming operations and through subsidies to crop insurance programs. Such schemes are quite expensive for domestic budgets and some Member States are trying to switch some of their cost to the Community's budget, although an expansion of financial resources devoted to agriculture in Europe is rather unlikely. Moving from the recently emanated proposal of the European Commission, this paper discusses the main issues related to public intervention for risk and crises management in agriculture.

Actuellement, les institutions européennes (Commission européenne, Parlement européen et gouvernements des pays membres) discutent intensément de l'opportunité d'élaborer un cadre général pour l'ensemble de l'Union européenne sur les crises et les risques dans le secteur agricole. Entre-temps, selon les règles de l'OMC sur l'agriculture, les gouvernements nationaux peuvent intervenir en accordant des compensations financières directes aux agriculteurs en cas de circonstances exceptionnelles causant des dommages aux exploitations agricoles ainsi que des subventions aux programmes d'assurance récolte. Ces interventions amputent considérablement les budgets nationaux, et certains pays membres tentent de transférer une partie de leurs coûts au budget de l'Union européenne, bien qu'il soit peu probable que les ressources financières consacrées à l'agriculture en Europe augmentent. A la lumière de la récente proposition de la Commission européenne, le présent article traite des principaux thèmes liés à l'intervention publique dans la gestion des risques et des crises dans le secteur agricole.

INTRODUCTION

In March 2004, the European Commission set forth a document discussing the issue of "Risk and Crisis Management in EU Agriculture."[1] The document is in response to an explicit request from the EU Council at the end of the Italian presidency that followed similar initiatives from Spain and Greece, all of whom brought the issue of risk management in agriculture to the attention of the Community.[2]

The EU Commission document, together with a companion working document,[3] set forth three possible options for new policy instruments that could help farmers improve their capability to manage risks and crises.[4] The proposal suggests that the measures be financed at no additional cost to the European budget, and encourages discussion among all interested institutions (European Parliament, Council, and Member States).

Overall, the tone of the document could be interpreted as a signal that the high and increasing pressure on the European agricultural budget derived from the EU enlargement and other issues deemed more deserving than agriculture, make it very difficult for agricultural risk management to become a relevant chapter of the European Agricultural Guidance and Guarantee Fund. Nevertheless, the document has contributed to fuel the debate about the justification of continued public support for European agriculture, including the compatibility of the proposed measures with the constraints imposed by the WTO agreement on agriculture, and by the European ruling on State Aids.

One of the characteristics of the debate is that the word "crisis" now receives more emphasis than ever in the past within the discussion on agricultural policy. Both private strategies and public policies are being discussed as pertaining to a context of "risk and crisis" management.

While one may agree that there is a potential role for public involvement in the management of both risks and crises in agriculture, the two concepts should be kept distinct. Broadening the scope of the debate to discuss options that ought to tackle both risks and crises has generated some confusion (as if there might be tools which can handle both equally well). One of the goals of this paper is to point to the source and to highlight the content of such confusion.

The objective of this paper is to analyze the options that have been advanced by the European Commission, something that will be done at length in the last section of the paper. To do so properly, however, the first two sections discuss the potential scope for risk related policy in agriculture, and introduce the peculiar conditions of the European Agricultural policy. The hope is to be able to contribute to informed academic and political debates on the role and effects of risk-related policies.

POLICY FOR RISK AND CRISES MANAGEMENT IN AGRICULTURE

Public policies aimed at dealing with risk in agriculture have been justified on several grounds and can be designed to achieve one or more of the following objectives: *(a) to reduce the incidence of damages of a potentially costly event*, *(b) to mitigate the effects of damages suffered by farmers*, *and (c) to increase the risk management ability of farmers*. The policies might be grouped correspondingly:

1. *Ex ante* policies, to reduce the incidence of damages of potentially dangerous event. These are policies intended at directly modifying the extent of the damages potentially caused by risky events (e.g., public investments or incentives for private investments in infrastructures—such as canals and drainage facilities—which reduce the damages in case of a flood.) Such policies are justified essentially by precautionary motives, and are advisable when the potential damage is very large or when the required investments assume the character of public goods. Their cost can be then transferred to farmers by imposing specific levies, such as it is the case for mandatory contributions to irrigation consortiums, or to the general population through taxes.
2. *Ex post* policies, to mitigate the effect of damage suffered by farmers, by financial transfers or other provisions intended at facilitating economic recovery, such as deferring or reducing tax payments. These are fundamentally redistributive policies that spread the cost of damage recovery over the general population through the

public budget. The cost of such policies is proportional to the lack of preventative measures, a situation that occurs especially when the events are unpredictable, so that no incentives existed for either private or public prevention.

3. Policies to increase the risk management ability of farmers. These policies are usually justified on efficiency grounds, and attempt to correct for various forms of market failure. Depending on the risk management strategy that farmers might adopt, governments might get involved in various ways.

   (a) Where insurance is viable, the government may reduce the cost of market based insurance (i) through subsidization of insurance premiums, (ii) by providing reinsurance, (iii) by taking actions aimed at reducing transaction costs in the insurance markets, such as certifying available information on yields, (iv) by providing information on the distribution of insurable events, (v) by increasing competition in the supply of insurance services, and (vi) by providing insurance directly.
   (b) The government may provide the legal and institutional environment for the operation of markets for financial instruments such as futures, options, and other derivatives.
   (c) The government may reduce the cost for farmers to retain the risk, for example, by subsidizing savings, by improving access to credit, by providing incentives to storage, by providing better marketing infrastructures, etc.
   (d) In general, the government may facilitating the flow of reliable information.

Some of these policies may compete with each other, while others might be complements. In any case, their presence will alter incentives facing private agents and therefore potentially affect their decisions. From the vantage of social welfare, several important aspects need to be considered when designing and implementing these policies.

(1) The availability of public policies can induce unjustified private risk-taking behavior. For example, when generous *ex post* disaster payments are anticipated, farmers might make production decisions and investments that can be considered suboptimal from a society's point of view, such as locating their activity in risk prone areas.
(2) The presence of public policies might crowd-out other equally efficient privately available actions. The presence of subsidized crop insurance, for example, might reduce the extent to which other private risk-reducing activities—such as crop diversification—take place. The benefits of these policies, therefore, should be correctly evaluated in terms of the *additional* protection, if any, they allow when compared to the otherwise available private instruments and of the distributional effects due to the costs. Private agents will clearly prefer publicly provided risk-management tools to private for equivalent benefits in terms of risk reduction. Therefore, the question arises as to whether such distributional effects are justified.
(3) The presence of risk related public policies might have unintended consequences such as negative environmental externalities (Roberts et al 2004).
(4) When public policies aim to increase farmers' ability to manage risk by means of market-based instruments, the competitive structure of such markets may strongly affect both the extent to which risk can be reduced and the distributional effect of the policies. In the vast literature on crop insurance, for example, very limited attention

has been given to the actual structure of the insurance industry, which most authors have assumed to be competitive.[5]

All these aspects make the assessment of the incidence of risk related policy particularly complicated. The difficulties are further increased by the problem the tools of welfare economics are controversial when applied to risk policy.

Economic Analysis of the Consequences of Risk Exposure

Although often criticized, the most widely used framework for the analysis of economic behavior under uncertainty is Expected Utility, and many policy prescriptions are either implicitly or explicitly motivated by results of Expected Utility-based analyses. To clarify the extent to which some of these prescriptions can be used for the welfare analysis of risk and as a guide for policy making, we review the main lessons from the extensive literature devoted to the topic.[6]

Three aspects particularly complicate risk analysis and have often been overlooked in policy discussions on the role of risk in agriculture. First, the welfare effect of risk depends on the *entire distribution of outcomes*, not just on the expected value or on the combination of mean and variance (Hardaker 2000). The distribution of outcomes matters because it has been convincingly demonstrated that preferences toward monetary outcomes are not symmetric, in the sense that the attitude toward losses does not mirror that toward gains, and that loss-avoidance might often be a better description of the objective of economic agents (Kahneman and Tversky 1984). To the extent that welfare analysis has to be based on preferences, this asymmetry must be recognized, implying that simple measures of *expected* costs and benefits are insufficient to properly assess welfare changes. Especially where the distribution of outcomes is very skewed, such as when low probabilities of very serious losses exist, also mean-variance approaches may lead to serious underestimates of the potential social benefits associated with eliminating just the lower tail of the distribution.

Second, from a utility-based point of view, what matters is the stability of *consumption*, not of current income. Since the development of the life cycle and permanent income hypotheses (Modigliani and Brumberg 1954), theory and evidence suggest that consumption is positively related to the expected value of the long-term wealth, not to current income. Changes in current income will have a significant welfare impact only in so far as they are deemed to be permanent (Friedman 1957). This aspect leads to the need to consider the role of saving and borrowing as means to smooth consumption. When credit is feasible, a transitory negative change in income will entail a much lower change in current consumption, given that the burden can be spread over the time span needed to repay the amount of money borrowed to face the emergency. Unless the reduction is very large and/or the interest rate is very high, the welfare cost of transitory changes in income is quite low for any reasonable degree of risk aversion. Therefore, unless income reductions are deemed persistent, or no opportunities to save or to borrow exist, the welfare benefit of eliminating transitory variations in income are very limited, which might contribute to explain, for example, the limited demand for insurance of some weather-related agricultural risks.

The third often-neglected aspect of the welfare analysis of risk in agriculture is that, even in developed economies, the relevant consumption decision unit is the household,

whose income generating potential depends on all of its available resources. Even for specialized farms, off-farm employment, and other financial activities, such as investments in equities and bonds, compete with the agricultural activity for the use of the households' resources. Farming and its exposure to risk should, therefore, be analyzed as part of the wider farmers' portfolio of activities and the possibility of reducing farm-related risk through public policies should be evaluated in so far as it contributes to the reduction of the overall risk of the entire agricultural household's enterprise.

All these considerations contribute to fuel the belief that much of the emphasis on normal production and market risk in agriculture is probably misplaced. In developed countries, it is difficult to conceive of conditions for which the real welfare cost in terms of normal enterprise risk exposure is truly relevant. At least for production and market risk, private mechanisms ought to be able to efficiently take on the responsibility of reducing the economic cost to farmers. Once the effects of possible private actions are taken into consideration, the scope for truly welfare-enhancing public actions related to risk is likely going to be limited to the creation of the needed institutional environment that allows the efficient operation of the needed markets. In particular, facilitating the collection, certification, and spread of reliable information appears crucial.

The question remains of how to tackle those rare and serious events whose consequences are beyond the capability of the risk-sharing potential of markets, which will be the topic in next section.

Risks versus Crises in Agriculture

According to the definition of crisis that the European Commission has adopted in its document (EC COM (2005) 74) (Commission of the European Communities 2005b), three conditions qualify for an event to be considered as conducive to a crisis: that it is unforeseen, that it exceeds the individual capacity to cope, and that it affects a large number of producers. By their very definition, there is nothing that can be done by individual farmers to cope with this type of events, and the only hope for avoiding bankruptcy is to count on some form of public support when the unforeseen event materializes.

From society's point of view, therefore, the question is how to provide the needed assistance at an acceptable cost, and one way to reduce the cost associated to crises management is to invest in actions that might either increase the predictability of the events, or reduce the extent of possible damages, thus transforming potential "crises" in manageable "risks."

Once a crisis hits, the only conceivable option is to try and limit the potential additional damages and to invest in restoration of the damaged structures. Nevertheless, the event might inform decision makers of the probability that similar events might occur in the future, and therefore it will help in assessing the worthiness of investing in preventative measures. Further, the event may contribute to the development of new mechanisms to share their cost, recent examples of which are catastrophic bonds, catastrophic reinsurance, and reinsurance sidecars.

The previous argument is very general, and applies to any economic sector. Agriculture however, due to its close relation to food production, presents some implications that need to be examined in detail. One element to consider, for example, is that the consequences of external events or "crises" as defined above, that may affect the demand of food products such as, for example, the BSE, or the more recent avian flu outbreak.

The price drop that has followed these outbreaks, for example, could neither have been predicted nor hedged against, even with an active trade of futures and options for beef, poultry, or eggs, and it is very unlikely that any insurance company could have predicted such events and developed viable contracts before they occurred. On the contrary, it is conceivable that the occurrence of events such those would have negative consequences even on existing insurance schemes: one example of such occurrences is provided by the U.S. Livestock Risk Protection program administered by the RMA, which was suspended following the detection of the BSE in the state of Washington in December 2003.

The outbreak of disease is a very serious problem for agriculture, especially for livestock production, given the strict link between agricultural products and food and the precautionary attitude that, rightfully, everybody takes when choosing what to eat. As demonstrated by the recent avian flu panic that spread across Europe, the potentially excessive reaction of consumers can truly pose serious problems to the viability of agricultural holdings. Given farmers have no control over these demand shocks, there is a legitimate role for public intervention to bail out farmers from a crisis they did not contribute to cause. In this sense, however, rather than sit and wait for the next crisis to spread, Governments and farmers have plenty to do in addressing the real causes of the *persistence* of the economic crisis that follows, for example, the outbreak of a livestock epidemic. Often the major cause of the drop in demand is to be found in the difficulty that consumers have in assessing the actual health risk associated with the consumption of the involved products. Health risk, in fact, is the result of many factors that define the *risk generating process* (see Metcalfe et al 2002), which include contamination, exposure and dose–response. All these factors interact in a possibly complex way to determine the actual risk function. Consumers may not be in the position to correctly assess the risk and therefore, for precautionary motives, the only option for them is to diversify consumption away from the involved products. Communicating reliable information on the actual risk involved and on possible private actions that consumers could engage in to reduce the overall individual health risk, might prove a much more cost-effective policy in sustaining farmers' incomes than any direct transfer of money.

Very different is the case of potential new crises to which agriculture is exposed to because of events that manifest in the wider environment that surrounds farming, such as environmental degradation, oil depletion, climate change, diffusion of genetically modified organisms, terrorism, and so on. It is true that the occurrence of these events pose questions to agricultural policy makers that they have never been called to analyze before, and it is therefore legitimate to ask if and how the public ought to intervene, while guaranteeing a fair balance between farmers' responsibilities and those of the society at large. However, to discuss of these events and of their potential impacts on the society requires attention to the complex role that agriculture plays within modern societies.

COMMON AGRICULTURAL POLICY REFORM AND RISK

It is likely that the recent reform of the Common Agricultural Policy (CAP) will leave European farmers more directly exposed to output price fluctuations. However, to conclude that the relevant risk for farmers has necessarily increased, implying that farmers' welfare is certainly reduced, would be wrong, given that private tools to hedge price risk exist and will likely be used.

But there is another, stronger, argument to respond to those who claim that the CAP reform will increase farm risk. The likely increase in the variability of agricultural prices, in fact, does not necessarily imply riskier prospects for European farmers, because the relevant definition of risk must consider both *variability* and *level* of the economic outcome. In the spirit of the recent CAP reform, the (possible) drop of prices is coupled to the introduction of the (certain, although temporary) single farm payments (SFP); this means that total farm revenue, which includes the SFP, will not be reduced, on average, whereas the presence of a fixed payment will likely reduce its variance.

To highlight this latter point, let us call X_0 the prereform level of farm revenue. After the implementation of the reform, farm revenue will be the sum of two components, $X_1 = X + T$, where X arises from production activities and T, with $\text{var}(T) = 0$, is the direct transfer. If the direct transfer is decoupled and set at a level such that expected revenue is unchanged, we have $T = E(X_0) - E(X)$ and $\text{cov}(T, X) = 0$. Therefore, $\text{var}(X_1) = \text{var}(X)$. How will the variance of the revenue change after the reform? Defining α as the size of the fixed transfer relative to the initial level of revenue, the postreform revenue can be written as: $X_1 = (1 - \alpha)X_0 + T$. For the variance of the *ex post* revenue X_1 to be higher than the variance of the prereform revenue X_0, it must hence be that $\text{var}(X) > [1/(1 - \alpha)^2]\ \text{var}(X_0)$. In other words, the variance of the production-related revenue after the reform can be sizably larger than before to compensate for the fact that now part of the total revenue is fixed. Just to give an idea of what does this could imply in practice, if the direct transfer were 10% of the prereform revenue, the variance of the revenue from the production activities would have to increase by more than 23% ($= 1/0.9^2$) to make the overall variance in farm revenue higher than before the transfer. In other words, the presence of a fixed payment allows the farmer to bear a higher variance in the production-related component of the farm revenues, no matter how risk averse (s)he might be. The larger the share of the single payment is of the entire income, the higher the increase of variance due to prices that can be borne without implications on the overall welfare.[7]

Thus, the view that the CAP reform *per se* is a cause of increased economic risk for farmers cannot be sustained. It can be argued that the compensation granted by the SFP will only last until 2013 and that it is slated to decline by 5% a year, or that the way in which it is calculated will not fully compensate for the reduction in expected incomes, but in such cases the criticisms should be oriented toward the ways in which the compensatory payments are calculated and implemented.[8] The decoupling of the support neither directly nor necessarily implies that more risk is at stake.

Two further arguments can be advanced to reinforce the conclusion that risk is not going to increase in the postreform conditions: first, farmers might engage in production patterns that grant higher average returns compared to the prereform cropping patterns, and higher average returns will reduce the welfare incidence of negative price variations. Second, many common market organizations (CMOs) still include features that eliminate the possibility that farmers' incentive prices can fall below predetermined levels, thus limiting the possibility that effective returns' variance might increase.[9] If a new framework for risk and crisis management must be conceived, it has little to do with the switch from coupled to decoupled subsidies, and it must consider the entire set of sectoral and social policies existing both at the Community and Member State levels, which might have a large impact on farmers' risk exposure, as we will see below.

The Risk Reducing Effect of Existing Policies

For many years, several phenomena have been predominant in the European agriculture that have been relevant for the overall variability of farm income: (1) yield variability, due to weather conditions, was coupled with a steady increase of the average yields due to technical and biological innovations, (2) relatively stable prices for most products were also following an increasing trend, due to the functioning of CAP market interventions; and (3) farmers have continued and increased their participation in gainful activities outside agriculture, and new opportunities have arisen for income diversification even within the farm (e.g., agro-tourism).

These conditions have strongly affected the development and use of agricultural risk management tools in Europe, which have been mostly focused on those aimed at coping with yield variability, namely, marketing excess production, technological innovation and yield insurance, and have neglected price stabilization tools, such as use of futures and forward contracts, options, and storage management, simply because they were not needed. If one thing can be expected from the change of philosophy that has inspired the recent CAP reform, it is that more and more *private* tools to manage price variation will develop.

Under the reformed CAP, it is possible that price variation for some products shall be somewhat higher than before, although this will likely not be the main concern. Market stabilization was one of the founding objectives of the CAP and many CMOs provided stabilization measures that work with different aims and ability to affect market price movements. Such measures range from market intervention with a floor price to instruments designed to smooth seasonality in prices movements, such as subsidies to storage. In several CMOs there still are stabilization measures whose existence has not been questioned during the process of reform, such as subsidies for private storage of sugar, dairy products and cheeses, bovine and sheep meat, wine, including intervention for distillation, and olive oil. Minimum intervention prices have been set at levels such that they have not been deemed as representing implicit support. To have a sense of the relevance of these measures, it can be considered that the EAGGF expenditure arising from the private storage measures in 2003 amounted at €928 million, a figure that also includes the budgetary outlays for table wine distillation.

In addition to measures included in the CMOs, farmers in several Member States can also count on measures administered at the State level, specifically intended to assist them to cope with income risk. The measures are quite diverse, ranging from support funds to be called upon in case on natural disasters, to the payment of subsidies to crop insurance premiums, to the administration of public crop insurance schemes.

Other measures exist which do not belong to agricultural policy proper, but that might have a non-negligible effect on farmers' overall risk exposure. In Italy, for example, the law that institutes the National Civil Protection Agency has recently been invoked to restore damage suffered by farms in Lombardy due to the drought. The recent European Solidarity Fund, instituted after floods plagued Central Europe in the summer of 2002, although not intended to finance damages to crops, can be used for restoration of damages to production structures.

Table 1 presents a list of the types of instruments that directly or indirectly contribute to form the income safety net for European farmers.

Table 1. Income safety net for European farmers

Private tools
Crop diversification and or crop/livestock combination
Crop insurance
Contract farming
Marketing
Hedging
Farm financial management
Income generating portfolio management
Savings/credit
Public policies
At local (regional) and/or State level
Sectoral
Subsidies to crop insurance
Public crop insurance
Agricultural solidarity funds
Other
General solidarity funds (civil protection)
At the European-wide level
Sectoral
Price support
Income transfers
Rural development initiatives
Other
European solidarity fund

The presence of such a wealth of tools poses a challenge in setting up a general framework for risk management in Europe, in that it either needs to be compatible with the existing national policies, which will likely lead to the definition of a very broad menu including all different existing types of policies, or would require some of the Member States to give up policies they already have in place. One other set of constraints on the possible definition of new policies is represented by the existing institutional limits related to WTO rules and to the discipline on State-aids.

WTO Rules

After the 1994 Uruguay Round Agricultural Agreement (URAA), the degree of freedom in agricultural policy choices has been considerably narrowed. Nowadays, the only new policy measures that can be introduced are those included in the so called green box. Much of the attention received by risk management policies in recent years, both in the United States and in Europe, is arguably due to the introduction of two articles in the URAA, which listed government financial participation in income insurance program or income safety net and payments for relief from natural disaster among the types of support exempted from the domestic support reduction commitments..

The eligibility criteria listed in the URAA are rather ample, in that compensations of up to 70% are admitted for income losses of at least 30% of the preceding three years' average (articles 7 and 8 of Annex II). These criteria caused most existing disaster

assistance and financial participation to crop insurance programs to be promptly redefined to comply with these norms.

Concerning the possibility that such schemes will remain in the green box, evidence so far suggests that the U.S. programs have had limited or no production enhancing effect, and therefore cannot be considered trade distorting (Smith et al 2003). It is worth noticing, however, that, despite being not directly trade distorting, transfers to U.S. cotton farmers channeled through crop insurance subsidies have been included in the calculation of the production enhancing, total support granted to producers in the context of the WTO cotton dispute raised by Brazil against the United States in 2002. Although the WTO panel concluded that Brazil had failed to establish that crop insurance subsidies have a price suppressing effect, the question as to whether crop insurance subsidies can be considered a form of production related support implies that how long their current levels of support will be acceptable is now in question.

EU Discipline on State Aid in Agriculture

Additional constraints on risk-related policies come from the Community Guidelines for state aid in the agriculture sector (EU OJ 2000/C 28/02), which allows both payments to compensate for damages and subsidies to insurance premiums, provided that insurance is intended to cover disaster-like risks.

In general, the discipline on state aids is rather generous in that it permits a wide range of interventions intended to compensate damages due to "unforeseen occurrences such as natural disasters, adverse weather conditions, or outbreaks of animal or plant disease." Adverse weather conditions such as frost, hail, ice, rain, or drought may be assimilated to natural disasters once the level of damage reaches a certain threshold, which has been fixed at 20% of normal production in the less-favored areas and 30% in other areas.

It seems evident that the European discipline on state aids in agriculture has continued in the road opened by the URAA. This is a dangerous road if it will lead to the mistaken impression that a temporary 30% reduction in gross income from a single crop/product could generate such a welfare loss to require the intervention of public financial support. The definition of a crisis from a farm perspective needs to be clarified, and therefore, what might call for public support, is one or a combination of events that, lacking external support, would cause *current consumption*, not current production or income, to drop by 30% or more.

THE EUROPEAN COMMISSION'S DOCUMENT OF MARCH 2005

With the preceding sections as a lengthy premise, we can now critically discuss the European Commission's proposal for the institution of a European framework for risk and crisis management in agriculture. In March 9, 2005 the European Commission advanced three possible options to be analyzed to the extent that they could "individually or jointly, completely or partially replace Community and MS's *ad hoc* emergency measures" (EC COM (2005) 74) (Commission of the European Communities 2005b, p. 6). The three options were described in very general terms, so that a precise assessment of their implications would require some speculation on possible ways in which the measures could be implemented. The only strict requirement indicated by the Commission was that their

implementation must be financed at most by the 1% point of the funds made available by the modulation of CAP direct payments.

The three options were:

(1) Financial participation in farmers' premium payments for insurance against natural disasters;
(2) Supporting mutual funds; and
(3) Providing basic coverage against income crises.

In this section we shall briefly review the potential strength and weaknesses of the three options, referring the interested reader to Cafiero et al (2005) for an extended treatment.

Option 1: Financial Participation in Farmers' Premium Payments for Insurance Against Natural Disasters

According to the European Commission, "insurance provides an *alternative* to public *ex post* compensation payments for losses caused by natural disasters at EU and national or regional level" (EC COM (2005) 74) (Commission of the European Communities 2005b, p. 6, emphasis added). The idea is that, if a farmer buys insurance against natural disasters, the damages covered by the insurance contract will not need to be compensated *ex post* by public financial support.

While it is clear that increased use of insurance by farmers could contribute to a reduction of the total amount of needed *ex post* compensation, it is not certain that public contribution to premium payments is the most effective way to foster an enlargement of such insurance market.

In this respect, other countries' experience has been rather negative, and the U.S. case is emblematic in this respect (Glauber 2004). The key issue is that, unless a government is capable of a credible commitment to not compensate those who had not signed an insurance contract, the farmers' incentive to buy catastrophe insurance is very limited: why spend money for coverage against events which are very rare and for which the public is expected to step in with compensation? On the other hand, such a commitment, even if theoretically possible, would hardly be politically sustainable, given that it would suffer of a severe form of dynamic inconsistency. Once a disaster hits, those without insurance coverage would also be those more in need of public assistance: to refuse to provide it, would be a very costly political decision for any government. In Europe, where agricultural national solidarity funds are in place, such as in Italy and in France, governments have been rather generous in declaring the status of agricultural natural disaster.

Apart from the competition of public solidarity, insurance against damages caused by natural disaster suffers from a series of other problems that have long hindered its diffusion. Natural disasters have the character of catastrophic/systemic risks and therefore are notably difficult to insure: it would require either holding large reserves, with resulting high opportunity costs of the immobilized capital, or buying expensive reinsurance. Reinsurance could allow the transfer of part of the systematic risk to other companies not bearing risks in the area in which the primary insurer operates. However, even when reinsurance is possible, systemic risk can still be a cause of failure for market insurance. Publicly supported reinsurance has been implemented for insurance of personal and property damages due to catastrophes in France and in Spain (which however does not cover

production damages) and for regular crop insurance in Spain and in the United States. Such policies, however, appear to be very expensive if compared to their effect in terms of reducing the need for *ad hoc* budget appropriations.

The combination of insurance and reinsurance subsidies implies a very high burden on taxpayers. It appears that the risk of a similar occurrence has been duly acknowledged by the European Commission, who advance the possibility that the encouragement of national reinsurance schemes could also be examined *as an alternative*, and not as a complement, to the subsidization of insurance premiums.

When considering subsidizing insurance premiums, one also must consider the competitive structure of the supply of insurance. If monopoly power exists on the supply side, subsidizing the premium paid by buyers might only have the effect of raising the prevailing premium with limited effect on wider market participation, and therefore no benefit in terms of farmers' reduced exposure. Although this aspect has been only explored in the literature to a very limited extent (Capitanio and Cafiero 2006) some anecdotal evidence suggests that the presence of local cartels among insurance companies might be a concern.[10]

Given the various problems that may afflict disaster insurance, it becomes crucial to develop well-designed mechanisms to prevent inefficiencies in the implementation of schemes based on the payment of premium subsidies. The European Commission provides some guidelines regarding possible implementation, such as,

(1) That the amount granted per farmer by the combined EU and national support should not exceed 50% of the total premium cost;
(2) To trigger payment, production losses should exceed 30% of the average agricultural production;
(3) Total compensation granted to an individual farmer should never exceed 100% of the loss when other forms of public compensation are in place; and
(4) The payment should not require or specify the type or quantity of future production.

Regarding condition (1), it must be noted how it could create discrepancies with existing national programs that comply with EU state-aid regulations in agriculture, which allow subsidies to premiums of up to 80%. It is very likely that if a proposal such as the one described here will be approved, state-aids regulations, as well as existing national legislations, will have to be emended to comply with the stricter limit of 50% of the premium.

Conditions (2) and (3) are the elusive, because of the potential ambiguity on the possible interpretation of the trigger level. If the 30% loss trigger level is interpreted as being effective at the individual farm level, it might cause a number of problems. First, the way in which it is formulated, it is not really a deductible, in the sense that, once the payment is triggered, it is still possible to fully compensate the damage. Such a contractual clause, rather than reducing the occurrence of moral hazard, will likely exacerbate it. In fact, such a mechanism would create strong incentives for the insured to engage in hidden actions that could bring damages of, say, 20–25% of production up to the trigger level of 30%, with the result that the increased monitoring costs might erode part of the benefits of the subsidy. Second, it is not clear whether production should be intended in physical terms or in value, and whether it must be intended with reference to a single crop/product or to the entire farm production. Defining the loss in terms of physical production of a

single crop would make the proposed measures not substantially different from traditional agricultural yield crop insurance, for which the long and varied history of governmental support programs across the world leads to the conclusion that the only beneficiaries have been "(1) those who were landowners at time of program introduction, who can benefit from the increase in land prices; (2) insurance providers, especially if oligopolistic; (3) politicians who work for them; and (4) economists who work for 2 or 3 above by making programs appear to be good or at least defensible policy" (Wright 2006).

A more defendable option would be to define the farm-level loss, caused by the natural disaster for which the policy is written, in terms of the *value* of the affected productions and to measure it relative to the average of the previous three years' *total* farm income (inclusive of fixed payments received under CAP provisions). Such a procedure would have the advantage of being truly decoupled from production decisions; it would take into account the possible effect of natural hedge (i.e., the negative correlation between production and price) and would be close to linking the income fluctuation to the actual welfare loss. The implementation of such a scheme, however, would require the setting up of a reliable system of records of individual farm incomes, which might be costly, although potentially fruitful. The availability of accurate time series data at the farm level, in facts, could make premiums differentiation for each farm possible, with benefits for the diffusion of insurance: premiums would reflect the risk carried by individual farms and thus adverse selection would be reduced. However, this scheme would not avoid the moral hazard problem, and claims for damages must be assessed for each insured. In short, all these features would likely imply high administrative costs, and the possibility of a viable insurance scheme at farm level would be very difficult to implement especially for countries where good farm income information is not available or reliable.

A third possible interpretation is that indemnity payments could be triggered by an index of *area production*. The 30% income loss could be intended at a regional or subregional level, and insurance contracts might pay indemnities only when an index of regional production would fall below 70% of the three-year historic average. Such an area-based insurance scheme could avoid moral hazard problems, in so far as no individual farmer would have the potential to affect total regional production to the point of triggering payment (Mahul 1999), although the problem remains of how to calculate indemnities. One option is to indemnify all insured on a per hectare basis, proportionally to the extent of the area production-fall. That is, if the area production index falls at, say, 65% of historic average, full compensation means that all insured would receive a payment equal to 35% of their historic individual average production, independent of their actual production. This would avoid the cost of assessing individual losses, but would imply the possibility that some farmers will be overcompensated and other will not be fully compensated, due to the fact that individual production might not be perfectly correlated to area production. The problem might be dealt with by leaving the possibility that individual farmers who suffered damages in excess of the average might make a claim for an additional indemnity and will have to demonstrate the actual loss. Such a scheme would be, in many respects, consistent with article 8 of the Annex 2 of the URAA, according to which eligibility for *ex post* compensating payments arises only when a formal recognition by government authorities exists that a natural or like disaster has occurred or is occurring. The advantage of linking the recognition of a disaster

occurring to an objective index of regional agricultural production, the determination of which might be assigned to an independent authority, is that of limiting the extent of the political failure due to the pressure to public authority to generous declarations of disaster status.

To identify the possible financial burden that financial participation to the payment of premiums would impose on the public budget, Cafiero et al (2005) estimated the hypothetical cost of an area based farm revenue insurance scheme of the kind described above for one Italian region. By projecting the results to other regions, their conclusion was that supporting insurance on a large scale, given the EU budget constraint, would require conspicuous integrations from national funds.

Taking into consideration the points raised in the previous section of the paper, the main conclusions on the option of public subsidization to insurance premiums may be summarized as follows.

(1) Privately provided insurance against natural disaster and other events with serious consequences on the agricultural sector (such as economic crises) is known to be difficult because of the systemic nature of the involved risk, in addition to the informational problems that plague agricultural insurance.
(2) A subsidy to insurance premiums will likely have very low transfer efficiency, because part of the transfer would be dissipated in transaction costs linked to the possibility of administering the insurance programs, and partly captured by rents to the extent that insurance supply is not competitive.
(3) The relative efficiency of a subsidy will depend crucially on the design of the insurance contract. Area based triggers, which determine eligibility to indemnities based on the level of an index of regional or subregional agricultural revenues would avoid some of the problems involved with individual insurance schemes.
(4) The implementation of any feasible program of such agricultural revenue insurance would require reliable time series data on crop revenues at the area level, something that might be very costly.
(5) A subsidization scheme for an insurance against natural disasters would be very costly, and financial resources from modulation would hardly be sufficient, even with cofinancing from Member States.

Option 2: Supporting Mutual Funds

The second option advanced by the European Commission proposes supporting a decreasing contribution to the administrative operation of mutual funds among farmers.

Mutuality has played, and still plays, an important role within the agricultural sector. It is an expression of solidarity among farmers that historically helped to build relevant organizations, such as cooperatives, that contributed to the growth and stabilization of family farming in Europe. Cooperatives and other forms of farmers' associations have been usually aimed at achieving more favorable distribution of power relationships within the agricultural sector. In doing so, cooperatives, as well as producers' organizations, already provide risk management services to their members, by performing commercial activities which reduce the effect of input and output price risk, such as by coordinating the purchase of inputs and by providing marketing contractual arrangements, storage

management, processing activities and other means to reduce the effects of output price risk.

The same spirit could pervade the establishment and operation of mutual funds with the specific aim of becoming risk management instruments for farmers. Traditional mutual funds as insurance tools are based on the establishment of financial reserves, built through participants' contributions, which can be called upon by members in the event of severe income losses, according to predefined rules. The basic idea, common to the principle of insurance, is to spread the risk within a pool of members, with the additional effect that, by implying long-term commitments, mutual funds would provide effective risk pooling also over time.

To all intents and purposes, a mutual fund can be seen as a form of organized, joint precautionary savings fund to be used to smooth incomes over time. As compared to traditional insurance in agriculture, the scope for moral hazard is strongly limited by the nature of the mutual agreement, where the participating group is bounded by a principle of solidarity, and by the long-term nature of the commitment. The shared knowledge of individual exposure to risk of participating farmers, on the other hand, would eliminate adverse selection problems.

The effectiveness of a mutual fund depends on the accumulation of sufficient reserves on which farmers can count in case of income losses. The funds can be provided by savings in the years in which farm returns are higher. However, reliance on the fund's capital could be hindered by the systemic character of the risk, especially if this option must be seen as an instrument to reduce the need of *ad hoc* disaster assistance. When severe and diffused damages are caused by adverse climatic events, a large number of members of the mutual fund would be hurt, especially if the scope of the fund is limited to the producer of a given product or to those residing in a given region. The systemic character of risks can be particularly problematic at the beginning of a mutual fund's activity, when the gathered capital can be insufficient to cover losses incurred by many participants at once. One possible solution to this problem can be publicly provided reinsurance offered by a Member States, particularly at the beginning of the fund activities. Reinsurance could cover losses in excess of the fund's accumulated capital, so that, with the growth of the fund's capital, reinsurance coverage might be gradually reduced. No reinsurance would be necessary when the capital fund has reached the maximum level.

A major problem for the institution of mutual funds could be the lack of sufficient incentives to induce farmer's participation, especially where tradition and experiences of mutuality are poor. Mutual funds have to rely on trust among their members. Trust can be considered as an externality produced by long-term relationships between members of a Community. Nevertheless, incentives might be needed to motivate farmers in depositing funds in the mutual fund rather than in personal savings account. The risk sharing character of the mutual fund might not be a sufficient incentive, even if partially enhanced by public reinsurance. A more effective incentive could be provided by a premium on the interest rates earned on deposits made in the fund. The interest rates' premium might borne by the fund's management and subsidized by local governments. Tax benefits for the share of farm income invested in the mutual fund could be an alternative or an integration to interest rate subsidies. For example, a lower tax burden on deposits to the mutual funds could be balanced by higher taxes when a member leaves the fund or when funds are

withdrawn for purposes different than those for which the fund has been specifically set up.

In addition to using internal reserves, a mutual fund could access credit in case of necessity. To the extent that the fund's members are able to jointly provide higher guarantee to the lending institution, mutual funds could contribute to increase access to and reducing the cost of credit relative to what individual member could achieve.

In the discussion so far, the hypothesis has been maintained that the fund fully retains the exposure to risk. However, the possibility of transferring part of the fund's risk exposure on others might greatly increase the risk management ability of mutual funds, especially in the context of natural disaster risk management, when the potentially large intensity of the damage is associated to the systemic nature of the risk. The transfer of risk, as usual, might be achieved either by insurance or by securitization, for which the presence of mutual funds might grant sizeable advantages relative to individual farmers' action.

The fund might buy commercial insurance coverage against the risks that are more likely to threaten a large number of its members. Compared to individually contracted coverage, a mutual fund would have greater bargaining power when facing the insurance companies (thus contributing to the reduction of some of the distributional inefficiency linked to presence of insurance subsidies we mentioned in the previous section) and, by internalizing monitoring costs, it could sensibly lower the premiums by, for example, accepting higher deductibles. There is ample evidence of such advantages from the *Consorzi di Difesa*: provincial farmers associations established in Italy in 1974 for the management of weather risk in agriculture. By negotiating the terms of collective insurance coverage, the *Consorzi* have been often able to obtain lower premium rates and better coverage than individual farmers (Melani 2005).

Another potential form of transferring the fund's risk is securitization of the fund's exposure through specific contracts that could be sold on the over-the-counter markets for financial derivatives, much in the tradition of the already mentioned CAT-bonds. While the potential for farmers to use financial markets to hedge their risk is very high, currently the most relevant obstacles appear to be the minimum size needed to efficiently access such markets and the professional skills required to profitably exploit them. Acquisition of the professional abilities required to operate on the financial markets is probably beyond a single farmer's ability, and their risk exposure might not be sufficient to justify securitization. In this sense, mutuality might be a very effective mean to justify both the acquisition of the required professional services and to reach the critical dimension needed for securitization.

Sectoral and/or regional mutual funds could play a fundamental role in collecting individual member's risks, packaging and placing them on the wider financial market by means of insurance companies, brokers and other intermediaries. In this respect, other forms of public support to farmers' organizations with the objective of increasing their hedging ability beyond that allowed for by traditional instruments, such as forward and futures contracts, might be highly beneficial. They might take the form of:

- Creation of the institutional setting necessary for farmers' organizations to operate on the financial markets;

- Financial contribution toward the creation of risk management units within existing or newly formed producers' associations; and
- Provision of required training opportunities.

For some sectors, the mutual risk management functions we are describing could be easily integrated in the operation of existing producers' organizations, such as those recognized by Member States under the current fruit and vegetables CMO. The scope of the Operational Programmes could be enlarged to include the financial activities required to provide precautionary savings to be used as risk management tools. Other sectors where producers share special risk management needs could be considered for the creation of analogous producers' organizations with the objective of performing mutual risk management functions: one example is the wine sector, where price risk could be easily hedged through use of appropriate financial derivatives. The establishment of an EU-wide network of agricultural mutual funds working in this direction could become the much needed stimulus to the development of a host of financial instruments suited to the changing risk structure of EU agriculture, thus creating a more favorable environment for agricultural risk management. Also, a revision of market stabilization policies defined within the CMOs could help in this regard, by avoiding the crowding-out phenomena that have hindered the establishment of market for risk transfer within the EU.

To summarize, the option of supporting the institution and operation of mutual funds seems highly promising. The main strength of this option is the low financial cost that it might impose on the EU budget. Indeed, the only fundamentally needed action would be that of setting up the institutional framework to allow funds operation, while the responsibility to provide financial incentives for farmers' participation to the funds could be assigned to local governments. In addition, the transfer efficiency of any financial support from taxpayers to producers would be relatively high because it would be entail making transfers directly to the farmers, with no intermediaries involved which could capture some of the benefits.

In terms of WTO-compatibility, there appear to be no problems involved. The conditions for institution and functioning of the fund can be written in ways that are fully consistent with the prescription of the URAA, by stating, for example, that withdrawals from the fund can be authorized after formal recognition by government authorities that a serious disaster has occurred.

The main weakness of mutual funds as an instrument for risk management is their dependence on the institutional setting required for their operation. The functions we have described, in fact, would require mutual funds to act as financial intermediaries, which would usually require specific authorization by the competent governmental authority, something that might be resisted by the lobby of other credit and finance operators. Also, difficulties might be found in situations where the traditions in mutuality are absent or weak and where the competing role of other forms of public insurance against income crises strongly reduces the need for mutual insurance as well as for other private instruments (see, e.g., the Italian experience).

Option 3: Providing Basic Coverage Against Income Crisis

The third option put forward by the European Commission consists of a generalized approach to manage income crisis in agriculture, as an alternative to other possible sector

specific intervention. The proposal is to offer a general income safety net to all farmers, thus improving the balance between different production sectors that today count on different levels of protection. The only stated conditions for such programs are that any such measure would be fully compatible with the prescriptions of article 7 of the Annex 2 to the URAA, so that it might be included in the WTO "green box." The measure, therefore, shall be open to all farmers facing gross income reductions of more than 30% of the preceding three years' average or of a three-year-based average of the preceding five years, excluding higher and lower values, irrespective of type and quantity of production. Compensation should amount at no more than 70% of the income loss, although it could be combined with payments from other compensation programs up to 100% of the gross income loss.

To guarantee fair competition across the Community, national programs developed according this option will need to be carefully examined to ensure compatibility with the regulations on state aids. The option opens several questions on both the motivation and the way in which the proposed measures could be applied. Regarding motivations, a first concern is raised by the general approach of income stabilization that the European Commission is apparently willing to introduce with such an option. Generalization of these payments would grant all EU agricultural producers access to income stabilization measures. Currently, farmers who receive decoupled payments can count on a fixed minimum income threshold even in case of a severe crisis. With implementation of this option, producers who currently operate in sectors not sheltered by the presence of decoupled direct payments could count on a form of farm income stabilization. As a result, equity of the CAP would increase.

Producers that would benefit the most from measures defined by this option are those who operate in sectors with the largest income variability (i.e., fruit and vegetables, wine, pig meat), for which CMOs do not provide direct decoupled payments. This lack of decoupled payments could imply the need for large amount of EU and national funds to compensate income losses in these sectors, thus raising concerns on the extent to which financial resources available from the modulation of direct payments might be sufficient.

It must be borne in mind that risk is an intrinsic component of business in these sectors. Farmers operating in such activities must be capable of managing it. A widespread, free, income safety net, such as the one envisaged under this option, could have strong distorting effects: it would likely cause more resources to be used in the riskiest activities, thus potentially generating negative effects in terms of larger supply, negative environmental externalities and a waste of public resources.

The European Commission proposal of an EU-wide common coverage of large income losses might also be motivated by the desire to avoid that national *ad hoc* disaster legislation could create differences across farmers operating in different Member States. An EU regulation on this issue, which would clearly state conditions for income stabilization payments made by Member States and the maximum allowed amounts, could be a relevant achievement, considering that such payments cannot be afforded by the EU budget. However it seems impossible to avoid the fact that using national funds might then create large discrepancies in the level of support received by farmers in different countries, given different capacity of national budgets to finance such compensations.

The conditions that would allow income compensation under such general scheme need to be specified. The European Commission staff working document (EC SEC (2005)

320) (Commission of the European Communities 2005a) identifies three main causes of crisis that should be managed on the basis of public funds: natural disasters and catastrophes, sanitary crises and economic crises. While it is clear that the first two are totally beyond farmers' control and might have effects on the long-term viability of agricultural holdings, and therefore appeal to public solidarity might be justified for financial support, the case of economic crisis is substantially different.

The phrase "economic crisis" is rather general; it includes very different phenomena having the effect of a large reduction of agricultural output prices, an increase of input prices, or both. The time-span of these crises may be very different, in the sense that some may be temporary, whereas others may become a stable feature of the economic environment that characterizes farmer choices. For example, the increase of oil prices reduced the profitability of farming, as well as of many other enterprises, but high oil prices are likely to persist in the long term. To deal with such a change as if it was an occasional risk can be ineffective and socially undesirable: it should rather be considered as the signal of a change in the economic environment surrounding farm activity and needs to be tackled with other instruments.

In other words, it would be wise and useful to distinguish between economic crises involving permanent changes with consequences on farm viability, and crises with strong but transitory effects. Long-lasting changes in the economic environment surrounding farming ought to be dealt with more articulated interventions that promote structural change and not through income transfers.

As for option 1, Cafiero et al (2005) estimated the foreseeable cost of implementing this option, showing that even under very restrictive eligibility criteria, the budget costs implied by this option could be huge. Therefore, it is quite difficult to imagine that this option could ever be applied on a large scale. Moreover, the interests at stake might be large and thus it is highly likely that eligibility to the payments will became largely a matter of political bargain at local level.

Implying essentially direct income transfers to farmers, the transfer efficiency of this option would be rather high, although possible rent seeking behavior on the part of potential beneficiary might reduce some of the benefits to farmers. Once such a scheme is in place, current administrative cost could be relatively low, although set up costs might be quite high, given the need to determine an agreed upon accounting definition of income, and reliable methods should put in place to calculate income and assess losses at the farm level.

As for other generalized risk reduction measures, compensation of farm losses open to all farmers might have strong distorting effects on resources allocation as well as negative environmental effects. Releasing farmers from the burden associated with the cost of risk attached to their choices, would likely generate externalities deriving from the increased use of resources in riskier alternatives.

The setting up of a general income stabilization scheme, as allowed by the current WTO rules, could be, in principle, a way to provide a solid safety net for farmers across Europe. Although the transfer efficiency would be high, given the direct nature of transfers to farmers, the burden imposed on taxpayers might be very heavy and different in different Member States, thus becoming a cause for increased distance between the levels of support granted to farmers in the various regions of Europe. This would contrast with the cohesion objectives that inform much of current European policy.

In addition, by taking away any individual responsibility in risk management, an intervention such as the direct income transfer envisaged by the European Commission proposal might have strong negative consequences in terms of efficiency of resource allocation.

Concluding Remarks on the Commission's Document

The general conclusion that can be drawn from the analysis of the three options proposed by the Commission is that it is quite difficult to imagine how any of the three could ever succeed in completely avoiding the need for emergency measures in case of disasters, if, as the document specifies, they must be financed by at most 1% point of the funds made available by the modulation of CAP direct payments. According to EU sources, with full implementation of modulation, 5% reduction of direct payments would amount at about €1,200 million/year.[11] If such an estimate proves correct, the prospected options can count on approximately €240 million/year, a figure which is lower, for example, than the €320 million/year that the Italian National Solidarity Fund alone has spent, on average, in each of the last 20 years to compensate farmers for damages due to natural disasters (Borriello 2003).

More reasonably, we can imagine that the three options, by promoting the adoption of effective preventive actions by farmers, should be intended as means to contribute to a reduction of the amount of financial resources eventually needed to face the emergencies caused by agricultural crises. As such, they could be intended as part of a more comprehensive plan, possibly including a common EU policy on disaster relief legislations. A uniform treatment of agricultural disaster compensation, in facts, could be desirable to avoid different national approaches that could undermine competition among the EU countries agriculture.

CONCLUDING REMARKS

In this paper we have presented a summary of the main theoretical aspects that should inform the discussion on policies intended to manage risk and crises in agriculture in the context of a developed economy, with a specific reference to the conditions of the European Union and of the reformed Common Agricultural Policy.

The main lessons we think can be drawn from all the preceding discussion on the possibility of setting up a comprehensive strategic framework for risk and crisis management in agriculture are as follows.

The relevance of the risk factors and their potential effects on farmers' welfare must be well understood.

To assess their welfare consequences, and therefore the value of possible risk reducing public policies, the various risks that farmers face must be measured against the potential consequences on the levels of farm households' *consumption*, not of current income. In most cases consumption depends on the expected permanent level of total family income. Such consideration would lead to the need to re-evaluate the welfare implications of exposure of farming to such things as natural hazards or to market crises for specific products, and therefore of the benefits associated with direct public intervention. Such a preliminary analysis would recognize that there are risks which are most efficiently managed by farmers' either by diversification of income sources or by coping with the consequences of limited income fluctuations through self insurance, without the need for public support. On the opposite end, when predictability is so limited that no preventive

action might be conceived and/or when the potential damages exceed farmers' ability to cope, there is no alternative to the reliance on some form of public solidarity.

An unambiguous distinction between normal enterprise risk and truly disastrous events ought to be made. Farmers should retain the main responsibility for management of normal enterprise risk and public action that tends to substitute for possible private action should always be avoided.

The actions should be different in case of crises and of normal enterprise risks. For crises:

(1) In the short-medium term, damage compensation is likely to be the only option;
(2) The responsibility of assessing conditions that trigger public transfers should be delegated to an agency independent of the political authority;
(3) Only damages to farm assets should be directly compensated, whereas damages to current production should be excluded;
(4) Compensation might be take the form of both direct transfer of money, and of financial participation in interests payments on loans specifically intended at damage recovery;
(5) In the medium–long term, preventive private actions should be supported that reduce the possible extent of damages caused by natural disasters, for example, by providing incentives to farmers to move from disaster prone areas, or to make investments in protective infrastructures; and
(6) Direct public investment in protective infrastructures might be needed, too.

For normal enterprise risks, farmers should develop their own risk management abilities, by making use of private markets of insurance, credit, and financial instruments. In this case, public intervention should act in order to promote private market or to favor the development of private abilities to manage risk, and not to substitute them.

Several actions can help in this direction:

(1) Providing the needed regulatory institutions and informational support in order to promote the expression of the private demand for market-based risk management tools, while guaranteeing competition on the supply side;
(2) Promoting the constitution of precautionary saving account through direct and indirect incentives, such as fiscal benefits in order to increase the potential of self insuring against some of the less severe risks at the individual farm level; and
(3) Promoting concentration of the demand for risk management instruments in order to have a more efficient access to all of these markets. In this case, supporting the operation of mutual funds is an effective way of fostering development of risk markets. In addition, to improve efficiency in risk transferring, the concentration of the demand will also have the effect of internalizing monitoring costs, thus increasing the scope for mutual management of some of the risks which, by their nature, might be difficult to transfer because of the presence of asymmetric information.

NOTES

[1]EC COM (2005) 74 (Commission of the European Communities 2005b).

[2]Reference is made to a memorandum submitted by the Spanish Presidency on March 18, 2002, followed by the International Conference on "Agricultural insurance and income guarantees," held in Madrid on May 13 and 14, 2002, and to the Greek Presidency memorandum on natural risks and insurance in the agricultural sector which was submitted to the Council on May 7, 2003, followed by

the seminar held in Thessalonica on June 6, 2003, to examine possible responses to natural disasters in the agricultural sector. It is worth noting that Spain, Greece, and Italy are the states where more public money is spent in agriculture under the rubric of agricultural risk protection, and therefore it is conceivable that the motivation for bringing the issue to the Union's attention was the desire to transfer part of the burden of their domestic agricultural production safety net onto the European budget.

[3]EC SEC (2005) 320 (Commission of the European Communities 2005a).

[4]Financial participation in farmers' premium payments for natural disaster insurance; supporting mutual funds; and the provision of a basic coverage against income crises.

[5]In the Italian legislation on crop insurance for example, for a long time collusion between insurance companies has been actually *promoted*, through operation of a mandatory consortium between crop insurance companies. The rationale was that sharing actuarial information on agricultural risks might have been used to better setting premiums. Less emphasis has been devoted to the possibility that lack of competition on the supply of insurance might cause the extraction of surplus and of all the potential benefits of premium subsidies. For some time, the danger that the presence of premium subsidies would mostly benefit insurance companies has been avoided by promoting the functioning of a counteracting monopsony, the ASNACODI (National Association among the "*Consorzi di difesa*"), the farmers' representative entity authorized to collect premium subsidies. In 2001, this market-controlling device was dropped, authorizing the release of subsidies also to insurance policy signed without the intervention of ASNACODI.

[6]Reference is made, in particular, to Moschini and Hennessy (2001) and Hardaker (2000).

[7]The point raised stands on the assumption that mean and variance are sufficient to define the relevant aspects of the risky prospect, here agricultural income.

[8]In fact, it is not to be taken for granted that the SFP will be eliminated. As one referee pointed out, there is already an active farm lobby in place in Europe that is concerned with the reduction of the SFP.

[9]Examples are the provisions of the beef and veal CMO, of the poultry and eggs CMO, which have been recently applied for example following the BSE, foot-and-mouth disease, and avian flu outbreaks, the mandatory distillation of excess production of wine, the withdrawal mechanism for fruit and vegetable, the subsidies to private storage for sugar and dairy products, and so on.

[10]In 1996, the Italian legislation that set conditions for subsidization of crop insurance was amended (DPR 324/96), following EEC directive 42/92 on antitrust law, to ban the existing consortium among agricultural insurance providers and to introduce a ceiling to the premiums entitled to the subsidy, in the attempt to reduce the incentive for insurance companies to capture the rent associated with the presence of the subsidy by increasing market rates. In 2004, the right of insurance companies to form consortia of reinsurance of co-insurance has been restored. In the recent past, the *Associazione Nazionale delle Imprese Assicurative* (ANIA) has been repeatedly challenged by the Italian anti trust authority, and in two cases it has been convicted for anticompetitive behavior in the delivery of mandatory car insurance.

[11]http://europa.eu.int/comm/agriculture/capreform/infosheets/modul_en.pdf.

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