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Crop Insurance in the European Union: Lessons and Caution from the United States

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Abstract

Recent changes in the Common Agricultural Policy have focused attention on the possibility of an enlarged crop insurance program in Europe. Several countries in the European Union already have national crop insurance schemes, but the performance of these programs in terms of realized demand has been low. In some cases, participation in the programs remains low in spite of significant subsidies to insurance premiums. This situation can be contrasted with the federal crop insurance program in the United States, which is now the principal instrument of American agricultural policy and insured over 366 million acres in 2015. We focus on two questions: are there any justifications for subsidized crop insurance and how could such a scheme possibly be implemented in the EU? Quantitative and qualitative comparisons of the current state of crop insurance in the EU and US serve to motivate our observations.

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Crop Insurance in the European Union: Lessons and Caution from the United States

Crop insurance is an important risk management tool for agricultural producers. It is also becoming increasingly significant, in both Europe and the United States, as an instrument of agricultural policy. Revisions to the Common Agricultural Policy support the subsidization of crop insurance premiums by EU member states with the EU providing backing for national crop insurance programs, but there has been less consideration of how risk management might be unified within the EU. Both the European Commission and the European Parliament have opened calls for additional studies on risk coping strategies in agriculture. In spite of these recent calls, two key questions remain: will the benefits from a European crop insurance scheme outweigh the costs? How could such a scheme be designed?

A tentative answer to this question can be found in the crop insurance system in the United States. The US federal crop insurance program is the largest subsidized agricultural insurance program in the world. For major grains, in excess of 85% percent of planted acres are insured under a crop insurance policy sold through the federal program (ARMS, 2010). The size of a government program is no indicator that it maximizes social welfare, but it does frequently signal a large burden for taxpayers. And, as is typical of many interventions, distortions can occur in both underlying and secondary markets (Goodwin and Smith, 2013).

Federal crop insurance is now the most expensive instrument of agricultural policy in the US. The Congressional Budget Office estimated that nearly 27 billion dollars in cost savings could be realized over ten years if administrative expenses were limited and premium subsidies were reduced from 60 to 40 percent. Federal crop insurance may also come under increasing attack at the World Trade Organization (Glauber, 2015). Recognizing possible benefits and costs, the results of any insurance program ultimately depend on implementation and specific policy proposals.

By comparing the situation in the EU with the more developed crop insurance program in the United States, we offer some conclusions for policymakers. What are some important features of crop insurance in the United States? Could a similar scheme be implemented in the EU, and are there any barriers specific to the European case? One must make some generalizations in arriving at answers to these questions. Nonetheless, some conclusions can be reached. It would be possible to achieve a widespread crop insurance program in the EU, but there are significant hurdles to implementation. These hurdles are both actuarial and fiscal. A major problem is the heterogeneous

nature of agriculture across member states. Furthermore, many scholars believe that there is little economic justification for subsidized crop insurance, except as a replacement for other policy measures. Whether a crop insurance program would be able to achieve policy goals more efficiently is a question for further research and discussion.

Pros and Cons of Subsidized Agricultural Insurance

The often stated rationale behind government crop insurance programs is to increase the resilience of farmers to major shocks to their incomes. Government intervention in these markets is justified through claims of market failure or missing markets. Some authors have argued that due to the spatially correlated and state dependent nature of agricultural risks, private markets for agricultural insurance are unlikely to develop (Miranda and Glauber, 1997). Without government intervention, farmers will not have access to crop insurance as a tool for managing production and price risks. But as Goodwin and Smith (2012) note, the absence of a crop insurance market is not conclusive evidence of the existence of some type of market failure. Supply and demand simply do not intersect at a feasible price in the market.

The notion of market failure in crop insurance rests on the assumption that agricultural insurance provides an external benefit, and thus the market demand for insurance does not capture benefits to society. One can arrive at similar conclusions by considering the agricultural sector to be a type of public good. Precisely what this externality entails, or the exact nature of the public good, is usually not explicitly stated. Under such arguments, it is exceedingly difficult to determine the magnitude of any external benefits to society. If the size of these external benefits cannot be determined, then it is highly unlikely that government intervention will result in the optimal supply of the good. The market failure argument provides little economic justification for the development of subsidized crop insurance programs. Market failure is either nonexistent or correction of the failure is wholly impractical.

Even if no market failure exists, there may be some justification of public support for crop insurance as one component of a broader portfolio of agricultural policies. If political institutions have already determined that agriculture will be supported, or a social concern for rural livelihoods exists, the economic problem is then one of achieving this support in the most efficient way. An ideally realized crop insurance program has the potential to be less distorting than other agricultural support measures. It may also be more politically palatable as farmers who pay at least a portion of the insurance premium have “skin in the game.”

In particular, subsidized crop insurance is often promoted as a substitute for disaster payments. The problem with many ad-hoc disaster payment programs is that the standard for determining whether a disaster has occurred is usually not explicitly specified. Payments are then subject to the political system. The end result is that the incidence and magnitude of payments are often determined not by farm losses, but by the distribution of political power (Chang and Zilberman, 2012). If insurance providers and ratemakers are sufficiently removed from political influence, crop insurance programs may be able to remedy this divergence of goals and outcomes. To facilitate oversight by watchdog groups and other policymakers, actuarial guidelines and program statistics can be made publicly available.

Once a crop insurance program is in place, a host of new problems arise. Adverse selection occurs when insurers do not charge an appropriate rate for the risk associated with insuring a particular policyholder. Farmers who have been charged a rate that is too high leave the program, while those who have been charged a low rate remain in the program. The insurer will pay out more on the insurance product than he takes in premiums, and the market will fizzle out over time. To combat adverse selection, it is vitally important that insurance rates are as actuarially fair as possible. A related problem is moral hazard, where policyholders undertake actions that increase their likelihood or magnitude of loss. Moral hazard in agricultural insurance can lead to a reduction in farmers' use of other risk coping mechanisms. Both adverse selection and moral hazard result from information asymmetries between the insurer and the farmer. Correcting this asymmetry (i.e. obtaining more information for the insurer) is usually a costly and difficult endeavor.

One benefit of a large crop insurance program is that it becomes relatively easy to tie program participation to other policies. For instance, compliance with environmental measures and best practices could be a prerequisite for insurance purchases. Linking the insurance scheme to "greening" measures may help to enhance participation. Catastrophic insurance coverage could become mandatory for farmers who sign up for other countercyclical loss programs. Bundling the insurance in this way would increase demand for the underlying product and alleviate problems that can occur because of adverse selection. While there is nothing unique about crop insurance in this regard, it is arguably a better vehicle for cross-compliance than ad-hoc payments or other distorting agricultural policies.

There are a number of other problems that can arise with agricultural insurance, but the issues mentioned above seem to have garnered the most attention. The most compelling argument for a subsidized program is that insurance could offer cost savings over ad-hoc disaster programs or other

forms of subsidy. But if a program is to substitute for disaster payments, it must have high participation. Program designs must also grapple with issues of adverse selection and moral hazard. These were the issues that confronted policymakers in the US when they sought to expand federal crop insurance in the 1980s.

Agricultural Insurance in the United States: What's Relevant for the EU?

While the crop insurance program in the United States continues to be a major source of government expenditures, several advances have been made in policy design, actuarial methods, and program administration. These new developments have been aimed at controlling adverse selection, moral hazard, and program costs. The most recent phenomenon in the United States is the growing popularity of revenue insurance. In 2015, roughly 70% of the total \$102 billion liability in the US crop insurance program was tied to a revenue insurance policy. This popularity may demonstrate the importance of price variation in farm income volatility.

The two most popular farm-level insurance policies in the US are Revenue Protection (RP) and Revenue Protection - Harvest Price Exclusion (RP-HPE). Revenue is determined by prices on the Chicago Mercantile Exchange and farm-level yields. For this type of insurance to function properly, prices on the futures exchange should be representative of the prices that farmers receive around the country. The benefit of using a futures market to determine payouts is that no single actor can influence market prices. Administrative costs are also likely to be lower as futures prices are readily available. One barrier to implementing a similar policy in the EU is that available futures markets may not be representative of local prices.

RP and RP-HPE are only available for commodities with liquid futures markets. To provide insurance for farmers who are more diversified, Whole Farm Revenue Protection (WFRP) was introduced in 2015 as a pilot program. A similar type of program may prove attractive in the EU where many farms produce a diverse set of crops or livestock. One disadvantage of this type of insurance is that, unlike the major revenue insurance policies, it relies on farm operation reports to establish historic and guaranteed farm revenue. This may not be an efficient practice in agricultural systems dominated by small and medium size farms. It is a more data intensive and time consuming enterprise than the sale of RP and RP-HPE, which only require the insurer to obtain farm-level yield histories.

As noted by Meuwissen et al. (2003), whole-farm income insurance carries a number of information

asymmetries related to farm operation. The potential for moral hazard is likely to be significant. This additional propensity for hazardous behavior can be weighed against the practical concern of finding an appropriate market to generate price expectations for revenue insurance policies. Provided that commodity prices are spatially co-integrated, such concerns may be unfounded. Even for commodities without active futures markets, such as short-grain rice, the Risk Management Agency has still been able to devise procedures for generating expected and realized prices.

In contrast to the farm-level policies that we have mentioned, there are several area-yield insurance policies available in the US. While these policies are usually cheaper to administer than farm-level policies, and have substantial advantages in terms of minimizing adverse selection and moral hazard, they have proven to be unpopular with American farmers. Because these policies are based on area yields (at the county level), there is a significant amount of basis risk due to idiosyncratic shocks. Weather-based index insurance may provide a solution to basis risk problems because the spatial dimension can be defined in a flexible way. One example of an index based policy in federal crop insurance is Pasture, Rangeland, and Forage (PRF), which is based on rainfall.

The sharing of risk between the federal government and private insurers has proven to be a significant factor in the growth of crop insurance in the United States. While not directly related to farm-level demand, reinsurance agreements encourage private companies to develop and market crop insurance policies. The Federal Crop Insurance Corporation (FCIC) is the US government corporation that carries out the crop insurance program. The FCIC provides a reinsurance and subsidy agreement to policies sold by cooperating private insurers. Risk sharing was integrated into the program in the early 1980s, shortly before the US saw a rapid increase in the uptake of federal crop insurance. Reinsurance agreements have encouraged private insurers to develop policies to meet farmer demand. An often ignored fact, at least by proponents of subsidized insurance, is that nearly 40 percent of planted acres for corn and soybeans in the US are covered under a private insurance policy (ARMS, 2010). Whether such policies are complementary to federal insurance is an open question.

The Present State of Insurance in the EU

Single and multiple peril insurance policies are already available in several parts of Europe. Private single peril insurance can be purchased in the vast majority of member states. In terms of at least partially subsidized single peril or yield insurance programs, subsidies are available in Austria, Belgium, Croatia, France, Italy, Lithuania, Hungary, Malta, the Netherlands, Portugal, and Spain. Germany is the only country to offer multiple peril insurance without subsidies. The two largest

programs are in Spain and Italy, which subsidize yield insurance premiums up to 65%. In spite of these large subsidies, participation has historically been low, with participation in Italy around 15%¹.

Several countries have also begun to experiment with other forms of insurance beyond single peril and yield products. Weather-based index insurance has been proposed in France and Spain, but has not yet seen much success. Similar index based schemes are under consideration in Germany and Switzerland. Italy recently introduced revenue insurance for grains and is one of the first countries in the EU to implement this form of insurance that has been widely adopted in the US.

In 2016, France adopted a new type of insurance for field crops and certain fruits. This type of subsidized insurance provides payments against production cost increases, yield losses, and losses due to other factors such as quality and price declines. Although it operates in significantly different ways, the newly introduced French scheme can be compared to margin insurance in the US. Both essentially cover net revenue at the farm level.

Barriers to Subsidized Insurance

A likely reason for low uptake is that farmers have a variety of other instruments available for the mitigation of their risks, including farm management practices and various capital investments. Significant direct payments in the EU, along with expectations of continued high prices, both decrease the demand for insurance. From a practical standpoint, the inclusion of crop insurance in the second pillar of the CAP may result in trade-offs with other aspects of rural development but impose additional costs for national budgets (Tangermann, 2011). One additional barrier to the development of, and increased participation in, insurance markets in the EU is the disparate nature of the agricultural statistics necessary to implement a large-scale program. These statistics must be detailed and accurate in order to limit hazardous behaviors.

Even if future research shows that crop insurance would be preferable to other policy measures, policymakers in the EU would be faced with a number of program design problems. Drawing on experiences with crop insurance in the United States, and research on demand in the EU, a holistic approach may prove to be the most effective in allaying these concerns. This approach could include public-private partnerships with existing insurers, public reinsurance agreements, and the

¹Participation in Italy differs greatly by location (Santeramo et al., 2016); more than 50% of policies involve farms in the northeast of the country. Several structural factors explain this low participation: a vast majority of farms are very small (below 1 hectare in size), farmers in the southern regions tend to have significant off-farm incomes, and several forms of risk management are well established in the Italian agricultural system (eg. crop diversification, irrigation, etc.).

development of insurance policies that protect the farmer from both yield and price risk.

In lieu of a single system for agricultural insurance in the EU, there are several approaches that may be taken to establish an insurance scheme in cooperation with private insurers and member state's existing programs. Public support of reinsurance is likely to be a primary factor affecting the development of markets. Reinsurers may be skeptical of taking on systemic agricultural risks, but evidence from the US shows that they are willing to do this with some level of public support. Leading EU insurance companies and reinsurers could act as catalysts for the transition toward a new era of agricultural insurance.

Recent work by Liesivaara and Myyrä (2015) has called into question the suitability of area-yield insurance for solving problems of crop insurance demand in Europe. In Finland, low correlations between farm and area yields implies that farmers would not benefit from area insurance. However, if correlations were higher, the insurer could face greater systemic risks. One possible correction for this actuarial problem is to stimulate cooperation in the provision of crop insurance across EU member states. Systemic risk can be countered by the inclusion of heterogeneous yields from different geographic areas. Reinsurance would help insurers to cover some systemic exposure. In this sense a more widespread insurance program might be more viable than many individual programs at the national level.

The regulatory framework could also be shifted further toward the subsidization of member state's national systems and in particular toward revenue or income insurance: covering both yield and price risk would ensure greater stability of farm incomes and result in increased participation. Whether insurance subsidies would be able to withstand attacks from the WTO and domestic budget hawks is questionable. It would be necessary to demonstrate the advantages of subsidized insurance when compared to other policy measures. As Tangermann (2011) notes, between 1995 and 2005 the average annual payments over all EU members to ad-hoc programs or disaster funds was about 1 billion EUR. This suggests that there could be cost savings for some EU members.

The design of revenue policies could be completed on a country by country basis, with the EU subsidy serving to encourage development and implementation. Indeed the agricultural statistics necessary to operate such a program are not available EU-wide at the present time. Without detailed statistics on farms, there is serious potential for moral hazard in any insurance program. In the US, the United States Department of Agriculture has worked hand in hand with agricultural economists and statisticians to design, rate, and improve upon crop insurance policies. European states could

follow this strategy by promoting cooperation between government agencies and the academic community. The specialized knowledge of agricultural economists throughout Europe could be put to work in constructing better policies. Area based policies or index policies might provide one avenue for insurance provision in areas without detailed farm level statistics.

Greater cooperation across the EU, and the construction of localized insurance policies, are not mutually exclusive goals. If the EU is to subsidize the policies in some way, then EU policymakers may demand control over the broad parameters of the underlying policies. Responsibility for the actuarial fairness of the crop insurance program would rest in Brussels. Individual member countries could propose schemes within the confines of broader EU restrictions; these schemes could be vetted by EU policymakers. These types of procedures would parallel developments in American crop insurance markets, where private insurers or commodity groups have constructed insurance plans that have later been adopted by the Risk Management Agency. Such developments could help promote sustainable agricultural insurance in the EU with possibilities for minimized distortions to agricultural markets. Results would depend on the integration of a crop insurance scheme with other policy measures.

Final remarks

While in the long-run it may be desirable to establish an EU-wide crop insurance program, impediments to implementation pose serious immediate doubts with respect to effectiveness and feasibility; the lack of a representative market for futures and the substantial heterogeneity of agricultural systems across Europe are a few of the many challenges that must be faced. The introduction of weather-based index insurance and revenue insurance may represent a temporary solution, bridging the gap toward a unified framework. We reiterate that greater cooperation across the EU and the construction of localized insurance policies are not mutually exclusive goals. Policies may be implemented at the EU level to promote flexibility within national crop insurance schemes. At the level of individual member countries, different types of insurance can be designed to take into account particular local agricultural structures and available data. In all cases, the integration of a crop insurance scheme with other policy measures would be necessary to minimize distortions to agricultural markets.

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