ERS-Farm Foundation Modeling Workshop
Modeling U.S. and EU Agricultural Policy: Focus on Decoupled Payments
Executive Summary, December 2, 2004

On October 4 and 5, the Economic Research Service (ERS) and the Farm Foundation co-sponsored a workshop at ERS, "Modeling U.S. and EU Agricultural Policy: Focus on Decoupled Payments." The workshop, organized by ERS economists, featured presentations by modelers and policy analysts from ERS and the European Union (EU) Commission, the Office of the Chief Economist of USDA, international organizations (Food and Agriculture Organization), and universities and research institutes in both the United States and Europe. The workshop focused on methodologies to improve modelers' ability to advise policy makers on the impacts of decoupled payments. Participants concluded that there is no single modeling framework that can address all the issues, but communication of analysis could be improved by a better understanding of the terminology used in debating the issues.

The **main objective** of the workshop was to bring together researchers working on representing agricultural programs of the United States and the European Union in policy models, with an emphasis on highlighting recent changes in agricultural policy of both countries. Consequently, the workshop focus was on decoupled and partially coupled farm programs. These programs provide new challenges for policy modelers to capture the full range of farm policies in their models. Our intent was to provide a forum for sharing methodologies, estimates, and experiences by presenting the range of approaches used by modelers and identifying the advantages and difficulties with each approach.

The presentations in the workshop were organized into **six sessions**. The first two sessions were designed to provide a general policy background for research on U.S. and EU programs. The first session discussed the policy setting and current U.S. and EU agricultural programs, identifying issues important for modeling policies. The second session provided an overview of some of the research to date on modeling payments and assessing their impacts. The next two sessions were intended to dig a little deeper into some policy models by taking a closer look at alternative approaches that have been used in various studies. The third session focused on U.S. programs and the fourth session discussed EU programs. The last two sessions were designed to discuss what we have learned so far in our various modeling approaches, with a look to implications for future research directions and efforts. The fifth session included some new research activities being undertaken on these policies and the sixth session was a panel discussion to provide a wrap-up summary of the workshop.

The workshop began (**Session I**) with an overview and background of decoupled and partially decoupled payments. Speakers summarized the policies to highlight the differences between the U.S. and EU in overall policy environment, interests of policy makers, implementation, and factors that affect policy impacts. From the U.S. perspective, a major theme was how domestic support has changed since the Uruguay Round of trade negotiations to the current Doha Round under the World Trade Organization (WTO). Old policies were based on relative price effects, while newer policies are more difficult to model and analyze because they are not necessarily contingent on prices. And the Doha Round emphasis on reducing "Amber Box" support to agriculture while allowing support classified as "Green Box" has led many countries to change

their policies to mirror these disciplines, while leading to disputes between countries as to what constitutes an acceptable payment. Asserting support is decoupled from production is not sufficient evidence for the Green Box classification. For example, while the U.S. claims that counter-cyclical payments (CCP) and market loss assistance (MLA) payments are permissible because they don't require production and don't distort markets, Brazil claims that all U.S. subsidies suppress prices. Measurement issues are important in the evaluation of these contrasting assertions. Measures which assess outcomes – the production or price effects – of a policy based on empirical evidence, are relatively easy to calculate. Measures which refer to the characteristics of the program –i.e., its intended, expected, or theoretical effects – are considered by many to be more appropriate, but are more difficult to calculate.

An overview of the 2002 Farm Act was presented to highlight the mix of policies under the new legislation and to illustrate that different types of payments have different effects on agricultural markets. In particular, marketing loans were continued under the 2002 Act, direct payments replaced Production Flexibility Contract payments, and a new counter-cyclical payments program institutionalized ad hoc Market Loss Assistance payments of 1998-2001. Marketing loans are considered coupled since they are linked to market prices and current production. Direct payments are decoupled since they do not depend on current production or market prices. Counter-cyclical payments are in the middle and are mostly decoupled since they do not depend on current production but are linked to market prices. Another important issue is whether the updating of base acres and programs yields under the 2002 Act may affect farmers' production decisions. Modeling issues related to these different types of programs and their interactions with each other are complex and present interesting challenges to economists. Key questions include how decoupled payments might have indirect effects on production despite being decoupled from current production and market prices, how to model and measure any such effects, what types of new data are needed for this analysis, what additional modeling issues and model challenges does the price-dependence aspect of counter-cyclical payments present, and how to appropriately represent those types of effects in our forecasting and policy analysis models.

An overview of the EU's 2003 reform of the Common Agricultural Policy (CAP) and its decoupled payments pointed out how EU farmers' influence on policy changes has declined since 1992 reforms. Consumers, environmentalists, animal welfare advocates and rural dwellers all now exert influence on agricultural policy. Policies are now designed to be more market-oriented, resulting in an increased reliance on market prices in production decisions. Mandatory compliance with environmental requirements raises the question how it will affect producers' competitiveness, since producers are required to take certain actions to qualify for payments. Some important conclusions included the need for more specific regional analysis to capture variations within the EU25, more attention to how food quality and safety issues affect producer response, and more emphasis on the role of environmental protection in producers' decisions. The new single farm payment scheme is designed to incorporate full decoupling between 2005 and 2007, but there are many options for partial decoupled policies to persist. Currently about 53% of EU area is under the single farm payment scheme, while 37% is subject to flat rate payments, and 10% under a hybrid scheme. One important simplification brought about by the 2003 reform is the integration of 9 types of direct payments into one, so policies might be less complicated to analyze.

Session II presented key findings and issues from a review of research on decoupled and partially coupled payments. Research results were identified on five mechanisms for payments to influence output --they can cover production costs; relax capital constraints; reduce risk or risk aversion; influence expectations about rebasing; and affect the pace of structural change. In the studies reviewed, the insurance effects (reduce risk or risk aversion) dominated the wealth effects, and payments affected land values more than production. Another key conclusion from the review of literature was that a consistent definition of decoupled payments would advance the dialogue between economists and policy makers. It was noted that there are few models that systematically incorporate decoupled payments in a consistent way. The use of farm household models to better represent farmers' behavior was advocated. This was tied to the implementation criteria for Green Box payments in the Doha Round, which allows for a lump sum redistribution of income when the individual can't act to change the amount of payment. It was pointed out that the non-distorting outcome of payments rests on strong economic assumptions, such as perfect competition and information, which are conditions not likely in the real world. Still, the conceptual framework is considered valid, with a focus on the flow of household income and expenditures, instead of the relative prices which were a focus of early decoupling analysis. An important tool for this analysis is the USDA Agricultural Resource Management Survey (ARMS), a survey of agricultural households since 1996.

An overview of research on EU Single Farm Payments highlighted how the modeling of decoupled programs is sensitive to assumptions about the degree of decoupling. It was also noted that the dynamics of the factor markets of land, labor and capital needed further study, as well as the impacts of the variety of institutional settings across the regions in the EU. Research is currently underway with surveys and farm level assessments, but there is still much to be done to achieve the goal of common understanding of policies. The U.S. experience with CCP payments also illustrates the difficulty of addressing the degree of decoupling because CCP's do not depend on the production choice but do depend on market prices.

The two most studied effects of decoupled payments have been how risk and capital constraints affect farmers, but the need now is to examine the effects of payments on structural change. It was asserted that the main impact of decoupled payments will not be on production, but on the well-being of households. Because payments affect households differently, it is important to move away from using a single representative farm household as the basis for analysis. There are several papers in progress to address these issues, but very few have been taken to industry and policy makers to get feedback to influence future work. One possible reason for this is that economists are just now beginning to collect hard data on these relatively new policies so it is too early for economists to make informed contributions to the policy process.

Session III focused on decoupled policies in models of U.S. agriculture. The first presentation focused on econometric estimation of acreage effects of U.S. farm programs, looking at planting effects in the U.S. Corn Belt. Again the issue was raised as to what programs qualified as truly decoupled. ARMS data was used for analysis, but it was noted that without repeated sampling one could not identify the behavior of the same farm over time in response to program changes. It was noted that while acreage response elasticities were statistically significant, they were small. This led to a suggested focus on intensive use of acreage, not just the expansion of

acreage. A CGE approach to modeling decoupled payments added an intertemporal approach to effects on U.S. agriculture. A problem with identifying non-distorting policy instruments was that markets are incomplete in real-world economies, so effects can differ from those assumed in modeling analysis. The CGE model of the entire economy included both rural and urban households. Two alternative simulations of decoupled payments included different assumptions regarding capital markets, so results were presented for integrated and segregated capital markets. Results showed small effects on output but lasting effects on land values and rental rates, so decoupled policies were shown to be least distorting with respect to land allocation.

Another modeling approach included effects of counter-cyclical payments and direct payments by looking at U.S. area planted to 9 major crops. No big increase in acreage was found in response to increased payments. It was noted how important it was to focus on total crop acreage, not just on one crop at a time, since total area planted in the Corn Belt does not change much in response to changing incentives. The decoupling factor used in the model was an informed guess rather than an estimate. Model projections were based on a stochastic simulation process. Since many programs have asymmetric effects, the model was solved for each of 500 draws. Stochastic analysis projects billions of dollars more in CCC outlays than deterministic analysis, so even though stochastic modeling is considered more an art form than a science, this is useful information for policymakers.

Session IV looked at decoupled and partially decoupled payments in models of EU agriculture. The first presentation concerned supply and land allocation responses to EU payments. The econometric models use individual farm data and the results are country specific. Results present evidence of partially coupled payments. Uncertainty is built into the model structure with insurance and wealth effects, and farmers are considered risk averse, with small farms much more risk averse relative to large farms. The deterministic model detects the partially coupled nature of area payments. The uncertainty model provides interesting results, with risk effects affected by cross crop effects. A CGE modeling analysis of the 2003 CAP was then presented, with results much stronger than other modeling analyses using partial equilibrium models and different parameters. EU enlargement eliminates border measures and extends direct payments to candidate countries over time at different levels. Three reform scenarios look at possible changes without decoupling, and then with partial and full decoupling. A major drawback to the analysis is that direct payments are measured in *ad valorem* terms which may not be consistent with how payments are made, and land is fixed, homogeneous, and only employed in agriculture. The results show wide supply increases in the new EU member countries, and reductions in the EU15. A general result is that decoupling can imply some structural adjustment.

The next modeling approach presented used partial equilibrium modeling to look at EU decoupled payments. Before simulating over a 10 year period, it was determined that current payments for arable crops are already considerably decoupled, but beef payments are coupled. And the single farm payments are not considered completely decoupled, due to wealth and cross compliance effects. A supply inducing effect was calculated resulting in a decoupling coefficient, but it was acknowledged more work is needed on this factor. Results show that the single farm payment has little impact on crop area, but results in a big drop in beef cow numbers. A common theme of all these results was the importance of farm level analysis.

The second day of the workshop started with **Session V** on issues in modeling decoupled payments. The first presentation highlighted modeling frameworks and data issues by comparing partial and general equilibrium models. The first important point was the huge impacts of the modeling framework, the modeling approach, and assumptions. The point was made that decoupled payments interact with other farm policy instruments, and the effects of cross-compliance on competitiveness must be considered. All effects have not yet been included in any one empirical model. An empirical, rather than theoretical, comparison of partial and general equilibrium models is needed to assess the importance of all these factors. One problem for this comparison is that models aren't always transparent in providing elasticities for use in comparing results. The concern is that general equilibrium models predict stronger supply responses than partial equilibrium models solely due to the higher elasticities used. Another concern is that for more developed economies the farm sector is quite small in a general equilibrium framework. Two main recommendations to enhance communication were that partial equilibrium modelers should give more attention to welfare changes, and general equilibrium modelers should report more on market effects. The increased use of general equilibrium modeling also led to the suggestion to improve computable general equilibrium models with three changes – greater product disaggregation, more specification of price and income elasticities, and more explicit representation of agricultural policy.

The next presentation addressed the importance of risk considerations in U.S. supply response. The premise was that partially decoupled payments such as CCP's, which are paid when the farm price falls below the target price minus the direct payment rate, lower risk indirectly, and this could affect supply if risk and wealth variables play an important role in planting decisions. The approach taken was to model expected utility for the farm household subject to a budget constraint, and have expected farm prices based on futures prices. Risk preference was characterized by decreasing absolute risk aversion. In general, though, the effects of risk on supply response are not strong, but there is also a need to further study risk behavior in farm households. This led into the next presentation on new modeling directions and data needs. Three approaches to get data on farm household responses are planned. These are the use of focus groups, economic experiments, and survey data from the ARMS database. One important area of concern for international analysis is that country perspectives differ on wealth endowment, risk attitudes, and cultural differences. The idea is that the same level of payments to farmers in different countries could elicit much different supply responses due to these differing attitudes.

The workshop concluded with a panel that presented a **wrap-up assessment (Session VI)**, and discussed priorities for future research. It was noted that the EU doesn't directly address risk like the U.S. does, but has studied similar issues in studies of decoupling. Other observations were that the EU needs to better understand factor market effects, and that it was a good idea to move into household decision analysis. From the U.S. perspective, there were more questions than answers, pointing to the need for more research particularly to address concerns in other countries regarding whether payments could be truly decoupled. Issues for further research include the following:

- Definition of a decoupled payment. Should decoupled payments be identified according to the program characteristics or according to their impacts? The problem is that while

the characteristics of the programs are known, a better understanding of the impacts, while difficult to analyze, is needed to address global concerns.

- Focus on additional important aspects, not just risk and capital constraints. Risk effects are small, and capital constraints are not that important for most farmers. Research on these other aspects such as structural change and farm household response is still in its infancy.

- A key point to be addressed is that decoupled programs may not act as expected, depending on the method of implementation and interactions with other farm programs.

- And analysis will call for a variety of modeling approaches, even qualitative analysis.

- Decoupled programs are not necessarily without cost to the producer; cross-compliance requirements that producers must meet are not adequately covered in models.

The final presentation in the wrap-up session helped frame future research questions by pointing out that decoupled payments are important because of their implications for trade negotiations and markets, but market access is the most important source of distortions. Poor countries can't protect their agricultural systems with decoupled payments, so instead rely more on using tariffs. So they will always be cautious of trade negotiation proposals that favor policies they are not in a position to implement. But for the assessment of those countries that favor decoupled policies, the overall structure of the model matters. There is also a need for more publication of existing research—much research on the topic exists in the form of working papers or conference papers--as economists grapple with coming to consensus on these issues. Researchers need to know more about the avenues for impacts, which necessitates taking into account the structure of agriculture. The last presenter re-emphasized the importance of farm-level analysis in understanding the effects of these policies. Other important issues to be addressed are how decoupled payments might affect long term structural change in agriculture, and how diverse farms use decoupled payments. The conclusion was that it will be 5 to 10 years for enough published literature to reach a consensus, so there will still be a need to rely on informed judgment now.

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