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Column

Variability in Markets and Agricultural Policy

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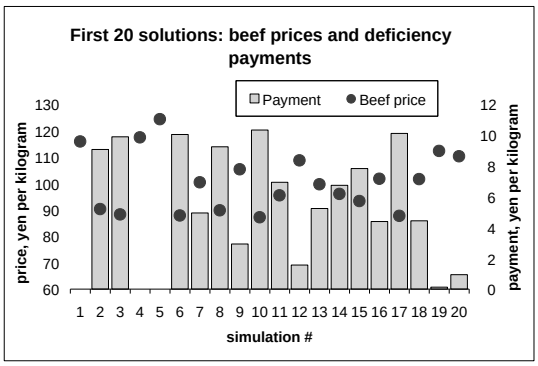
Policy is usually evaluated on the basis of a certain starting point. For example, a 'base year' can be used for comparison. Analysis often assumes 'average weather' or 'stable macroeconomics'. These starting points may be necessary for much of our analysis, but they may not always help. Sometimes, it may be important to recognize the possibility of extreme values, such as years with low yields or recession.

The main project of my Fellowship at PRIMAFF has been to create a system for analyzing the effects of policies on markets using a "stochastic" model. This starts with a normal, econometric model of markets: supply and demand usually depend on domestic prices, with trade balancing in the world markets. The additional step is to create random distributions for certain exogenous variables. Then, we replace 'average weather' with distributions for yield variation and we replace 'stable macroeconomics' with distributions for macroeconomic variables. We can draw random values for yield shocks and macroeconomic shocks many times, then solve the model each time. The end result is many model solutions, not a single base year or an assumption of average weather.

An example might help to show how these results can help evaluate policy. Consider the case where a country has a combination of policies to protect beef producers, for example. If there is a tariff on imports, then domestic prices will be higher than world prices. If there is also a deficiency payment system, then producers will get direct payments if the domestic price falls below a certain level. Variability in markets may be very important for a deficiency payment system: there are big payments if prices are low; there are no payments if prices are high.

In this example, if the tariff is reduced by half, then domestic prices will tend to fall and there may be more deficiency payments. But the effects depend on many other factors, like world beef market prices and exchange rates. Some combinations of prices and payments for 2008, for example, are shown below. In some solutions, the price is high and there are no payments, so a change in tariff will affect farmers' revenue. In most years, however, the prices are not so high, so a change in tariffs will mostly change payments, not farmers' revenue.



In conclusion, the main project of the JSPS Fellowship has been to allow for a broader range of analysis. Single values for each variable can be replaced by a range of possibilities. Hopefully, this process can be used to help people understand what different policies do to markets in their own and other countries.

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