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The Rationality of Economic Policy

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Questions about the rationality of economic policy come up in a number of different contexts. For example, models of induced technical change for sectors of the economy in which publicly financed research is important posit a rational response on the part of policy makers to changes in factor price ratios (see [2]). But econometric models, on the other hand, typically treat economic policy as an exogenous variable or as an exogenously determined constraint on economic variables.[1/] Seldom is an attempt made to specify and quantify behavioral equations for policy makers as social agents.

In contrast to these "belief" and "agnostic" views, there is a large body of opinion which implies that economic policy, or more specifically, policy makers, are irrational. This position has been expressed frequently in recent discussions of agricultural policy, where it is argued that the existence of import boards, export boards, and government marketing agencies constitute a barrier to the efficient use of markets and the world's resources. Implicitly or explicity these discussions assume that such public agencies do not respond rationally to the price incentives they receive.

The basic premise of this paper is that economic policy as expressed in the actions of public agencies is more rational than generally believed and that attempts to understand the behavior of policy makers and public agencies may have considerable payoff in obtaining a more complete understanding of

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economic activity. In support of this proposition evidence is drawn from a couple of recent attempts to specify and estimate behavioral equations for policy makers. In both cases the results are part of a larger study.

Behavioral Equations for Public Policy

Trade policy is an important and frequently used means of transferring some part of the agricultural 'surplus' (in the Nicholls' sense [4]) to the nonfarm sector [5, 6]. In this sense it becomes a powerful means of allocating resources within the economy, as well as an important means of determining the sectoral, functional, and personal distribution of income.

There are many elements to trade policy, and seldom can one element be understood in isolation of others. Exchange rates are often set at other than equilibrium levels, tariffs are imposed selectively, export and import quotas are used to regulate quantum flows, and a wide range of export taxes and subsidies are often used. The proliferation and seeming ad hoc nature of such policy interventions often add to the belief that there is little rationality to the total complex of policy. This view is reinforced by the apparent contradiction of some of the policies that are imposed, where often it seems that the right hand taketh away what the left hand giveth.

A couple of recent empirical studies on the Brazilian economy, however, suggest that at least some elements of Brazilian trade policy are largely explainable by a relatively simple economic model. For example, the Brazilian government has relied rather heavily on trade policy to influence the domestic price of beef.[2/] Since beef has been an exportable product, these policies have included export quotas, export taxes, overvalued exchange rates, and the tying of exports to the quantity of beef supplied (through storage) to the domestic market during the slack or dry season. The net effect of these policies has been to lower the domestic price of beef in terms of the domestic currency when the latter is evaluated

at the effective exchange rate for beef exports.[3/] Hence, these policies have driven a wedge between the exogenously determined world price and the domestic price of beef, with the result that the domestic price is lower than it would otherwise be.

In general, the level of trade intervention for a given product is the net effect of policies introduced to meet a number of objectives. Typically, these include a desire to remove resources from the export sector into the import competing sector, to increase government revenues, and to hold down the domestic price of exportable products, which in many cases are agricultural products. Given this framework, researchers commonly assume that the level of intervention for the product being studied is determined exogenously to the model being studied, in part because the policies introduced to meet the above objectives can be extremely complex and diverse.

However, in a recent econometric study of the Brazilian beef sector [3] we hypothesized that over the period 1947-71, trade intervention against beef exports by government authorities was determined primarily by a desire to hold down the domestic price of beef, and that the importance of other discriminatory motives was small by comparison with this objective. This led to the definition of an intervention variable, I_t, (measured in cruzeiros per unit weight) which was defined as the difference between the FOB price of beef for export (P_{fob}) times the free trade (or equilibrium) exchange rate (Π^*) minus the FOB price times the effective exchange rate (Π^E)[4/]:

$$I_t = P_{fob} (\Pi^*_t - \Pi^E_t).$$

This intervention mechanism was assumed to work in the following manner. If there was an increase in the quantity of beef demanded by the rest of the world, for example, then the external or FOB price would rise, other things being equal. If the government wished to prevent the domestic price from rising, it could lower the effective exchange rate by any one or a combination of policies. The most direct means, in terms of the above definition of the intervention, was to change the effective exchange rate relative to the equilibrium exchange rate. But at times the government introduced quantitative restrictions on exports as well. Since it is difficult to calculate the export tax that is equivalent to a quantitative restriction, it is usually not possible to express the domestic price in terms of the FOB price. However, since the domestic beef price is observable, it is possible to calculate the level of intervention (I') as the difference between the FOB price evaluated at the free-trade exchange rate and the domestic beef price:

$$I'_t = (P_{fob} \cdot \Pi^*) - P^b_t$$

where I'_t is the level of intervention including the effect of quantitative restrictions.

Variations in this level of intervention in the beef sector were hypothesized to be a function of a limited set of economic variables. It was postulated that the two basic factors affecting this variable were the desire to hold down the price of beef to domestic consumers and the need for foreign exchange earnings. One measure of the government's interest in holding down beef prices is the current rate of inflation, as measured by the general level of prices. The rate of inflation is highly visible to policy makers as well as the public, and increases in the price of beef have a significant effect on the price index

since beef products have a weight of 0.25 in the food price index. Hence, an increase in the rate of inflation was hypothesized to cause an increase in the level of intervention, other things being equal.

The overall position in the balance of payments, on the other hand, was hypothesized to act as a constraint on the level of intervention. More specifically, when the balance of payments is in surplus (or expected to be in surplus), the government is expected to increase the level of intervention, other things being equal, because the country can afford to sacrifice beef export earnings without precipitating a balance of payments problem. Similarly, if the government expects a deficit in the overall balance of payments (or if the deficit is expected to rise), it will tend to reduce the level of intervention in order to ameliorate or overcome a shortage of foreign exchange.

The FOB price of beef was also included in the equation on the grounds that the higher this price the greater must be the level of intervention to maintain a particular price (or quantity consumed) in the domestic market. In addition, a set of policy dummies was included in order to test whether differences over time in major policy stances or trade affected the relationship.

The results of estimating an equation with these variables included were as follows:[5/]

$$I_t = -523.04 + \underset{(2.75)^{***}}{1.538X_1} + \underset{(2.98)^{***}}{7.900X_2} + \underset{(1.30)^{*}}{0.249X_3} - \underset{(1.80)^{**}}{218.05X_5} - \underset{(0.10)}{16.39X_6} - \underset{(0.41)}{65.41X_7}$$

$R^2 = 0.73$ D.W. = 1.71

where I_t = level of discrimination (as described above) against beef exports, cruzeiros of 1965/67, per ton carcass weight.

X_1 = weighted average price of Argentine beef sides and corned beef in London, US$ of 1965/67, per ton (weights 0.5:0.5).

X_2 = rate of increase of the general price level, in percentage terms.

X_3 = overall position in the balance of payments.

X_5 = policy dummy, = 1 for 1953-59, 0 otherwise.

X_6 = policy dummy, = 1 for 1960-63, 0 otherwise.

X_7 = policy dummy, = 1 for 1964-71, 0 otherwise.

The policy dummy for the period 1947-52 was suppressed in order to avoid singularity. Its effect appears in the constant term.

Parameters of the equation were estimated by ordinary least squares. Overall, the statistical support for the model is quite good. Some 73 percent of the variation in the level of intervention is explained. All coefficients with a priori restrictions have the expected sign, and two of the three "economic" variables (the world price of beef and the rate of domestic inflation) have coefficients that are significantly different from zero at the 1-percent level. The remaining variable, the overall balance of payments, has a coefficient that is significantly different from zero at the 10-percent level.

Only one of the policy dummies had a coefficient that was significantly different from zero at usually accepted levels, and it was significant at the 5-percent level. This policy dummy refers to the period 1953-59, which is generally recognized as a period of liberalization of trade policy with respect to agricultural exports (see [8]). The sign of the coefficient is consistent with this hypothesis, and the level of statistical significance of the coefficient is consistent with the hypothesis that there was a shift in the equation describing the intervention of policy makers at this time.

In a related study [7] the same model was tested with data from the corn sector. The results were as follows:[6/]

$$I_t = -1.508 + .583X_8 + .005X_9 + 1.105X_{10} - 17.316X_{11} + 14.683X_{12} + 25.334X_{13}$$
$$(.218)^{***} \quad (.016) \quad (.488)^{**} \quad (13.000)^{*} \quad (18.368) \quad (16.519)^{*}$$

$R^2 = .747$ D.W. = 1.569

where:

I_t = level of government intervention, defined as the world market price of corn in dollars times the shadow rate of exchange less the domestic price of corn, in cruzeiros per metric ton.

X_8 = percentage increase in the Brazilian consumer price index.

X_9 = overall position in balance of payments, in millions of U.S. dollars.

X_{10} = world market price of corn, in dollars per metric ton.

X_{11} = 1 in years 1953-59; 0 in all others.

X_{12} = 1 in years 1960-63; 0 in all others.

X_{13} = 1 in years 1964-70; 0 in all others.

The statistical results again support the model quite well. Some 75 percent of the variation in the level of intervention is explained by the included variables. Two of the variables, the rate of inflation and the world price of corn, have coefficients that are significantly different from zero at the 1-percent level. The policy stance in the 1964-70 period was more discriminatory against corn than in the other periods considered. There is some evidence that the basic policy position was somewhat more liberal in the 1953-59 period, but the level of significance is not strong.

The statistical results are consistent with judgments of others that domestic inflation and the cost of living were the major factors influencing trade policy. Bergsman [1], for example, in his careful analysis of Brazilian trade policy argued that the main reason for the overvaluation of the Brazilian currency was to keep the domestic cost of living down. In both models the

coefficients of the domestic rate of inflation and the world price of the respective commodities are highly significant and have the expected sign. The coefficient of the balance of payments variable is substantially weaker, and in only one case was it marginally significant -- at the 10-percent level.

That such a large fraction of the variations in the level of intervention through trade policy could be explained by a limited set of variables hypothesized to explain it suggests that there was more rationality to Brazilian trade policy than many have believed. Moreover, the dominant factor influencing trade policy appears to have been a concern with inflation and the urban consumer. In attempting to protect consumers, of course, policy makers discriminated against agricultural producers.

It should also be noted that the variation in the level of intervention was quite large, with rapid shifts from one period to another. The model is not just explaining one "trend" variable with another set of "trends." The rate of inflation also fluctuated widely from one period to another, as did the prices of the commodities (although to a lesser extent).

Concluding Comments

Economic policy may not be overtly rational in the sense that policy makers consciously act to maximize social welfare functions and explicitly balance and weigh trade-offs among various groups in society. But such conscious behavior is not needed for the theory to have explanatory relevance. All that is required is that policy makers act, in the final analysis, as if they were responding to economic incentives. The results presented above suggest that much can be done to understand why economic policy is what it is. And until we do more fully understand the forces that shape economic policy, of course, a large part of our economic world is left unexplained.

Footnotes

1/ An important exception, of course, is the formalization and estimation of tax functions. Strictly speaking, these equations do not describe the behavior of government per se, however, but rather attempt to identify functional relationships among economic variables, given that policy decisions have already been made.

2/ For detail, see [3], especially Chapter 1 and Appendix A.

3/ The effective exchange rate for beef is the rate that applies to beef exporters, corrected for any taxes or subsidies which apply to those exports.

4/ During periods in which multiple exchange rates prevailed the effective rate of exchange was defined at times for narrowly defined groups of products. At other times a single exchange rate prevailed for all exports. For detail, see [3] and [8].

5/ Numbers in parentheses are student t-ratios. Three asterisks indicate that the coefficient is significantly different from zero at the 1-percent level, and one asterisk indicates significance at the 10-percent level.

6/ The numbers in parentheses are standard errors in this case.

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