



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## INTERSECTORAL TERMS OF TRADE IN THREE POLITICAL ECONOMIC STRUCTURES

Margaret S. Andrews and Alain de Janvry<sup>1</sup>

The political and economic histories of both capitalist and socialist nations are full of examples where the terms of trade between the agricultural and nonagricultural sectors have emerged as critical issues in state policy. Since any policy action to control agriculture's terms of trade will both redistribute income and alter the climate for economic growth and investment, the question of terms of trade policy deserves a new treatment in the light of the current debate on possible tradeoffs between growth and equity in the process of agricultural development.

In this paper we examine the importance of the wider political economic structure in determining the growth and distributional consequences of an intersectoral terms of trade policy. The structures we consider are all basically capitalist in nature; however, the patterns of wage, rent, and profit determination differ. The pattern of class alliance, hegemony in the political structure, or both, and the degree of social disarticulation are also important. Social disarticulation occurs when the expansion of the market of key growth sectors is not derived from the earnings of workers in key sector production (de Janvry; and de Janvry and Garramon).

### Structural Distinctions

The three structures to be examined will be called (1) articulated, (2) Ricardian disarticulated, and (3) disarticulated with functional dualism. We will develop the distinction between these structures in two sector models with agricultural and nonagricultural sectors, where the latter is designated as the key growth sector.

The articulated structure is characterized by a constant share of workers' earnings in nonagricultural output. All nonsubsistence worker income is expended on the key growth, nonagricultural product. The agricultural sector is dominated by a farmer class that earns all income generated in the sector, and the nonagricultural sector is controlled by a capitalist class that earns a fixed share determined through a collective bargain with workers. A reserve army of industrial workers exists, but the number of farmers and capitalists integrated in the economy is unchanged by the level of production. Farmers can supply any quantity of product demanded. Farmers and capitalists both have a constant marginal propensity to save out of income, and all classes engage in equal level of subsistence consumption defined in terms of constant quantity of the agricultural product. The articulated political structure is likely to be characterized on most issues by some form of a social democratic alliance between workers, capitalists, and farmers.

The Ricardian disarticulated structure is defined in terms of four classes: landlords, peasants, workers, and capitalists. The structure is disarticulated because demand for the nonagricultural product comes only from the incomes of the propertied classes. In the agricultural sector, landlords extract as rents all excess product beyond the physical subsistence needs of the peasant producers. In the nonagricultural sector, workers are paid the classical fixed real wage and capitalists earn all remaining nonagricultural income. A reserve army is available to participate in the economy as either peasants or workers. Finally, the Ricardian political structure is one where the two propertied classes vie for hegemony and have little material basis on which to form alliances with workers or peasants.

The disarticulated structure with functional dualism can be distinguished by the fact that production in the agricultural sector has developed in a dual pattern where the landlord class controls production of agricultural goods for export but does not engage in production of the agricultural goods for the domestic market. The rural sector is thus characterized by large numbers of independent, semi-proletarian peasants who provide whatever marketed surplus is necessary for domestic consumption, but also serve as a reserve army of proletarians for export enterprises and the nonagricultural sector. The peasant class earns income equal to the value of domestically consumed agricultural product, and workers are paid a fixed real wage. Landlords and capitalists earn all income net labour costs in their lines of production. The structure of demand of the key growth sector is made up predominantly of capitalist and landlord incomes, but may include consumption from peasant income. Within the political structure, there is a strong basis for political alliance between landlord and capitalist classes, at least with respect to the terms of trade issue.

These distinctions between structures are set out formally in table 1, which presents for each structure a Keynesian type model of income determination. We will use these models to determine the extent to which a state terms of trade policy can change the aggregate demand for the key growth, nonagricultural sector. We will then examine the income redistribution effects of a terms of trade policy to determine the circumstances under which a positive terms of trade policy will be politically expedient.

**Table 1. Models of Income Determination in Three Structural Contexts**

Articulated	Ricardian Disarticulate <sup>a</sup>	Disarticulated with Functional Dualism
Income Distribution	Income Distribution	Income Distribution
$Y_f = pX_1$	$Y_L = pX_1 - paN_p$	$Y_p = pX_1 - pE + pa\alpha_1 X_1$
$Y_w = wN_w$	$Y_p = paN_p$	$Y_w = paN_w$
$Y_c = (1+m)wN_w$	$Y_w = paN_w$	$Y_L = pE - pa\alpha_1 E$
Employment	$Y_c = X_2 - paN_w$	$Y_c = X_2 - paN_w$
$N_w = \alpha_2 X_2$	Employment	Employment
Consumption	$N_p = \alpha_1 X_1$	$N_w = \alpha_2 X_2$
$C_1 = pa(N_w + N_c + N_f)$	$N_w = \alpha_2 X_2$	$N_p = \alpha_1 X_1$
$C_2 = (Y_w - paN_w) + b_f Y_f + b_c Y_c$	Consumption	Exports
Equilibrium	$C_1 = pa(N_c + N_L) + Y_w + Y_p$	$E = F/p^\beta$
$pX_1 = C_1$	$C_2 = b_L Y_L + b_c Y_c$	Consumption
$X_2 = C_2 + I$	Equilibrium	$C_1 = pa(N_c + N_L + N_p + N_w)$
$X_2 = Y_w + Y_c$	$pX_1 = C_1$	$C_2 = b_L Y_L + b_c Y_c + b_p (Y_p - paN_p)$
Reduced Form	$X_2 = C_2 + I$	Equilibrium
$X_2^* = (b_f paN + I) / (pa\alpha_2(1-b_c) + (\frac{1+m}{2+m})(1-b_c))$	Reduced Form	$pX_1 = C_1 + pE$
Demand Response Condition	$X_2^* = (b_L paN + I) / (1-b_c + (b_c - b_L)\alpha_2 p)$	$X_2 = C_2 + I$
$\partial X_2^* / \partial p > 0$ if	Demand Response Condition	Reduced Form
$b_f > (\alpha_2 I) / (\alpha_2 I + N(\frac{1+m}{2+m})(1-b_c))$	$\partial X_2^* / \partial p > 0$ if	$X_2^* = (I + b_p paN + F(b_L(1-\alpha_1))p^{1-\beta}) / (1 - (b_c(1-p\alpha_2) + b_p pa_2))$
	$b_L > (b_c \alpha_2 I) / ((1-b_c)N + \alpha_2 I)$	Demand Response Condition
		For $b_p = 0$ , $\partial X_2^* / \partial p < 0$ if $\beta > 1$
		For $b_p = 1$ , $\partial X_2^* / \partial p < 0$ if
		$\beta < 1 / (1 - pa\alpha_2)$

where:

Endogeneous Variables

- $Y_i$  = aggregate level of income of social group  $i$ , ( $i=f,w,c,L$ )
- $C_j$  = aggregate consumption of output of sector  $j$ , ( $j=1,2$ )
- $X_j$  = level of output of sector  $j$
- $E$  = quantity of exports of agricultural good
- $N_i$  = employment of social group  $i$ , ( $i=w,p$ )

Parameters

- $I$  = investment
- $N_i$  = fixed population of social group  $i$ , ( $i=f,L,c$ );  $N=\sum_i N_i$
- $\alpha_i$  = labour input per unit of commodity  $j$
- $F$  = export demand
- $a$  = required subsistence consumption of agricultural good per capita
- $w$  = nominal wage
- $m$  = fixed mark-up over wage costs
- $\beta$  = elasticity of export demand
- $b_i$  = average propensity to consume the nonagricultural commodity for social group  $i$  (or marginal propensity to consume out of total income)

Subscripts

- $f$  = farmers
- $w$  = workers
- $L$  = landlords
- $c$  = capitalists
- $p$  = peasants
- $1$  = agricultural sector
- $2$  = nonagricultural sector

## Aggregate Demand and Growth

The emphasis on determining conditions where an increase in agricultural prices serves to stimulate demand for the nonagricultural good may appear puzzling at first glance, since it is generally assumed that the relation is negative. (See, for example, Chichilinsky and Taylor, p. 304.) In addition, the extent of agricultural supply response has traditionally been considered the crucial economic growth factor (Krishna). Our justification for treating the growth question from the point of view of effective demand is that investment responds to the level of aggregate demand not only through the more familiar accelerator relation, but also through the sway of "animal spirits" and through the internal accumulation process described by Kalecki. In economic structures where accumulation is important, agricultural price policy will not stimulate growth unless it generates a favourable investment climate in the key growth sector. Thus we can look at the question of growth driven by demand, since policies that tend to expand markets for the nonagricultural product also tend to increase investment and expand the circuit of production. This linkage is not explicitly modelled, however.

Table 1 also shows the conditions for a favourable demand response. For the disarticulated structure with functional dualism, the relation can never be positive when peasants' propensity to consume is zero and export demand is price elastic. When peasants consume all income earned from their marketed surplus, there may be circumstances when the increasing peasant demand derived from more favourable price overcomes the negative income effects on landlord and capitalist classes. Peasants are not likely, however, to have the social access to markets necessary for heavy consumption. Thus we can expect that there will be little basis for stimulating demand for the nonagricultural good with a positive price policy in the functionally dual, disarticulated structure.

The conditions for a positive, nonagricultural demand response in the articulated and Ricardian disarticulated structures can be analyzed in terms of the propensities to consume of the farmer, landlord, and capitalist classes, and of the level of investment. In the articulated case, the possibility of a positive demand response is inversely related to the level of investment. At zero investment, the demand response will always be positive; however, as investment becomes infinitely large, the demand response will be negative for any reasonable values of consumption propensities. For the Ricardian disarticulated structure, the Malthusian counterargument to the repeal of the Corn Laws is clearly substantiated. Again, the possibility of a positive demand response is inversely related to the level of investment. However, if landlords consume at a higher marginal rate than capitalists, the demand response will always be positive, whatever the level of investment.

## Income Distribution and Political Structure

Returning to the distributional consequences of an internal terms of trade policy, in table 2 we present a summary of the relation between a change in the agricultural price and nominal income changes of different social groups. The direction of change depends not only on the social relations of income distribution that distinguish structures, but also on the nonagricultural demand response to price changes. This information can be used to explain the political feasibility of a positive terms of trade policy, particularly if it is conceded that social groups will lend support to policies that increase their nominal incomes.

In the articulated structure, there will be a strong logic for unified support within the social democratic alliance for an increase in agriculture's terms of trade when such an increase will also stimulate nonagricultural demand. Since

**Table 2. Direction of Change in Nominal Incomes of Different Social Classes Given a Change in Intersectoral Terms of Trade**

	<u>Landlords</u>	<u>Farmers</u>	<u>Peasants</u>	<u>Workers</u>	<u>Capitalists</u>
Articulated	--	PI	--	I	I
Ricardian Disarticulated	PI	--	PI*	PI*	NI
Disarticulated with Functional Dualism	N	--	II	PI*	NI

where: PI = of the general form  $a + b(\partial X_2^*/\partial p)$  with a and b positive  
 PI\* = same as PI, but structural conditions keep real wage per capita always at subsistence  
 II = same as PI but a can be positive or negative  
 I = of the general form  $b(\partial X_2^*/\partial p)$  with b positive  
 N = always negative  
 NI = of the general form  $-a + b(\partial X_2^*/\partial p)$   
 -- = not applicable

the demand response is more likely to be positive at low investment levels, a positive terms of trade policy can become integral to an overall social democratic scheme for recovery from depression, as shown by the Great Depression experience in the United States and France.

In the Ricardian disarticulated structure, there is little basis for political consensus on a positive price policy (unless the demand response is large enough to offset the negative income effect on the capitalist class). The stage is set for fractional debates between landlords and capitalists, and a terms of trade policy will arise only when there is a clear hegemony of one class in the political structure.

In the disarticulated structure with functional dualism, the persistence of cheap food policies and agricultural disincentives in many developing countries is understandable. The logic of a cheap food policy is clearly stated here for countries where landed elites have specialized in production for export at the same time that a capitalist class has emerged and involved itself in production for the domestic market, perhaps of an import substitution nature. In the case where export demand for the agricultural product is not price inelastic, a disarticulated alliance between landlords and capitalists is likely to form around the terms of trade issue. There will be great pressure to maintain agricultural prices at depressed levels since our earlier analysis showed that a large demand response to a positive change in agricultural prices is unlikely.

### Conclusions

We admit that our modelling of political economic structures as related to the terms of trade issue is heavily influenced by historical experience. Nonetheless, we believe that the exercise of formally incorporating aspects of political economic structure can reflect on current policy issues. To the extent it is generally accepted that a positive price policy is a "sure-fire" fix for stagnant agricultural production (Schultz), our incorporation of a fuller description of the political economic structure can delimit the conditions under which a positive price policy may also be both politically expedient and consistent with the stimulation of aggregate demand for the nonagricultural sector.

## Note

<sup>1</sup>Assistant Professor of Agricultural Economics, Rutgers University and Professor of Agricultural and Resource Economics, University of California, Berkeley. New Jersey Agricultural Experiment Station Contribution #F-02411-1-82.

## References

- Chichilinsky, G. and Taylor, L.**, "Agriculture and the Rest of the Economy: Macroconnections and Policy Restraints," *American Journal of Agricultural Economics*, Vol. LXII, No. 2, May 1980.
- Janvry, A. de**, *The Agrarian Question and Reformism in Latin America*, Johns Hopkins University Press, Baltimore, 1982.
- Janvry, A. de and Garramon, C.**, "Laws of Motion of Capital in the Center-Periphery Structure," *Review of Radical Political Economics*, Vol. IX, No. 2, Summer 1977.
- Kalecki, M.**, *Selected Essays on the Dynamics of the Capitalist Economy: 1933-1970*, Cambridge University Press, Cambridge, 1971.
- Krishna, R.**, "Agricultural Price Policy and Economic Development," in Southworth, H. and Johnston, B. (Eds.), *Agricultural Development and Economic Growth*, Cornell University Press, Ithaca, 1967.
- Mitra, A.**, *Terms of Trade and Class Relations*, Frank Cass, London, 1977.
- Schultz, T.** (Ed.), *Distortions of Agricultural Incentives*, Indiana University Press, Bloomington, 1978.