URBAN BIAS REVISITED : THE ROLE OF TECHNOLOGY AND ECONOMIC GROWTH IN FOOD POLITICS

YOO CHUNG-SIK*

I. Introduction

Lipton (1976) claims that urban interests clearly dominate rural ones in the area of food pricing :
"The urban employer wants food to be cheap, so that his workforce will be well fed and productive. The urban employee wants cheap food too; it makes whatever wages he can extract from the boss go further. Less obviously, the whole interest of the rural community is against cheap food. This is clear enough for the farmers who sell food to the towns(largely big farmers, bought off by input subsidies); but even the deficit farmer' or net food buyer(who grows too little to feed himself from his land alone)often gains when food is dear, except perhaps in the very short term." (P.67)
and hence
"The most important conflict in the poor countries of the world today is not between labor and capital. Nor is it between foreign and national interests. It is between the rural classes and the urban classes. . . . the urban classes have been able to 'win' most of the rounds of the struggle with the countryside" (P.13)
In this paper, we argue that Lipton's hypothesis of an urban-rural trade-off and the dominance of urban interests(urban bias) in food politics require some qualifications. We suggest that certain economic parameters(for instance, urban labor demand elasticity, the efficiency effect of wage and the employment elasticity of food

* Assistant Professor, College of Commerce and Law of Yonsei University, Wonju Campus, Korea.

price), along with the bargaining structure between urban workers and firms and the technological characteristics of the economy determine the degree of urban bias. This is because the effect of the terms of trade between the two sectors on wage and employment decisions along with the characteristics of technological advances in the economy will impose conditions for the optimal degree of political involvement in food politics for urban dwellers and farmers.

While there may be several other characteristics relevant to the degree and extent of urban bias, for analytical convenience, we focus our attention on terms of trade(pricing policy) issues in the dual economy. Changes in the internal terms of trade between the agricultural sector and the manufacturing sector will generate varied economic impacts. In particular, the role of the internal terms of trade as a redistributive device in the short run may be contrasted with its role in boosting capital accumulation and economic growth(Dixit 1969, Zarembka 1970). The so called Preobrazhensky(1965)'s proposition that the socialized industrial sector expands by drawing on the surplus generated from the peasant-owned agriculture in "primitive socialist accumulation" is a classic example emphasizing the importance of the latter point. Schultz(1978) has been cited consistently for the argument that price disincentives to farmers are the major cause of low investment in agriculture, lower rates of technological adoption and hence increased food imports in LDCs. He attributes low food price to politics in which urban residents are more powerful. Recently, apparently rejecting the urban bias hypothesis, Anderson and Hayami(1986) claims that as economies grow they tend to change from taxing to assisting or protecting agriculture relative to other sectors, and that this change occurs at an earlier stage of economic growth the weaker the country's comparative advantage in agriculture. This paper is motivated to provide a theoretical framework which may be used to systematically evaluate these somewhat contradicting arguments.

In fact, it is not easy to disentangle the static redistributive effects of the low price incentive to peasants(motivated by maldistribution of political power in favor of urban dwellers) from the effects of economic growth through capital accumulation(motivated by the monopolist government trying to optimize the growth path). In planning models, economic growth through capital accumulation is a

national objective and the role of agriculture is examined in that perspective. It is well recognized that given the demand decisions of workers and supply decisions of peasants, and given the limited possibility of direct agricultural taxation, the social planner has two main options for extracting surplus from agriculture to finance industrial accumulation : pricing policy and investment in agriculture. As Dixit(1969) succinctly expresses, the former presents a trade-off, since obtaining more food on the market may require a high purchase price of food, while keeping the wage bill low requires a low selling price for food when the wage rate is tied to the price of food. With respect to the latter, so much of agricultural investment is of a social overhead character that it is not possible to extract its full cost from farmers. The government as a discriminating monopolist will thus intervene and control the buying and selling prices of food as well as investment allocation between industry and agriculture in a dynamically optimal fashion. In these planning models, the monopolist government is assumed to be a benevolent dictator who is only interested in optimal growth path of the economy. In contrast, the urban bias argument narrows the focus to the redistributional effect of the terms of trade, mainly motivated by the skewed political power distribution in favor of urban dwellers. This leads us to address the redistributional issues involved in pricing polices, rather than growth issues.

This paper is organized as follows. Section 2 introduces a heuristic model. In Section 3, we discuss the role of technology in food politics in this simple framework. Section 4 extends the model into a bargaining formulation, followed by the conclusion.

II. A Heuristic Model

Generally speaking with respect to agricultural products, urban dwellers are consumers, while residents are producers. In a political economic analysis of pricing policies, it is natural to assume that the major conflict arises between producers and consumers[1]. However,

---

[1] More precisely, we may aggregate interests between industry and agriculture since we are dealing with the terms of trade rather than a single price.(de Janvry and Sadoulet 1988)

the consumers in this model are not a homogeneous group since there exists a fundamental difference between firms and workers in their interests in food issues. Decreases in food price will induce a change in both food and labor supplies from the farm sector. The lowered price will be unilaterally beneficial to urban employers since it will lower the labor costs. due to both an increase in supply of labor and an increase in the real income of workers(since it lowers the reservation wage of workers). For the workers in the urban sector, however. the subjective cost of a threat of possible unemployment or underemployment caused by outmigration from the farm sector may outweigh the beneficial real income increase effect of low food prices. Thus. producer/consumer "two group" conflict models will be misleading[2].

1. Government

The economy is assumed to have four interest groups among which three are active(in the sense that they spend real resources to seek rents) and one is residually determined. Rural farmers, urban wage workers in the formal sector and urban employers are the three active groups. Urban informal(underemployed) workers are assumed to be inactive[3]. We assume that the government chooses the optimal level of transfer to or tax from farmers by adjusting internal food prices[4]

---

[2] Similarly, we may introduce the rural poor(who are mainly consumers of agricultural products) who actually suffer from high food prices. However, since our focus is on the effects of migration and the existence of the informal sector in urban areas on food politics rather than the problem of rural poverty, this possibility is not pursued.

[3] According to Zusman and Rausser(1990), interest groups may be conceptualized into three categories. First is a group which is "organized" ; the constituents can negotiate with each other to find binding agreements. Second is a group which is not organized(hence no binding agreements) but can respond. The third group is inert and hence does not respond. In our case, three organized interest groups and an inert group are assumed. Of course, the urban poor, who in general earn their living from the informal sector underemployment, sometimes get organized through the initiative of socially active noneconomic institutions(e.g., church). Hence it may be more plausible to assume that at least they respond.(For example, it is found that urban squatters organize and take action against the government when threat of eradication is imminent(Nelson)). But in this case, we only require that they do not *deliberately* invest in political actions.

[4] In general, a two price system(support producer price, subsidized consumer price) is a more common practice in developing countries. In this model we did not

relative to industrial price. We assume, for simplicity, that the reaction function of the government to political lobbying of private actors is known to interest groups as follows(Becker 1983)

$$P = P^0 - \gamma_k E_k^\delta - \gamma_u E_u^\delta + \gamma_r E_r^\delta, \qquad 0 < \delta < 1, \ \gamma_k, \ \gamma_u, \ \gamma_r > 0 \qquad (1)$$

where E_j denotes the level of political activity of the jth interest group(r=rural farmers, u=labor union, k=urban employers), P represents the terms of trade, P^0 is the terms of trade chosen by the policy maker in the absence of political influence of interest groups and γ_j represents the importance attached to the political influence of the jth group by the policy maker. Note that in this formulation, we do not consider the possibility of political lobbying by the labor union in favor of high food prices.

2. Urban Firms

We assume that the population of urban employers(and hence their consumption of food) is negligible(i.e. $L_k = 0$, $D_k = 0$), and urban aggregate production employs labor under fixed stock of capital. We also assume that urban employers are the residual claimants and the productivity of labor is dependent on the indirect utility of workers, which depends on P. The urban firms' problem is

$$\max_{L_u, E_k} \pi(P) = G(h(V_u)L_u, \overline{K}) - L_u W_u - E_k \theta_k \qquad (2)$$

G_L, G_K, $G_{LK} > 0$, $G_{LL}, G_{KK} < 0$, where G represents the aggregate production function in the urban sector, h is an efficiency parameter, V_u represents the indirect utility of urban workers in the formal sector which is a function of food price and wage income and θ represents the unit cost of E^5. Note that migration does not affect the optimal

---

introduce that possibility for the sake of the analytical tractability. In fact, the conflicts among interest groups, especially between farmers and urban dwellers may be diluted by a reconciliatory government which may deliberately transfer them into the revenue burden, which may sometimes be inflationary. This may be a way of reducing the political instability arising from direct conflicts among major social groups, at the expense of the interests of future generations.

[5] We are ignoring the fixed capital cost in this formulation. Hence G actually represents the total revenue of urban firms before subtracting the capital cost.

choice of the urban employers. Following Calvo's(1978) first case in which there exists a benevolent arbitrator to match the wage bid of the labor union and the employment bid of firms, W_u is assumed not to be a choice variable for them. Rather, it is assumed to be determined by the monopoly union. To be more precise, we assume

$$h(V_U) = \bar{h}V_U(P,W_U), \bar{h} > 0 \Rightarrow dh = V_U d\bar{h} + \bar{h}(V_P dP + V_w dW_U) \quad (2')$$

where $V_P = \dfrac{\partial V_U}{\partial P}$, $V_w = \dfrac{\partial V_U}{\partial W_U}$ and $\bar{h}$ is a constant representing the degree of the efficiency effect on labor input. The first order conditions become

$$\frac{\partial \pi(P)}{\partial L_U} = G_L h - W_U = 0 \quad (3)$$

$$\frac{\partial \pi(P)}{\partial E_k} = -G_L L_U \bar{h} V_P \gamma_k \delta E_k^{\delta-1} - \theta_k = 0 \quad (4)$$

Note that urban employers have a relative advantage in their unit cost of political activities(because of the negligible number of population) and hence it is easier and more profitable in cost terms for them to generate political actions. This tendency will be strengthened if the unit cost is locally a decreasing function of E_k.

From these two equations, we can derive

$$\frac{dL_U}{dW_U} < 0, \quad \frac{dL_U}{dP^0} \geq (\leq) \, 0 \text{ if } \eta_L \leq (\geq) \Phi \quad (5)$$

where $\eta_L = -\dfrac{\Phi G_L}{L_U G_{LL}}$ is the labor demand elasticity and $0 < \Phi = (1 - G_L$

$\dfrac{\partial h}{\partial W_U}) < 1$[6]. From (5)[7], we propose

---

[6] We may call Φ the 'net unit cost of wage'. $0 < \Phi < 1$ implies that the direct cost of wage increase is assumed to outweigh its indirect benefit of labor productivity increase in the efficiency unit.

[7] Note that if we assume a CES production function, the condition for positive employment effect of food price can be restated that the elasticity of substitution is smaller than a value which is smaller than one by a simple manipulation.

Proposition 1 *Urban employment will decrease with the original terms of trade(P^0) unless labor demand elasticity in the urban sector is smaller than the 'net unit cost of wage', which is less than one.*

We also get

$$\frac{dE_k}{d\overline{K}} > 0 \tag{6}$$

We find that capital accumulation in the urban sector will provide greater incentive for the urban employers to be involved in food politics, *ceteris paribus*. Intuitively, as capital is accumulated, labor productivity will increase and the marginal benefit of political lobbying for inducing the low food price will increase, resulting in a larger equilibrium choice of E_k, *ceteris paribus*. The result in (6) shows that there is no theoretical reason to argue that urban dwellers will be less interested in food politics as the economy grows.

Similarly, we derive

$$\frac{dL_U}{d\overline{h}} \geq (\leq) \, 0 \text{ if } \eta_L \geq (\leq) \Phi, \quad \frac{dE_K}{d\overline{h}} \geq (\leq) \, 0 \text{ if } \eta_L \geq (\leq) 2\Phi, \tag{7}$$

$$\frac{dL_U}{d\gamma_k} \geq (\leq) \, 0 \text{ if } \eta_L \geq (\leq) \Phi, \quad \frac{dE_K}{d\gamma_k} \leq 0 \text{ if } \eta_L \leq 2\Phi, \tag{8}$$

Note that if the efficiency effect of wage is dominant, Φ will approach zero. Then, an increase in the efficiency unit in terms of utility will increase urban employment and induce more political investment in food politics by urban employers. If $\Phi \rightarrow 0$, we also get a result that urban employment will increase with an increase in the political importance of urban employers. On the other hand, if $\Phi \rightarrow 1$, i.e., if the efficiency effect of wage is negligible, all the results(except $\frac{dE_K}{d\gamma_k}$) will be reversed, unless urban labor demand elasticity is high enough(at least greater than one). Hence, we propose

Proposition 2 *If the efficiency effect of wage is dominant, urban*

employment will decrease with food price, increase with the efficiency unit(in terms of utility)and the political importance of urban firms in food politics.

3. Labor Union

The monopoly union is assumed to maximize the aggregate welfare gains of its members from employment in the formal sector as compared with the employment in the informal sector that everyone starts with.[8] It chooses wage rates and the level of political investment subject to the employment schedule chosen by urban firms(i.e., the reaction function of the urban firms)(Quibria 1988)[9].

$$U = \max_{W_U, E_U} L_U[V_U - V_i] - \theta_U(L_U)E_U \tag{9}$$

---

[8] In general, many people in the informal sector are engaged in a small scale self-managed(or with a few employees) business, from which they may sometimes earn more income than that from the alternative employment in the formal sector. (For example, a report states that only 40% of the informal workers earn a wage compared to 95% of those in the formal sector in Peru). This point is also raised by empirical findings such as in Majumdar(1976) or Banerjee (1983). However, in general, a small scale self-managed business(for example, street vending) is much risker than being employed in the formal sector and receiving a guaranteed wage which is generally higher than that available in the informal sector. The relative importance of wage earnings versus a small scale self-managed business income should be empirically examined. In fact, greater sophistication in the specification of the informal sector(as in Rauch 1991) will be needed for more realistic results. But for simplicity, we take a heuristic interpretation. We focus on wage income or interpret W as expected *average* income in both sectors.

[9] This formulation emphasizes the spatial aspect of securing employment in the formal sector, in contrast to Calvo(1978), who assumes a utility function which is a product of urban employment and the differential between rural and urban wage levels. While the rural income level may be relevant for individual migration decisions, it is not so for the union in wage setting behavior. The more relevant consideration is the alternative earning in the informal sector. The objective function can be justified as follows. Suppose the union has Nu members of which Lu are employed in the formal subsector while the rest are employed in the informal sector. Thus each member has a probability Lu/Nu of being employed in the formal subsector. The expected utility of a union member is therefore(1/Nu) [LuU(Wu)+(Nu-Lu)U(Wi)]. Since Wi and Nu are data *as far as wage setting is concerned*, the problem is analytically equivalent to maximizing Lu[U(Wu)-U (Wi)]. See Quibria(1988), P.558, footnote 5. In our case, we use indirect utility functions instead, to see the effect of food price. Of course, if the union fully appreciates the labor mobility effect of their involvement in food politics, the objective function based on individual decision will be slightly different from the above specification.

The first order conditions are

$$\frac{\partial L_U}{\partial W_U}\,[V_U - V_i] + L_U \frac{\partial V_U}{\partial W_U} - \frac{\partial \theta_U}{\partial L_U}\frac{\partial L_U}{\partial W_U} E_U = 0 \tag{10}$$

$$\frac{\partial L_U}{\partial W_U}\frac{\partial P}{\partial E_U}\,[V_U - V_i] + [L_U(\frac{\partial V_U}{\partial P} - \frac{\partial V_i}{\partial P}) - E_U \frac{\partial \theta_U}{\partial L_U}\frac{\partial L_U}{\partial P}]\frac{\partial P}{\partial E_U}$$

$$- \theta_U = 0 \tag{11}$$

Equation(10) indicates that the current welfare benefit to be employed in the formal sector will negatively affect the optimal wage bid of the monopoly union. Equation(11) shows that if the urban employment effect of food prices($\frac{\partial L_U}{\partial P}$) is not negative(i.e., if urban labor demand elasticity is smaller than the net unit cost of wage) or if the welfare difference between formal sector workers and informal sector workers is not greater than the total cost increase of political investment caused by labor migration(i.e., $[V_U - V_i] - E_U \frac{\partial \theta_U}{\partial L_U}$ is not positive), the monopoly union will not be interested in food politics[10]. This result claims that in countries where rising food prices hurt the underemployed more and the employment effect of food price is negligible(or the welfare difference between formal workers and informal workers is not greater than the total organizational and operational cost increase of political investment caused by outmigration from the farm sector), we would hardly find organized political activities among the urban workers to lower the internal terms of trade.

4. Migration Equilibrium

We assume that the total population is given and urban formal employment is determined by the optimal choice of urban employers

---

[10] In this case, the condition for the interior solution of Eu(i.e., Eu > 0) is $\left|\frac{\partial V_u}{\partial P}\right| > \left|\frac{\partial V_i}{\partial P}\right|$

$\Rightarrow d_U\Gamma_U > d_i\Gamma_i$, where $d_j(j = i, u)$ represents the demand for food and Γ_j is the marginal utility of a representative individual in jth group. Without much risk, we might say that d_u is roughly same as d_i.

and employment in the rural sector. Further, the number of underemployed in the urban informal sector is determined by the migration equilibrium condition. The equilibrium is assumed to be established when the expected income from migration is equal to what they would earn if they were in the rural sector[11].

$$\frac{PF(L_r)}{L_r} = \frac{L_U}{(L-L_r)} W_U + \frac{L_i}{(L-L_r)} W_i, \qquad F'>0, F''<0 \qquad (12)$$

where $q = \dfrac{L_U}{(L-L_r)}$ is the probability of urban formal employment and W_i is given and less than W_U(Note that we did not introduce rural classes in this formulation). From this equation and $L_r + L_U + L_i = L$, we get

$$[\frac{eW^D}{N_U} + \frac{\pi^f}{L_r}] dL_r = [\frac{F}{L_r} - \frac{B^w}{N_U}(1-\frac{1}{\eta_L})\mu_{LP}]dP, \ N_U = L - L_r \qquad (13)$$

where $\pi^f = \dfrac{P(F-L_r F')}{L_r}$ is the per-capita gross profit(before subtracting capital and overhead cost) of farmers, $W^D = W_U - W_i$ is the wage difference in the urban sector, $e = \dfrac{L_U}{N_U}$ is the urban employment rate, $\mu_{LP} = \dfrac{\partial L_U}{\partial P} \dfrac{P}{L_U}$ is the urban employment elasticity with respect to food price and $B^w = \dfrac{W_U L_U}{P}$ is the real wage bill in the urban formal sector. (13) reveals the interesting result that for a certain range of values of urban labor demand elasticity, the countermigration effect of food prices will not be unambiguous. To see this, we derive

$$\eta_L > 1 \text{ or } 0 < \eta_L < \Phi < 1 \Rightarrow (1-\frac{1}{\eta_L})\mu_{LP} < 0 \Rightarrow \frac{dL_r}{dP} > 0$$

$$\Phi < \eta_L < 1 \Rightarrow (1-\frac{1}{\eta_L})\mu_{LP} > 0 \Rightarrow \frac{dL_r}{dP} (?) \qquad (14)$$

---

[11] Another possibility is to use the rural labor market equilibrium condition as is frequently done in the development literature following Harris-Todaro. To simplify rural interests, however, we did not pursue that possibility. For an empirical critique of this formulation, see Majumdar(1976), Banerjee(1983). See also Quibria(1988), who advocates using utility rather than income for introducing risk aversion of migrants. We tried this alternative, and obtained the same results as in our original formulation.

Note that the ambiguous range will become smaller or larger the value of Φ. Hence,

Proposition 3 *The greater the efficiency effect of wage, the smaller will be the possibility of restraining outmigration from the farm sector by augmenting internal terms of trade.*

Note that the counter-migration effect of food prices will be weak if urban employment and wage(through the employment effect) move favorably, despite an augmented agricultural terms of trade. Intuitively, food price increases will induce a decrease in labor efficiency and desired urban employment under a given wage. This in turn will provide an incentive for the monopoly union to raise the wage bid. The equilibrium wage and employment will be critically dependent on the values of labor demand elasticity and the efficiency effect of wage. The larger the latter, the more profitable it is to raise the equilibrium wage and the less effective it is to use the terms of trade policy to restrain outmigration, ceteris paribus. (14) reveals a detailed condition for the result. To examine the ambiguous case more closely, we derive

$$\frac{dL_r}{dP} < 0, \text{ if } \overline{Y}_r < \upsilon \overline{Y}_m \text{ and } \upsilon = (1 - \frac{1}{\eta_L})\mu_{LP} > 0 \text{ (i.e. } \Phi < \eta_L < 1) \quad (15)$$

where $\overline{Y}_r = \dfrac{PF}{L_r}$ is the average income in the rural sector and $\overline{Y}_m = \dfrac{W_U L_U}{\eta_L}$ is the average wage income in the urban sector (if $W_i = 0$). For a numerical instance, let $\Phi = 0.5$, $\eta_L = 0.75$ and $Y_r = 0.5Y_m$. Then $\dfrac{dL_r}{dP} < 0$, if $\mu_{LP} < -1.5$. This case, of course, is not unrealistic.

Similarly, we find

$$\frac{dL_i}{dP} = \frac{1}{PH_0}[-\overline{Y}_r + \{\overline{Y}_m(1 - \frac{1}{\eta_L} - e) - \lambda\pi^f)\}\mu_{LP}], \lambda = \frac{L_U}{L_r} \quad (16)$$

where $H_0 = \dfrac{eW^D}{N_U} + \dfrac{\pi^f}{L_r} > 0$. For a numerical example, assume $e = 0.5$, $\Phi = 0.5$, $\lambda = 1$ and $\pi^f = 0.5\overline{Y}_r$, $\overline{Y}_r = 0.5\overline{Y}_m$. Then for $\dfrac{dL_i}{dP} < 0$, it is required that $-0.66 < \mu_{LP} < 0$ if $\eta_L = 1$, $-0.5 < \mu_{LP} < 0$ if $\eta_L = 0.8$. These

latter conditions are rather restrictive and may not hold in many developing countries. In general, if $\overline{Y}_r = \sigma_1 \overline{Y}_m$, $\lambda \pi^f = \sigma_2 \overline{Y}_m$,

$$\frac{dL_i}{dP} > 0, \text{ if } \mu_{LP} < \frac{\sigma_1}{(1 \text{-} e \text{-} \sigma_2 \text{-} \frac{1}{\eta_L})} \tag{17}$$

under the negative employment effect of food price (i.e. $\mu_{LP} < 0$), if $1 < e + \sigma_2$ or $\eta_L < \frac{1}{(1 \text{-} e \text{-} \sigma_2)}$ (if $1 > e + \sigma_2$). To compare(17) with (16), we get

$$\frac{dL_i}{dP} < 0, \text{ if } \mu_{LP} < \frac{\sigma_1}{(1 \text{-} \frac{1}{\eta_L})}, \eta_L < 1 \tag{18}$$

Note that the condition in (18) is more restrictive than that in (17). These equations show that, under given parameters, favorable terms of trade policy may paradoxically induce social instability in the urban sector and outmigration from the rural sector, and the former possibility is greater than the latter.

We also find that favorable internal terms of trade policy may induce a greater social instability by increasing the population of the underemployed in the urban sector. The conditions for this are : i) the absolute value of(negative) employment elasticity of the terms of trade is large enough(or the relative ratio of the average rural income over the average urban income is small enough) and ii) urban labor demand elasticity is smaller than a value which is greater than one or the unemployment rate in the urban sector plus the relative ratio of the per-capita gross profit in the farm sector over the average income in the urban sector is greater than one.

5. Farmers

We assume that farmers have an association only for political activities and the employment of farm labor is determined solely by the migration equation[12]. To simplify the situation, we further assume

---

[12] An underlying assumption is that farmers are allowed to form these organizations for their own purposes. In many cases, we observe farmers' organizations are initiated and controlled by the government.

that the organization tries to maximize total farmers' income after subtracting the total cost of political activities. Then the maximization problem becomes,

$$\max_{E_r} \quad P(E_r)F(L_r) - E_r\theta_r(L_r) \tag{19}$$

where θ_r is the unit cost of E_r (expressed in the unit of industrial goods), which is assumed to be a function of L_r (Note that we depressed the sector-specific fixed factor, land or capital, in the expression of the rural production function). Assume that the population elasticity of unit political cost is unity for the relevant range of the level of population. The first order condition is

$$\frac{1}{P}[PF+(PF'L_r - E_r\theta_r)\mu_{LP}^r]\frac{\partial P}{\partial E_r} - \theta_r = 0, \text{ if } \eta_\theta^r = \frac{\partial \theta_r}{\partial L_r}\frac{L_r}{\theta_r} = 1 \quad (20)$$

If the total labor cost(production effect of counter-migration) is greater than the total political cost(political cost effect of counter-migration), then the counter-migration effect will give more incentive to employing E_r, under a positive counter-migration effect of food price(i.e., if $\mu_{LP}^r = \frac{\partial L_r}{\partial P}\frac{P}{L_r} > 0$). The reverse also holds, with smaller labor costs creating less incentive to employing E_r. If the counter-migration effect is negligible and/or the total labor cost is approximately equal to the total political cost, then the first order condition implies that farmers will employ E_r until its marginal contribution to total income(via price increase) becomes equal to the unit cost of political activity. Of course, if θ_r is a decreasing function at least locally with respect to E_r, there will be an additional incentive to employ E_r. It seems reasonable to assume that total labor cost is greater than total political cost in general. Then the positive counter-migration effect of food price implies that high food pricing policy will have two favorable effects for farmers : a price effect and a production effect[13].

If the political organization for farmers is interested in aggregate utility rather than income, the result will look quite

---

[13] Of course, in general equilibrium context, the production effect will dampen the price effect at the margin.

different. To see this, we assume that farmers would

$$\max_{E_r} \quad L_r V(P,\overline{Y}_r) - E_r \theta_r(L_r) \quad \overline{Y}_r = \frac{PF}{L_r}$$

Then,

$$\frac{1}{P}[(L_r V - V_y \pi^r - E_r \theta_r)\mu_{LP}^r + V_y L_r \overline{Y}_r(1-c)]\frac{\partial P}{\partial E_r} - \theta_r = 0, c = \frac{Pd}{\overline{Y}_r}$$

where d represents a representative farmer's demand for food and c is food consumption ratio per income. This equation shows that, under a positive counter-migration effect of food price, the larger the food consumption ratio and gross profit, the smaller will be the marginal incentive for political action, ceteris paribus. In sum, we propose

Proposition 4 If farmers try to maximize total farm income in food politics, high food pricing policies, by augmenting both production and price, will help farmers if the counter-migration effect of high food prices is positive. On the other hand, if farmers try to maximize aggregate welfare rather than income, the larger the farm consumption ratio and gross profit, the less inclined they will be to be involved in food politics.

We may summarize some important results obtained in this section as follows : a) The parameter values of the urban employment elasticity of food prices, urban labor demand elasticity and the efficiency effect of wage are crucially important in assessing food politics. These will decide the degree and the extent of the involvement of urban dwellers and farmers in food politics ; b) Capital accumulation in the urban sector, ceteris paribus, will render urban employers more interested in food price issues. An important underlying assumption of this hypothesis is that the level of employment in the urban sector is fundamentally determined by the demand side. This observation negates the general perception that economic growth will bring less interest in food politics for urban dwellers. An interesting observation is that economic growth caused by capital accumulation will induce greater interest by urban employers in food politics, while it may cause the monopoly labor

union to be less involved in food price issues through its influence on the employment and wage effects of food price ; c) Favorable terms of trade policy may paradoxically induce social instability in the urban sector and outmigration from the rural sector under plausible circumstances.

III. The Role of Technology and Economic Growth

In this section, we introduce technological change. To simplify the situation, let's assume that there exist two factors for production in each sector, labor and capital, and the technology is disembodied. We express each production function as

$$F = F\{a(t)L_r, b(t)K_r\}, \quad G = G\{(c(t)+h(V_U))L_U, g(t)K_U\} \quad (21)$$

where a,b,c,g are efficiency parameters. Note that the efficiency parameters of urban labor consist of those from labor augmenting technology and from the food price effects. Under these production functions, we may derive[14]

$$\frac{dL_U}{dc} \geq (\leq) 0 \text{ if } \eta_L \geq (\leq) \Phi, \quad \frac{dL_U}{dg} > 0 \quad (22)$$

In words, labor augmenting technological advances in the urban sector may raise or lower the level of labor employment in that sector depending on labor demand elasticity and the efficiency effect of wage, while capital augmenting technological advances will always raise the level of labor employment.

If we assume that $\frac{\partial E_j}{\partial E_i} = 0, i \neq j$, we find

$$\frac{dE_k}{dc} \geq (\leq) 0, \text{ if } \eta_L \geq (\leq) 2\Phi, \quad \frac{dE_k}{dg} > 0 \quad (23)$$

Similarly,

---

[14] To simplify the argument, we are only considering the static version of technological advance(i.e. once and for all). The partial derivative with respect to efficiency parameter b, for instance, is equivalent to say that b(t) > 0.

$$\frac{dE^r}{da} \geq (\leq) \, 0, \text{ if } \tau \, \frac{\partial \mu_{LP}^r}{\partial a} \geq (\leq) \, 0 \text{ and } \eta_L^r \geq (\leq) \mu_{LP}^r, \, \frac{\partial E_r}{\partial b} > 0$$

$$\text{if } \tau \, \frac{\partial \mu_{LP}^r}{\partial b} > 0 \tag{24}$$

where $\tau = \frac{1}{P}(PF'L_r - E_r\theta_r)$ and $\eta_L^r = -\frac{F_r}{F_{LL}L_r}$ is the implicit[15] labor demand elasticity in the rural sector. Note that labor augmenting technological advances in the urban sector will induce less involvement by urban employers if the efficiency effect of wage is negligible(under the condition that urban labor demand elasticity is smaller than 2). If the efficiency effect of wage is significant, however, labor augmenting technological change in the urban sector may increase the incentive for urban employers under plausible values of urban labor demand elasticity. For instance, if the efficiency effect of wage is 50%(i.e. $\Phi = 0.5$), the condition for the result is that labor demand elasticity is greater than one. The latter result more closely approximates reality in the primitive development stage when the efficiency effect of wage seems to be relatively high. Hence

Proposition 5 *In the primitive development stage, labor augmenting technological advances in the urban sector will increase the incentive for urban employers to be involved in food politics. This is less likely in the reasonably industrialized stage, for a given labor demand elasticity in the urban sector. Capital augmenting technological changes in the urban sector will always induce a greater incentive for urban employers to be involved in food politics.*

Similarly, if the effects of technological advances on the counter-migration elasticity of food price are negligible, labor augmenting technological advances in the rural sector will induce more incentive for farmers to be involved in food politics if and only if rural labor demand elasticity is greater than the counter-migration elasticity of food price. Capital augmenting technological advances in

---

[15] If we assume that there exists perfect labor market in the rural sector.

the rural sector, however, will always induce a greater incentive for farmers to be involved in food politics.

If the efficiency effect of wage and labor demand elasticity in the urban sector are reasonably small, and the average rural income is much smaller than the average urban income, counter-migration elasticity will have a negative value. Then, unless counter-migration elasticity is significantly affected by technological changes, labor augmenting technological advances in each sector will induce less interests of urban employers and more involvement of farmers in food politics. Alternatively, capital augmenting technological advances in each sector will always increase the optimal political investment of both parties. Note that in this sector-specific interpretation of capital, the results will be identical even if we introduce land instead of capital in the aggregate rural production function. Roughly speaking, the former result may be attributed to the fact that labor augmenting technological changes will lower the benefit of political investment of urban employers, since it depends on the marginal product of labor which will be reduced as the efficiency unit increases. On the contrary, labor augmenting technological changes will augment the benefit of political investment of farmers since both the output level and price of food will be favorably affected. Of course, a crucial assumption is that farmers are interested in their total income rather than their aggregate welfare. This assumption is realistic in many cases of farm politics since farm organizations are generally dominated by large farmers.

Some implicit conclusions from the previous analysis are in order. First, the trade-off between urban consumers and rural producers should not be interpreted as a trade-off of interests between farmers and urban workers. Rather it represents a trade-off of interests between urban employers and farmers. This is due to the fact that interest in food prices by the monopoly labor union in the urban sector depends upon the employment effect of food prices which in turn is fundamentally determined by economic and political decisions of urban employers[16]. This statement implicitly relies on the observed

---

[16] An interesting empirical report shows that when labor reallocation is taken into account the short-run impact of a 5% reduction in ad valorem rice export duty in Thailand reduced the urban real wage of casual labor by only 0.2%(Siam II model, World Bank research team in Thailand). This simulation result means that the real

stylized fact that in LDCs urban labor market is demand-rationed by oversupply of labor. Second, different types of technological advances will result in different power structures in food politics. For example, if the dominant technological advances in the economy are labor augmenting(in both urban and rural productions), farmers will be politically more active and powerful. If they are capital augmenting, however, the result is less apparent. Given the employment effect of food price changes(i.e., given political interests of urban employees), different combinations of the contents of technical changes will result in different degrees of urban bias in food price. Ceteris paribus, we find that urban bias will be more prominent in countries where urban production follows capital augmenting technological advances. An important underlying assumption is that the optimal decision regarding political investment in food politics of urban dwellers is made without collusive interaction between the two interest groups.

Factor augmenting technical change in one factor generates the. following changes in the factor intensity of that factor under a constant wage-rental ratio: the intensity increases, remains constant, or declines if and only if the elasticity of substitution is larger, equal or smaller than one, respectively. Hence under the constant wage-rental ratio, the observed capital-intensive bias in the manufacturing sector in LDCs implies capital augmenting technical change, with the elasticity of substitution of urban production function larger than 1, or labor augmenting technical change with the elasticity of substitution of urban production function less than 1[17]. This means that the commonly observed capital-intensive bias in LDCs will imply very different political economy outcomes in food economy depending on the.elasticity of substitution of the urban production function. Ceteris paribus, we find that urban bias will be more significant in countries (LDCs) where the elasticity of substitution of the urban production function is larger than 1[18](i.e. with capital augmenting technological

---

urban beneficiaries of rice export taxation of Thailand are urban employers.(World Bank Country Study, Thailand, 1985)

[17] In this discussion, we are assuming CES production functions.

[18] This also implies that urban labor demand elasticity is greater than the 'unit cost of wage', i.e., the employment effect of food price will be negative. Note that this negative employment effect will become greater, the larger value of the elasticity of substitution.

changes in the urban sector), under capital intensive bias. This also comes from the fact that the monopoly labor union will become more interested in low food prices since the latter condition means the larger negative employment effect of food price.

In sum, if the elasticity of substitution of the aggregate urban production function is larger than 1, urban bias will become more significant due to : i) the commonly observed capital-intensive bias in LDCs, which means that capital augmenting technical changes generate a greater interest of urban employers in food politics and ; ii) the negative employment effect of food price is strengthened leading to amplified interests of the labor union in food price. Urban bias will become more prominent if there are labor augmenting technical changes relative to the case where there are capital or land augmenting technical changes in the rural sector. The smaller the elasticity of substitution of the rural production function is, the larger will be urban bias if there are labor augmenting technological changes, ceteris paribus. Hence, we may claim a refutable hypothesis that the level of farm taxation(or any measure of urban bias) is positively related to the elasticity of substitution of the urban production function, given capital intensive bias and negatively related with that of the rural production function under significant labor augmenting technical changes. Of course, this analysis holds only under the assumption that the two urban classes do not collaborate with each other.

IV. Bargaining Formulation of Urban Employers and The Labor Union

An immediate extension of the previous analysis is to introduce a bargaining situation between the urban employers and the monopoly labor union. As both will be interested in lowering food price under some negative employment effect of food price, it is natural to consider a Nash bargaining solution. As we assumed different unit cost functions of political activities of each interest group, there are three possibilities for generating political actions : i) only urban employers act, ii) only the monopoly labor union acts on behalf of its coalition or iii) each acts separately but the optimal solution is

controlled by a coalition objective. For simplicity, let's assume that only urban employers act on behalf of urban dwellers. (This is plausible since the unit cost function will be smaller, ceteris paribus[19]). In this scenario, the urban coalition will determine wage, employment and political investment variables. Due to analytical difficulties, however, we hypothesize the following two plausible stories. First, the urban coalition decides only the optimal labor employment and political investment levels. The wage level is exogenously given(cf : Harris-Todaro). Second, the employment schedule is determined by a competitive market mechanism(marginal value product schedule vs. wage cost), and the urban coalition decides the optimal levels of urban wage and political investment in food politics. In the first case, the following Nash product will be maximized :

$$\max_{L_U, E_k} j = L_U[V_U - V_i]\{G\{(c+h(V_U))L_U, d\bar{k}\} - L_U W_U\} - E_k \theta_k \qquad (25)$$

Assuming interior solutions,

$$\frac{\partial J}{\partial L_U} = \{G - L_U W_U\}[V_U - V_i] + L_U[V_U - V_i]\{G_L(c+h) - W_U\} = 0$$

$$\Rightarrow G_L(c+h) < W_U = \frac{1}{2}(G_L(c+h) + \frac{G}{L_U}) \qquad (26)$$

We find that the bargaining solution of the employment level is larger than that of the previous case. Note that the larger the initial equilibrium profit before deducting capital costs(or the smaller the total labor cost), the greater will be the employment level over the level which will prevail under no bargaining case. We also get

---

[19] It is important to note that responses of policy makers to political actions of these two groups will in general be different. For instance, if the ruling ideology of the society is industrialization, the political appeals of urban employers will be more influential and more effective. If the ruling elites are populists, on the other hand, the political demands of urban wage workers for low food price will be more influential. In this model, we are abstracting from the issue of differentiated government responses. Given responses of policy makers, cost effectiveness will be an important consideration for the optimal decision of the urban coalition.

$$\frac{\partial J}{\partial E_k} = L_U[V_U - V_i]\{G_L L_U \bar{h} V_P P_E\} - \theta_k = 0,$$

$$V_P = \frac{\partial V_U}{\partial P}, \; P_E = \frac{\partial P}{\partial E_k} \tag{27}$$

assuming $\dfrac{\partial V_U}{\partial P} = \dfrac{\partial V_i}{\partial P}$. From (26), we define

$$\eta_L = -\frac{(G_L + \dfrac{G_L}{L_U})\Phi}{(G_{LL} + \dfrac{G_L}{L_U} - \dfrac{G}{L_U^2})L_U} \Rightarrow \frac{G_{LL} L_U}{G_L} = \frac{2W_U}{G_L}(1 - \frac{\Phi}{\eta_L}) - 2 \tag{28}$$

where $\Phi = 1 - \dfrac{1}{2}G_L \bar{h} \dfrac{\partial V_U}{\partial W_U}$ is the 'net unit cost of wage' as is

defined in the previous section. Then

$$\frac{dL_U}{dP} \geq (\leq) 0 \text{ if } \eta_L \leq (\geq) \Phi \tag{29}$$

As is the previous case, (29) shows that the employment effect of food price will be negative if labor demand elasticity is greater than the net unit cost of wage. We also get

$$\frac{dE_k}{dK} > 0 \text{ if } \eta_L > \Phi, \; \frac{dE_k}{dc} > 0 \text{ if } \eta_L > \frac{(\dfrac{G}{L_U} + G_L)\Phi}{(\dfrac{G}{L_U} - G_L)} \tag{30}$$

Since $\dfrac{dE_k}{dg}$ has the same sign with $\dfrac{dE_k}{dK}$, this urban coalition will

increase its involvement in food politics as the economy grows and/or if technology is capital augmenting, unless labor demand elasticity is smaller than the net unit cost of wage.

Similarly, if the dominant change in technology is labor augmenting, this coalition will increase its concern regarding food issues given a large enough[20] labor demand elasticity. Note that the

---

[20] Note that the relevant minimum value of labor demand elasticity for the positive

larger the value of the unit cost of wage(i.e. the smaller the efficiency effect of wage), the less likely it is that the urban coalition will raise its interest in food politics in response to technological advances under given labor demand elasticity. Compare (30) with (6). We find that the larger are the economic rents enjoyed by the members of the monopoly labor union, the greater will be the incentive provided by economic growth for political involvement of the urban coalition in food price. If these rents are negligible, labor demand elasticity should be high enough and in particular, it should be greater than one under a negligible efficiency effect of wage.

We also note that the larger the efficiency effect of wage(i.e., the smaller the net unit cost of wage) and the larger the magnitude of labor demand elasticity, the more likely it would be that the employment effect of food price will be negative. These results show that bargaining formulations do not significantly alter the basic insights described in the previous section.

Another possible bargaining situation is that urban firms decide the employment level and then the coalition decides the levels of optimum wage and political investments. In this situation, we get

$$\frac{\partial J}{\partial W_U} = (G - L_U W_U)L_U V_w + L_U(V_U - V_i)(G_L L_U \bar{h} V_w - L_U) = 0 \qquad (31)$$

instead of (26). By assuming that $\dfrac{\partial V_U}{\partial P} = \dfrac{\partial V_i}{\partial P}$, we derive

$$\frac{dE_k}{d\bar{K}} > 0 \text{ if } 1+z > 0 \text{ and } \eta_L > \frac{(V_U - V_i)\Phi}{1+z}, \ z = \frac{V_{Pw}}{V_P V_w} = -\frac{(R_r - \mu_y)}{W_U V_w} \quad (32)$$

Note that if $1+z$ is negative and its absolute value is extremely large(i.e. if the level of risk aversion of a representative individual is extremely high), (32) may not hold. Hence,

Proposition 6 *If the urban coalition determines wage with the*

---

sign of the equation (35) depends on : i) the difference between the average product of labor and the marginal product of labor ; ii) the current welfare benefit to be employed in the formal sector and ; iii) the value of the net unit cost of wage. For instance, the larger the values of ii) and iii), the less likely it is that the urban coalition will positively respond to labor augmenting technological changes.

political investment level in food politics, the level of risk aversion will be one of the key variables in assessing the effects of technology and economic growth on food politics. If urban dwellers are very risk averse, for instance, it may be possible that economic growth may bring less incentive for them to be involved in food politics.

This result is derived due to the efficiency effect of wage. Similarly,

$$\frac{dE_k}{dc} < 0 \text{ if } -2 < z < -1 \text{ or } z > -1 \text{ and } \eta_L < \frac{2+z}{1+z}(V_U-V_i)\Phi \quad (33)$$

i.e., under a relevant range of the level of risk aversion, labor augmenting technological advances will always decrease the incentive for the urban coalition to be involved in food politics.

V. Concluding Remarks

In this paper, we examine the effects of technological characteristics of the economy and the bargaining structure between the two major groups in the urban sector on the structure of food politics and the significance of urban bias. Focusing on the important role of migration and the employment effect of food prices, we find that the specification of the bargaining structure bears a crucial importance in assessing food politics. Two cases(following Calvo(1978)'s idea) are presented. In one case, a hypothetical arbitrator is introduced who matches labor employment bid of firms and wage bid of unions. Political concern about food price is assumed to be separately represented. In the other case, labor union and urban firms are assumed to play Nash bargaining game. The urban coalition is assumed to make economic(wage and employment) and political decisions jointly. In the latter case, the effect of capital augmenting technological advances on urban interest in food price becomes less clear than that in the former case in which it is unambiguously positive. An empirical implication of the model is that urban bias hypothesis is least relevant in an economy with a dominant labor augmenting path of technical advance. In the case of an economy with a dominant capital augmenting path of technical advance, urban bias

is more significant in the case when urban interest is dominantly expressed by urban employers than in the case when labor unions are collaborating with urban employers so that they form a coalition to represent their interests in food politics by maximizing their coalitional objective. The effect of economic growth on the significance of urban bias may be similarly addressed : the maturity of the labor union and the stability in the power structure between labor and capital in the urban sector may discourage the significance of urban bias in the process of economic growth. This observation implies that Liptonian urban bias is not free from the conflicting interests between the two major groups of urban dwellers.

We also indicate that there is no theoretical reason that urban interests are weakened due to economic growth(capital accumulation) per se. The interests of urban employers in food price will always be augmented as the economy grows due to labor productivity increase. Given a specific bargaining structure between the two urban interest groups, we discuss the role of technology in food politics. If the two urban groups collaborate, it becomes less likely that they will increase their investments in food politics in response to capital augmenting technological change and economic growth, the smaller the efficiency effect of wage and the larger the level of risk aversion of a representative employee in the urban formal sector. On the other hand, the urban employers in isolation will become unilaterally more interested in low food price under the capital augmenting case. Similarly, in the case of labor augmenting technological advances, the conditions for lowered interests in food politics will also be different depending on the nature of the urban coalition : both the urban coalition with employment bargaining and urban employers in isolation will become less interested in food price issues under negligible efficiency effect of wage and small enough labor demand elasticity, while the urban coalition with wage bargaining will be less interested in food politics under the relevant range of the level of risk aversion and labor demand elasticity.

Note that in this discussion, the policy response of the government is not explicitly mentioned. In fact, it may be possible that the powerful government may implement farm policies according to its own historical goals and/or ideological considerations rather than by simply channeling private interests. It may be an interesting

and important extension to explore, therefore, the analytics of the mechanism through which the contents of the government policy orientation in food issues may be affected by economic growth and technological characteristics.

REFERENCES

Anderson, K. and Hayami, Y.(eds), 1986, *The Political Economy of Agricultural Protection : East Asia in International Perspective*, Allen and Unwin.

Anderson, K. and Tyers, R., 1988, "Agricultural Protection Growth in Advanced and Newly Industrialized Countries," Conference Paper, *XX International Conference of Agricultural Economists*, Buenos Aires.

Bale, M.D. and E. Lutz, 1981, "Price Distortions in Agriculture and Their Effects: An International Comparison," *American Journal of Agricultural Economics* 63, 8-22

Banerjee, B., 1983, "The Role of the Informal Sector in the Migration Process: A Test of Probabilistic Migration Models and Labor Market Segmentation for India," *Oxford Economic Papers*, 35, 394-422

Bates, R., 1981, *Markets and States in Tropical Africa*, Univ. of California Press.

Bates, R., 1983, *Essays on the Political Economy of Rural Africa*, Cambridge Univ. Press.

Becker, G., 1983, "A Theory of Competition Among Pressure Groups for Political Influence," *Quarterly Journal of Economics*, Aug., 371-400

Calvo,G., 1978, "Urban Unemployment and Wage Determination in LDCs : Trade Unions in the Harris-Todaro Model," *International Economic Review*, 19, Feb. 65-81

Cook,A.E., 1989, "The Informal Sector and Peru : A Brief Literature Survey," mimeo, U.C. Berkeley

de Janvry, A. and E. Sadoulet, 1988, "Alternative Approaches to the Political Economy of Agricultural Policies : Convergence of Analytics, Divergence of implications," Conference Paper, *XX International Conference of Agricultural Economists*, Buenos Aires.

Dixit, A., 1969, "Marketable Surplus and Dual Development," *Journal of Economic Theory*, 1, 203-219.

Preobrazhensky,E., 1965, *The New Economics*, Oxford, Clarendon Press.

Quibria,M.G., 1988, "Migration, Trade Unions, and the Informal Sector : A Note on Calvo," *International Economic Review*, 29, 557-563

Schultz, T.W.(ed), 1978, *Distortions of Agricultural Incentives*, Indiana Univ. Press.

Zarembka,P., 1970, "Marketable Surplus and Growth in the Dual Economy," *Journal of Economic Theory*, 2. 107-121

Zusman, P. and G.C.Rausser, 1990, "Equilibrium States and Dynamic Behavior of a Political Economy : Applications to Water Resource Management," mimeo, U.C. Berkeley.