The Political Economy of State-Owned Enterprises

Carlos Seiglie, Rutgers University, N.J. and Luis Locay, University of Miami. FL.

In this paper we wish to explain certain "stylized facts" of the Cuban economy, both past and present, as well as outline certain features which will be prevalent during a transition to a market economy with private property rights. We employ a "new political economy" or "public choice" framework to understand the effects that economic variables have on the political support for the regime. We begin by first developing the model. We then proceed to derive comparative statics results which we use to interpret recent events which have occurred in Cuba. We conclude by making some observations regarding a major obstacle which confronts transitional economies, namely the need to reduce employment to more efficient levels.

I. The Model

The politician, bureaucracy or dictator in a socialist regime is seen as choosing policies which maximize the political support they receive from possible coalitions. This level of support is denoted by S. Let support be derived from two policies, namely increasing employment, L, and providing some amount of other government services, e.g., education or health care which we denote by G. Assume for simplicity all industry is State-controlled, so the State is the sole recipient of profits or is liable for losses, [[pi]], from these enterprises. These, along with foreign borrowing or foreign aid, b, are the government's only sources of revenue to finance, G.

Formally, the regime (dictator) seeks to maximize support, S, where

$$S = S(G, L - L^f)$$

subject to:

$$G = \pi + b,$$

$$x = f(K, L),$$

$$\pi = px - wL - rK,$$

where L^f is full-employment or some other target level of employment; **x** denotes the level of output; **p** is the price; **w**, the wage rate and **K** and **r** are the amounts and cost of capital, respectively. Furthermore, we assume that [[partialdiff]]S/[[partialdiff]]L,[[partialdiff]]S/[[partialdiff]]G>0, namely that support for the regime is increasing in government transfers and employment.

Note that, for simplicity, there is only one industry and that the government restricts competition by restricting imports so as to permit for [[pi]]>0. Our solution is arrived at by solving the following constrained optimization problem:

$$\underset{G,L,\lambda}{MAX}\,\Omega = S(G, L - L^f) + \lambda(G - px + wL + rK - b$$

The first-order conditions are:

$$\frac{\partial S}{\partial G} + \lambda = 0,$$

$$\frac{\partial S}{\partial L} - \lambda p \frac{\partial f}{\partial L} + \lambda w = 0.$$

Solving out for [[lambda]] we get:

$$\frac{\partial S}{\partial L} + \frac{\partial S}{\partial G}\left(p \frac{\partial f}{\partial L} - w\right) = 0,$$

$$-\frac{\frac{\partial S}{\partial L}}{\frac{\partial S}{\partial G}} = \left(p \frac{\partial f}{\partial L} - w\right) < 0.$$

or

In other words, a support maximizing regime will always employ more labor than is socially optimal (where the value of the marginal product is equal to the wage rate) and which maximizes profits. Figure 1 depicts the political equilibrium implied by equation (9). Note that profit maximization, and therefore efficiency, would require the employment of L* amount of workers, yet the regime employs L". The slope of the iso-support curve, So, is given by the left-hand side of equation (9) while that of the government's budget constraint by the right-hand term.

Political equilibrium dictates that the marginal political benefits of increasing employment beyond the efficient point, [[partialdiff]]S/[[partialdiff]]L be equal to the cost, namely the reduction in political support which results from providing the marginal worker with a subsidy of (pfL - w). Note that this subsidy drains the government of revenues which it could use for other purposes.

II. Some Comparative Statics

First of all, note that as a result of employing more labor than is optimal the marginal productivity of capital is increased. If the planning ministry takes the cost of capital as established in the world market as the domestic price of capital it will tend to over-invest in capital as a result of its higher marginal productivity. In other words, there exists a bias for industries to be more capital-intensive. Whether they are depends upon the political incentive to maintain full employment.

Second, a decrease in subsidies from a foreign country (e.g., Russia) can be viewed as a capital outflow resulting in a fall in the marginal productivity of labor and consequently, a fall in the political support for the regime (see Figure 2). Similarly, an increase in the price of one of its inputs (oil) which had previously been subsidized by the former Soviet Union has the same effect. Conversely, infusions of foreign capital has the opposite effect, i.e., increasing productivity, the state industry's net revenues and therefore increasing or in a dynamic context, maintaining support.

Formally, we can derive a series of implications from the model by totally differentiating equations (6) and (7) along with the constraint that G = px-wL-rK + b. In matrix notation this yields:

$$\begin{bmatrix} \frac{\partial^2 S}{\partial G^2} & \frac{\partial^2 S}{\partial L \partial G} & 1 \\ \frac{\partial^2 S}{\partial G \partial L} & \left(\frac{\partial^2 S}{\partial L^2} - \lambda p \frac{\partial^2 f}{\partial L^2}\right) & -\left(p \frac{\partial f}{\partial L} - w\right) \\ 1 & w & 0 \end{bmatrix} \begin{bmatrix} dG \\ dL \\ d\lambda \end{bmatrix} = \begin{bmatrix} \frac{\partial^2 S}{\partial G \partial L'} \\ \frac{\partial^2 S}{\partial L \partial L'} \\ 0 \end{bmatrix} dL' + \lambda \begin{bmatrix} 0 \\ \frac{\partial f}{\partial L} \\ x \end{bmatrix} dp + \begin{bmatrix} 0 \\ 0 \\ -K \end{bmatrix} dr + \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} db.$$

Using Cramer's rule we can solve the above system for the desired comparative statics results:

$$\frac{dG}{db} = \frac{-\frac{\partial^2 S}{\partial G \partial L}\left(p \frac{\partial f}{\partial L} - w\right) - \left(\frac{\partial^2 S}{\partial L^2} - \lambda p \frac{\partial^2 f}{\partial L^2}\right)}{\Delta} > 0,$$

$$\frac{dG}{dp} = \frac{\lambda \frac{\partial f}{\partial L} w - x\left(\frac{\partial^2 S}{\partial L^2} - \lambda p \frac{\partial^2 f}{\partial L^2}\right) - \left(p \frac{\partial f}{\partial L} - w\right) x \frac{\partial^2 S}{\partial G \partial L}}{\Delta}, > 0$$

$$\frac{dG}{dr} = \frac{K \frac{\partial^2 S}{\partial G \partial L}\left(p \frac{\partial f}{\partial L} - w\right) + K\left(\frac{\partial^2 S}{\partial L^2} - \lambda p \frac{\partial^2 f}{\partial L^2}\right)}{\Delta} < 0,$$

$$\frac{dG}{dL'} = \frac{w \frac{\partial^2 S}{\partial G \partial L'}\left(p \frac{\partial f}{\partial L} - w\right) + w \frac{\partial^2 S}{\partial L \partial L'}}{\Delta} < 0,$$

where [[Delta]] is the determinant of the matrix in (10), which is positive by the second-order conditions for a maximum. Although not necessary, we assume that [[partialdiff]]^{2}S/[[partialdiff]]G[[partialdiff]]L>0, [[partialdiff]]^{2}S/[[partialdiff]]G[[partialdiff]]L^f>0 and [[partialdiff]]^{2}S/[[partialdiff]]L[[partialdiff]]L^f<0, i.e., that the marginal political support for the regime as it increases social expenditures is increasing in the level of employment and in the size of the work force, and decreasing in the level of unemployment (or underemployment). Similarly, we can derive comparative statics for the effects of the exogenous variable on the level of employment.

We summarize other implications of the model:

1) A fall in the world price of its tradable goods (terms of trade) results in a movement away from its target of full employment, a decline in State provided services and political support for the regime.

2) Emigrations (a fall in L^f) increases the internal support of the regime (even if those that emigrate are strong supporters) by shifting the shape of the iso-support functions such that the new political equilibrium is one towards greater efficiency in production, government revenues and, therefore, support for the regime.

3) Trade sanctions (if they are effective) can be viewed as reducing prices, **p**, increasing transaction costs, or increasing the cost of some of the inputs required in production, either of which shifts down the government's budget constraint and reduces support for the current regime. A similar effect results from capital (lending) restrictions where the government's budget constraint shifts down as the marginal

productivity of labor declines, and therefore so does support.

4) Current interest in attracting private capital is aimed at offsetting the decline in capital from the former USSR and limiting decline in support (expands constraint).

5) The same is true of the recent policy of allowing the use of dollars to increase international reserves (expands constraint).

6) A dual system of private investors allowed to maximize profits and produce efficiently, e.g., in the tourist sector, is incompatible, as more productive workers will flow from State industries to private industries leading to a collapse in the "full-employment system" because of sectoral distortions.

These are just some of the implications derivable from this framework which have relevance to the case of Cuba.

It is important to point out that as the level of support for the regime declines as economic conditions deteriorate,e.g., as foreign loans (aid) declines or the level of production, x (sugar) falls, the government has an incentive to reverse the process by allowing foreign ownership of specific industries. For example, if we now denote the profits from the state-run industries by [[pi]]1 and those earned by foreigners [[pi]]2, and the government taxes these profits at the rate t, then the governments budget constraint given by equation (2) is replaced by

$$G = \pi_1 + \tau\pi_2 + b.$$

We can see that this will result in both an increase in G and L accompanied by an increase (or a slowing down of the deterioration) in support for the regime.

During a transition to a market economy there exists political pressures to continue to maintain a more than optimal number of workers employed in the state-owned industries and therefore the economy. This can be seen by analyzing Figure 3. The political equilibrium in this case is given by an employment level of Lo which is not socially optimal. The socially optimal level of employment at L* yields less political support for the regime, so therefore there will be pressure to enact labor laws governing the conditions of labor contracts. These laws (which are not so different from those outlined in the Constitution of 1940) will impose large deadweight losses on the economy and are doomed to exact large costs on the development of the Cuban economy if the pressure to enact them is not resisted.

III. Concluding Remarks

We make a final observation regarding the employment policy of a socialist regime in transition. The fact that these economies tend to employ more labor than is socially optimal leads to the marginal productivity of capital being high. Foreign investors may be attracted by this high return to capital prior to the transition towards a smaller work force. But as the transition occurs and unemployment (in the short run) increases, it reduces the marginal productivity of capital. While the economy adjusts to more efficient methods of production we should expect that the reduced returns to capital will temper foreign investment after the transition.

[For Figures 1, 2, 3, please contact the authors.]

Bibliography

Becker, Gary S. "Public Policies, Pressure Groups and Dead-Weight Costs." *Journal of Public Economics,* December 1985, 329-47.

Brennan, G. and J. Buchanan. *The Power to Tax*. Cambridge University Press, 1980.

Findlay, R. and J.D. Wilson. "The Political Economy of Leviathan," in A. Razin and E. Sadka, eds., *Policy in Theory and Practice*. New York: Macmillan, 1987.

Findlay, Ronald. "The New Political Economy: Its Explanatory Power for LDCs," in Gerald Meier, *Economic Development and Public Policy.* San Francisco, 1992.

Locay, L. and C. Seiglie. "Endogenous Political Structures," in George P. Montalván (ed.), *Cuba In Transition, Volume 2: Papers and Proceedings of the Second Annual Meeting of the Association for the Study of the Cuban Economy.* Miami, FL: Florida International University, 1993, pp. 241-254.

Peltzman, Sam. "Toward a More General Theory of Regulation." *Journal of Law and Economics*, August 1976, 211-40.

Seiglie, Carlos. "A Theory of the Politically Optimal Commodity Tax." *Economic Inquiry*, July 1990.

Stigler, George. *Chicago Studies in Political Economy*. Chicago: University of Chicago Press, 1988.