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Sociopolitical Instability, Inequality and Consumption Behavior

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Intertemporal utility maximizing behavior by income group under uncertainty due to sociopolitical instability leads to an estimable aggregate consumption function. Estimation from a cross-section of 50 countries indicates a significant positive relation between sociopolitical instability and the aggregate propensity to consume and yields point estimates of income-group consumption propensities. With the estimation of a relation making sociopolitical instability dependent on the distribution of income, a 2-equation system is obtained which models the effect on the aggregate consumption propensity of income redistribution. An interesting result is the existence of equalizing redistributions that do not reduce the propensity to save.

I. Introduction

Our purpose here is to investigate the effects of income distribution and uncertainty caused by sociopolitical instability (SPI) on the behavior of consumption. The literature has attributed the sources of uncertainty about the future either to natural causes (Boulding), or to general economic circumstances (Keynes), rather than to possible changes in the sociopolitical environment and institutional structure. Yet, such changes can be identified in the modern histories of many countries. Moreover, events that may be viewed as precursors of sociopolitical changes, or that may result in new regimes with new and different pri-

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tion function, more equal income distributions may be associated with lower aggregate consumption propensities.

In the next section we develop the theory that yields our APC function. In Section III we describe the data for our 50-country sample, and we present estimates of the APC function under a number of coefficient restrictions. In Section IV we present and estimate the SPI function and analyze the comparative-static implications of alternative income-distribution scenarios and in Section V we summarize our findings.

II. Theoretical Development

For each income group, *i*, we assume that the consumers' homogeneous tastes are represented by a utility function defined over present (c_1) and future (c_2) consumption, u (c_1, c_2), which is characterized by all the usual properties. In the present, current income (y_1) and assets (a), representing past accumulation, are known with certainty, but future income (y_2) and the effective rate of return (r) are not. The consumers' views of these unknowns are represented by independent subjective probability density functions $f(y_2)$ and $g(r)$. Consumers are assumed to choose the handle (c_1*, c_2*) that maximizes expected utility subject to the constraint $c_2 = y_2 + (1 + r)(y_1 - c_1 + a)$. Excluding corner solutions, the chosen c_1* must satisfy the first-order condition $E\ (u_1 - (1 + r)u_2) = 0$.[3]

Thus, present consumption of the *i*-th group will be a function of its present income, assets, and the parameters of the density functions for its future income and the effective rate of return. It follows that c_1* will be affected by changes in the probability distributions. In particular small changes in c_1* can be expressed as a linear function of changes in the means and dispersions of the random variables r and y_2.[4] However, without assuming more

[3] The utility subscripts denote partial derivatives, and

$$E(\bullet) = \int_{-\infty}^{\infty}\int_{-\infty}^{\infty} (\bullet)\ f(y_2)g(r)dy_2dr.$$

[4] The expression is derived from the total differential of the first-order condition with $dy_1 = 0$ and with dy_2 and dr expressed in terms of differentials of shift (*e* and *f*) and spread (θ and Φ parameters of their respective distributions in the manner of Sandmo. We obtain

Assuming $\beta_i > 0$ and $0 < \gamma_i < 1$, equation (2) resembles consumption functions proposed by others (e.g. Houthakker and Taylor). If $y_i = c_i + s_i$ and $s_i = \dot{a}_i$, where s_i is the saving of the i-th income group, then equation (2) implies the differential equation[5]

$$\dot{c}_i + \beta_i c_i = \gamma_i \dot{y}_i + \beta_i y_i + \delta_i \dot{SPI}.$$

If similar to Swamy, we assume $\dot{y}_i = P_i$, a constant, and $\dot{SPI}/SPI = \beta_i/\mu_i$, then

$$(3)\quad c_i = y_i + A_{0i} e^{\beta_i t} - \{(1-\gamma_i)/\beta_i\}\dot{y}_i + \delta_i SPI/(1+\mu_i)$$

solves the differential equation where

$$A_{0i} \equiv \alpha_i + (1-\gamma_i)\ \{(P_i/\beta_i) - y_i(0)\}\ +\ \mu_i \delta_i SPI(0)/(1+\mu_i).$$

Then from equation (3) we have an expression for the i-th income group's APC, i.e.

$$(4)\quad (c/y)_i = 1 + A_{0j} e^{\beta_i t}/(y_i(0) + p_i t)\ (1-\gamma_i)(\dot{y}/y)_i/\beta_i$$
$$+ \delta_i SPI/\{y_i(0) + p_i t\}(1+\mu_i).$$

We would normally think of the long-run APC being defined by this expression in the limit as $t \to \infty$. But in the long-run so defined we would expect all uncertainties associated with SPI to vanish. Indeed, that is what happens here since

$$\lim_{t \to \infty} (c/y)_i\ =\ 1 - (1-\gamma_i)(\dot{y}/y)_i/\beta_i,$$

which is equivalent to Swamy's long-run savings function. Moreover, this long-run is not consistent with our underlying uncertain future — certain present 2-period model. Therefore, here we shall be concerned with some finite period of adjustment and evaluate equation (4) at some $t = T$. Doing so yields the linear relation

$$(5)\ (c/y)_i\ =\ b_{0i}\ +\ b_{1i}(\dot{y}/y)_i\ +\ b_{2i} SPI$$

where theoretically $b_{1i} < 0$ while b_{0i} and b_{2i} are of indeterminate

5 The dot denotes the derivative with respect to time.

Taylor and Hudson for years through 1967 and from Taylor and Jodice thereafter.[8]

In estimating equation (7) we have used instrumental variables because it can be argued that SPI is endogenous to the development process, e.g., see Venieris and Gupta (1983).[9]

In preliminary regressions the coefficient of the contemporaneous growth rate of GDP was quite insignificant. Yet the variable is required theoretically and is significant in other studies, e.g., Ram; Leff. Thus, in the results reported below $\dot{y}/y$ represents the annual growth rate averaged over a 2- to 6-year period ending with the year contemporaneous with c/y and SPI. This period length is three years for most countries, but in varies from that for the others as dictated by data availability.

Table 1 reports our coefficient estimates for equation (7) under a number of coefficient-restrictions on the three interactive terms. We found coefficient-restriction necessary in the sense that colinearity becomes a problem when more than one interactive term is included. The first seven versions include all the ways of including only one interaction term. The consistent significance of the SPI coefficient, and improvement in $\overline{R}^2$ relative to version 8

8 The sample countries are listed with the year of the economic and SPI data. IF Fields' distribution data is for a different year or years, a second date is given:

Chad (1961, 58)
Niger (1961, 60)
Nigeria (1961, 59)
Sudan (1969)
Tanzania (1964)
Burma (1961, 58)
India (1961, 56-7)
Madagascar (1961, 60)
Morocco (1965)
Senegal (1961, 60)
Sierra Leone (1968)
Tunisia (1971)
Bolivia (1968)
Ceylon (1963)
Pakistan (1964)
S. Korea (1966)
Malaysia (1961, 57-8)
Ivory Coast (1961, 59)
Zambia (1961, 59)
Brazil (1961, 60)
Ecuador (1968)
El Salvador (1965)
Peru (1961)
Philippines (1961)
Colombia (1964)
Gabon (1961, 60)
Costa Rica (1969)
Jamaica (1961, 58)
Lebanon (1961, 55-60)
Chile (1968)
Mexico (1963)
Panama (1969)
S. Africa (1965)
Argentina (1961)
Trinidad & Tobago (1961, 57-8)
Venezuela (1962)
Greece (1961, 57)
Japan (1962)
Israel (1961, 57)
U.K. (1964)
Netherlands (1962)
W. Germany (1964)
France (1962)
Finland (1962)
Italy (1950, 48)
Norway (1963)
Australia (1967)
Denmark (1963)
Sweden (1963)
U.S. (1969)

9 The instruments used are: the GDP shares of exports and government consumption, population, per capita GNP in 1964 U.S. $s, g_1, g_2, $\dot{y}/y$, $(\dot{y}/y)^2$, a dummy for per capital GNP $>$ $800, and four regional dummies for Africa, Asia, South America, and Mexico, Central America and the Caribbean.

Table 1

2SLS ESTIMATES OF THE CONSUMPTION FUNCTION COEFFICIENTS

Version	g_1	g_2	g_3	$\dot{y}/y$	$\sum_i g_i SPI$	$\bar{R}^2$	$\ln l$	Restrictions
1	0.9939	0.6094	0.6424	-1.129	0.02311	0.318	63.2	$b_{21} = b_{22} = b_{23}$
	(3.2)	(3.6)	(8.1)	(3.0)	(2.2)			
2	0.7241	0.6456	0.6911	-1.068	0.15949	0.336	63.8	$b_{22} = b_{23} = 0$
	(2.0)	(3.8)	(11.0)	(2.8)	(2.5)			
3	1.0196	0.5298	0.6866	-1.079	0.07192	0.339	63.9	$b_{21} = b_{23} = 0$
	(3.5)	(3.5)	(11.0)	(2.9)	(2.5)			
4	1.0829	0.6198	0.6233	-1.203	0.03780	0.294	62.3	$b_{21} = b_{22} = 0$
	(3.6)	(3.3)	(6.3)	(3.2)	(1.73)			
5	0.9207	0.5684	0.6865	-1.070	0.05052	0.340	64.0	$b_{21} = b_{22}$, $b_{23} = 0$
	(3.0)	(3.7)	(11.0)	(2.9)	(2.5)			
6	1.0453	0.5994	0.6371	-1.145	0.02644	0.314	63.0	$b_{21} = 0, b_{22} = b_{23}$
	(3.5)	(3.6)	(7.7)	(3.0)	(2.1)			
7	0.9969	0.6367	0.6284	-1.164	0.03243	0.306	62.7	$b_{22} = 0$, $b_{21} = b_{23}$
	(3.2)	(3.5)	(7.0)	(3.1)	(1.95)			
8	1.2968	0.4302	0.7651	-1.387	—	0.263	60.7	$b_{2i} = 0$ for all i
	(4.6)	(2.8)	(13.0)	(3.7)				

$|t|$ statistics are shown in parentheses while all caveats as to their validity are accepted.

differential form with $d(\dot{y}/y) = 0$ we obtain

$$dSPI = (a_2/g_2 - a_1/g_1)dg_2 - \{(a_1 + a_2)/g_3 + a_1/g_1\}dg_3,$$

which when evaluated at the sample means yields

$$(9)\ dSPI = -17.79dg_2 - 5.84dg_3.$$

Now dg_i represents a change in income of group i measured as a fraction of y. Thus, for example, a transfer of 1% of GDP from the low-income to the high-income group would imply dSPI = -0.0584, and a 1% transfer from the high-income to the middle-income group would imply dSPI = -17.79 (0.01) - 5.84 (-0.01) = -0.1195. Equations (8) and (9) imply that SPI declines as the share of the middle-income group increases, regardless of the source of increase. This reflects the importance of a middle group as a source of both sociopolitical stability and instability as historians and political philosophers have long suggested. Moreover, any transfers from the low-income group reduce SPI. This may be due to their relative powerlessness and overriding concern with subsistence problems. It might also reflect Hirschman's "tunnel effect" whereby as the poor see improvements for other groups their expectations of improvement rise.

The differential form of version 2 of equation (7) is

$$(10)\ d(c/y) = (b_{02} - b_{01} - b_{21}SPI)dg_2 + (b_{03} - b_{01} - b_{21}SPI)dg_3 + b_{21}g_1 dSPI$$

where the identity has been used to eliminate dg_1. Substituting from equation (9) and evaluating at the sample means yields

$$(11)\ d(c/y) = (-0.3573 - 0.4049)dg_2 + (-0.3118 - 0.1329)dg_3$$

$$(11a)\ d(c/y) = -0.7622\ dg_2 - 0.4447\ dg_3.$$

In equation (11) the second term in each parenthesis represents the indirect effect on c/y of a change in distribution via equation (9) and the last term in equation (10).

From equations (9) and (11) our model clearly predicts that transfers to the poor from either the high- or middle-income

Clearly, taking account of the connection between SPI and income distribution substantially limits the otherwise strong proposition that there is necessarily a savings-equality trade-off.

V. Summary

The preceding analysis points to following conclusions. First, the average propensity to consume and the level of sociopolitical instability are directly related. Second, relative to the consumption propensities of the high-income group, those of the low-income group are much higher while those of the middle-income group are slightly lower. The former relationship between the consumption propensities supports the Keynesian hypothesis but the latter contradicts it. Third, the level of sociopolitical instability depends on income distribution. Given the functional relationship between sociopolitical instability and income distribution a redistribution of income need not result in an increase in the aggregate propensity to consume and in fact, under a number of circumstances, may result in a decrease.

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