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Income Distribution, Export Instability, and Savings Behavior

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This paper examines the effects of income distribution and export instability on the savings ratios of a group of 12 developed and 52 less developed countries (DCs and LDCs) for 1968–73. The effect of income distribution on savings has been studied before¹ but not on as comprehensive a group of countries as presented here. The effect of export instability on savings has not been examined before in the literature on the determinants of savings behavior. It has, however, been discussed in the literature on the relationship between export instability and economic growth² and part of the purpose of this paper is to relate this argument to our discussion of the determinants of savings behavior.

I

An uneven income distribution is generally believed to lead to a higher savings rate than an even one. If total income is low, as it is in LDCs, an uneven distribution of income permits a surplus of income over consumption. There may be conspicuous consumption or the surplus may be invested overseas in which case there will be no domestic saving. However, the important point here is that an uneven income distribution provides

¹ See H. S. Houthakker, "An International Comparison of Personal Savings," *Bulletin of the International Statistical Institute*, vol. 38 (1960), and "On Some Determinants of Saving in Developed and Underdeveloped Countries," in *Problems in Economic Development*, ed. E. A. G. Robinson (London: Macmillan, 1965); J. G. Williamson, "Personal Saving in Developing Nations: An Intertemporal Cross-section from Asia," *Economic Record* (June 1968), and "Income Growth and Savings," *Philippine Economic Journal*, vol. 8, no. 1 (First Semester, 1969); and A. C. Kelley and J. G. Williamson, "Household Saving Behavior in the Developing Economies: The Indonesian Case," *Economic Development and Cultural Change* 16, no. 3 (April 1968): 385–403.

² See A. I. MacBean, *Export Instability and Economic Development* (London: George Allen & Unwin, 1966); and D. Lim, "Export Instability and Economic Growth: A Return to Fundamentals," *Oxford Bulletin of Economics and Statistics* (November 1976).

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the necessary condition for domestic saving, something that is not possible with an even income distribution under conditions of extreme poverty.

This is especially the case if the income is skewed toward the entrepreneurial group. Entrepreneurs tend to save more than nonentrepreneurs because they need to maintain their depreciating capital stock; they prefer internal to external sources of funds for investment; and they have better information about investment opportunities.³ A sociological argument may be that entrepreneurs save more because of cultural factors and simply have "what it takes" to abstain from current consumption.

It is, however, not possible to use the sources of income and occupation as determinants of savings for a comprehensive cross-country study since the required data are not available. What is available are data on the shares of the national income going to the poorest (20%) and to the richest (5%) of the households (D_{L20} and D_{R5}) for a large group of countries.⁴ There is, of course, no guarantee that incomes accruing to the poorest (20%) and the richest (5%) of the households are necessarily nonentrepreneurial and entrepreneurial incomes, respectively. Nor is there any guarantee that some of the data collected are no more than "garbage data." However, it is highly unlikely that significantly superior data on income distribution will be available for some time to come. In the meantime there is some justification for using D_{L20} or D_{R5} for studying the effects of income distribution on savings behavior.

Export instability has been claimed to affect economic growth both positively and negatively. Whatever the relationship postulated, it has always been an indirect one through the effect that instability has on some intermediate variables which then act on the growth process. One argument that export instability is beneficial to growth is based on Friedman's permanent income hypothesis. Export instability produces income instability which induces, in turn, a higher propensity to save as higher reserves are needed to maintain permanent consumption levels during shortfalls in the income level.⁵ The counterargument is that export instability creates uncertainty which increases, among other things, the costs of investment and so discourages it. Savers, deprived of an important reason for abstaining from consumption, will accordingly save less. There is another criticism. It may be true that savings would be high in good times to maintain consumption in bad times. But it may be equally true that savings need only be low when times are good to maintain the same

³ Kelley and Williamson, pp. 389-90.

⁴ Data on D_{L20} and D_{R5} and the other variables used in this study are from the World Bank, *World Tables 1976* (Baltimore: Johns Hopkins Press, 1976).

⁵ See O. Knudsen and A. Parnes, *Trade Instability and Economic Development: An Empirical Study* (Lexington, Mass.: D. C. Heath, 1975); and O. Knudsen and P. A. Yotopoulos, "A Transitory Income Approach to Export Instability," *Food Research Institute Studies*, vol. 15, no. 1 (1976). See also S. Caine, "Instability of Primary Product Prices: A Protest and A Proposal," *Economic Journal* (September 1954).

consumption level, so that there is no reason to believe that income instability per se would produce a higher average propensity to save over the cycle.

These arguments can be presented conveniently within the Harrod-Domar framework. The growth of output in such an economy depends on the productivity of capital and on the investment ratio. The permanent income argument is that export instability results in a higher savings ratio and, provided there are adequate financial intermediaries, in a higher investment ratio and greater economic growth. The counterargument is that export instability discourages savings and, as savings is a necessary condition for investment, the investment ratio, and therefore growth of output, will be adversely affected.

There has been no attempt so far in the literature on instability and growth to examine directly the effect of instability on savings. The studies have examined the statistical relationship between instability and growth and have assumed implicitly the existence of the underlying structural relationships between instability and savings and between savings and growth.⁶

II

The basic estimating equations used are $S/Y = f(D_{L20}, EI)$ and $S/Y = f(D_{R5}, EI)$ where S/Y is the average national savings rates (gross national saving/GNP) for 1968–73 in domestic currencies and in current prices. The alternate measures of income distribution for 1970 are D_{L20} and D_{R5} . Support for the hypothesis that an uneven income distribution is likely to produce higher savings rates than an even one will be shown by the presence of statistically significant negative and positive coefficients for D_{L20} and D_{R5} , respectively. EI is the export instability coefficient for 1968–71.⁷ Support for the transitory income approach to instability will produce a positive and significant coefficient for EI .

Data on S/Y , D_{L20} , D_{R5} , and EI were available for 12 developed countries and 52 LDCs. The equations were estimated, using both the linear and the logarithmic forms, for (a) all of the countries (12 DCs + 52 LDCs), (b) the 12 DCs, (c) the 52 LDCs, (d) the 52 LDCs less the 4 Middle East

⁶ See Lim.

⁷ EI is given by

$$100 \sqrt{\frac{\sum_{i=68}^{71} \left[\frac{x_i - \bar{x}_i}{\bar{x}_i} \right]^2}{4}}$$

where x_i = merchandise exports for year i and \bar{x}_i = 5-year moving average of merchandise exports centered on year i . The moving average is preferred to the mean for the period concerned in order to incorporate some element of expectancy in the value for x_i .

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LDCs (ME), (e) the 18 Western Hemisphere (WH) LDCs, (f) the 12 African (AF) LDCs, and (g) the 13 Asian (AS) LDCs.⁸ The linear form produced the better results and these are presented in table 1.

The signs of D_{L20} and D_{RS} are consistent with expectations for all of the seven groupings. However, the regression coefficients are statistically significant in only two of the groups: the 18 LDCs in the Western Hemisphere and the 13 LDCs in Asia. Nothing showed up for the 52 LDC-group or even for the same group without the four Middle East LDCs. One tentative conclusion that may be drawn is that the income distribution hypothesis is correct for all the groupings but that the data, other than that for the LDCs in the Western Hemisphere and Asia, are "garbage data." Another tentative conclusion may be that the hypothesis is true only in the LDCs in the Western Hemisphere and Asia. If the latter conclusion is true then it points out strongly the dangers of generalizing about the effect of income distribution on savings behavior.

The signs of EI are positive and statistically significant in five groupings. In the other two groupings (DCs and WH LDCs) the signs are negative but statistically insignificant. There does seem, therefore, to be some support for the transitory approach to export instability in most of the LDCs. The increase in savings in good times when only the "permanent-equivalent" level of consumption is maintained is not matched equally by the decrease in savings when times are bad. There is, in other words a "ratchet effect." This support for the transitory approach to export instability is obtained by relating export instability directly to savings behavior. This is unlike the approach adopted in all previous studies where only the relationship between export instability and economic growth is estimated, on the assumption that the underlying structural relationships exist.

It is also significant to note that the only regression equations which are not statistically significant as a whole are those obtained for the 12 DCs. All the other equations have F -ratios which are significant at the 0.05 level of confidence. The results for the DC group are not really surprising. The DCs have much higher total incomes than the LDCs so that the existence of a surplus of production over consumption may not even be a necessary condition for saving. The DCs export mainly manufactured goods whose revenues fluctuate less than those for primary products. Their fiscal and monetary policies are also more sophisticated so that instability in the

⁸ The 12 DCs are Canada, United States, France, Netherlands, Finland, West Germany, Denmark, Norway, Sweden, United Kingdom, Japan, and New Zealand. The 18 WH LDCs are Brazil, Dominican Republic, Panama, Mexico, Costa Rica, Jamaica, Colombia, Ecuador, Paraguay, Bolivia, Peru, El Salvador, Venezuela, Argentina, Honduras, Chile, Guyana, and Uruguay. The 12 AF LDCs are Gabon, Ivory Coast, Malawi, Tanzania, Liberia, Egypt, Benin, Sierra Leone, Madagascar, Sudan, Zambia, and Senegal. The 13 AS LDCs are Pakistan, Sri Lanka, India, Burma, Bangladesh, South Korea, Fiji, Malaysia, Philippines, Singapore, Taiwan, Hong Kong, and Thailand. The 5 LDCs in Southern Europe are Greece, Cyprus, Turkey, Spain, and Yugoslavia. The 4 ME LDCs are Iran, Iraq, Israel, and Lebanon.

TABLE 1
 LINEAR REGRESSIONS EXPLAINING SAVINGS RATES, 1968-73, BY DEVELOPMENT STATUS AND REGION

INDEPENDENT VARIABLES	DEPENDENT VARIABLE S/Y													
	12 DCs+52 LDCs (1)	(2)	12 DCs (3)	(4)	52 LDCs (5)	(6)	52 LDCs-4 ME LDCs (7)	(8)	18 WH LDCs (9)	(10)	12 AF LDCs (11)	(12)	13 AS LDCs (13)	(14)
Constant.....	17.49 (6.13) ^a	16.41 (5.15) ^a	31.34 (4.69) ^a	19.59 (1.93) ^d	12.77 (4.88) ^a	9.65 (3.17) ^b	12.12 (4.51) ^a	10.26 (3.24) ^b	25.52 (5.30) ^a	9.64 (1.62)	5.56 (1.20)	-0.56 (-0.09)	20.32 (3.91) ^b	-3.11 (-0.41)
D_{L20}	-.52 (-1.35)	...	-.97 (-1.04)	...	-.33 (-.96)	...	-.21 (-.59)	...	-2.22 (-2.34) ^c	...	.06 (.10)	...	-1.47 (-2.09) ^c	...
D_{RES}.....	...	.06 (-.64)	...	.32 (1.03)	...	.05 (.59)	...	.03 (.30)	...	.37 (2.19) ^c	...	.19 (1.19)	...	.70 (2.29) ^c
EL.....	.44 (1.83) ^d	.46 (1.86) ^d	-.10 (-.11)	.08 (.09)	.67 (3.20) ^b	.67 (3.13) ^b	.66 (3.10) ^b	.66 (3.06) ^b	-.26 (-.52)	-.71 (-1.46)	1.06 (3.60) ^b	1.02 (3.75) ^b	.76 (1.96) ^c	.68 (1.83) ^d
\bar{R}^2.....	.05	.02	-.08	-.09	.15	.14	.15	.14	.21	.19	.50	.57	.30	.34
F-ratio.....	2.55*	1.82*	.61	.55	5.64*	5.29*	5.01*	4.85*	3.44*	3.08*	6.56*	8.30*	3.52**	4.06*

NOTE.—DCs = developed countries; LDCs = less developed countries; ME = Middle East; WH = Western Hemisphere; AF = Africa; AS = Asia. Figures in parentheses are *t*-values: ^a, ^b, ^c, and ^d denote statistical significance at the .0005, .005, .025, and .05 levels of confidence, respectively. * and ** denote statistical significance of the *F*-ratio at the .01 and .05 levels of confidence, respectively.

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external sector is less likely to be transmitted to the internal sector. The effect of export instability on DCs is therefore likely to be insignificant.

III

It is necessary to finish this note by briefly justifying the use of a single-equation, and not a simultaneous-equation, model of savings behavior. There can be little doubt about the assumption that export instability is exogenous to the system. I know of no economic hypothesis that argues for an influence running from savings to export instability. It is possible to argue that rapid economic growth results in high savings ratios which produce in turn an uneven income distribution. However, economic growth must be initiated somehow. Within the Harrod-Domar economy it may come from a higher savings ratio which in turn must be due to some exogenous factor. Even if growth had been started by the discovery of valuable minerals, capital goods must be used and funds available for the discovery to be made. A major source of the funds may be the surplus of production over consumption made possible in a LDC with a low per capita income by an uneven income distribution. In any case, most LDCs start their development process with a given income distribution, the legacy, as it were, of the colonial era.

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