INDIAN SAVING BEHAVIOR: A RECONCILIATION OF TIME SERIES AND CROSS SECTION EVIDENCE

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Serious doubts have been raised as to the validity of using cross-sectional estimates of the average propensity to consume over time. These doubts are based on empirical evidence for the United States presented by Kuznets and Goldsmith. This paper extends these considerations to developing countries by looking at the evidence for India. Simple statistical techniques, including ordinary least squares regression, Chow tests, and t-tests, are used in the estimation of the consumption functions and the formulation of hypotheses. Both India and the U.S. are seen to exhibit the same characteristic secular constancy in the average propensity to consume. For India the average propensity to consume is about 0.95 and is maintained in the face of no substantial secular increases in per capita income during the period under study (1919–1960).

The same inconsistencies between time series and cross-section evidence on the average propensity to consume are found to exist for India. The permanent income theory suggested only a partial explanation of these inconsistencies and the reconciliation was achieved by a Duesenberry type explanation based on evidence for a shifting cross section consumption function over time. The data was provided by a set of Family Living Surveys for Industrial Workers: 1926, 1933–35, 1950–52, 1958–59.

Finally it was noted that the cross-section consumption function in India had shifted both upwards and downwards over the period under study, in contrast to the strict upward shift for the U.S. In an economy such as India's, where secular growth is by no means assured, it is not always likely that consumers can avoid lowering previously achieved consumption standards in the face of cyclical economic conditions.

I. INTRODUCTION

Serious doubts have been raised as to the validity of using cross-sectional estimates of the average propensity to consume over time. These doubted are based on empirical evidence for the United States presented by Kuznets[1] and Goldsmith.[2] It is the purpose of this paper to extend these considerations to developing countries by looking at the evidence for India and to suggest that: (1) India and the United States exhibit the same inconsistencies between time series and cross-sectional studies; (2) the permanent income hypothesis[3] provides only a partial explanation of these divergences; (3) the empirical evidence presented in favor of a Duesenberry[4] type explanation based on a shifting cross-sectional consumption function over time reconciles the apparent divergences between the constancy of the average propensity to consume over time, even though at any one point of time the average propensity is lower for upper income groups than for lower income groups.

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[1]S. Kuznets, "Proportion of Capital Formation to National Product," *American Economic Review, Papers and Proceedings*, May 1952.

[2]R. Goldsmith, data available in M. Friedman, *A Theory of the Consumption Function*, Princeton University Press, Princeton, N.Y., 1957, 117.

[3]M. Friedman, *op. cit.*

[4]J. S. Duesenberry, *Income, Saving, and the Theory of Consumer Behavior*, Harvard University Press, Cambridge, Mass., 1967, 115.

II. The Evidence from Time Series

Time series analysis usually involves the regression of personal consumption expenditures per capita on personal disposable income per capita deflated for price level changes. Such statistics are very scarce in developing countries, since it has only been with the recent concerns for planning that serious attempts have been made to gather statistical data. Fortunately India afforded a lengthy enough time series to enable the computation of a long-run function. These data are readily available in the United Nations[5] publications and in Narasinham.[6]

Table 1 presents data on population, prices, national income and private consumption expenditures in India for the period 1919–60. Differences between national income and personal disposable income were very small as could be expected in developing countries. When deflated by price level and population changes the divergences become insignificant. One obvious reason for this is that the bulk of the population is not taxed. Consequently, estimation of the time series consumption function involved in this case the regression of personal consumption expenditures per capita on national income per capita deflated for price level changes.

Using estimates of the long-run consumption function for the United States as a guideline, two linear functional forms were used for India; they were $C_t = B_1 + B_2 Y_t$ and $C_t = B_2 Y_t$. The regression results are presented in Table 2 below and they are plotted in Figure 1. A cursory observation indicates that the general pattern of these data is readily approximated by a linear functional form. The point of controversy is whether the linear function goes through the origin or not; that is, whether the average and marginal propensities to consume are independent of the level of income.

This hypothesis is easily testable when formulated in terms of a t-test for the null hypothesis $B_1 = 0$. The results shown in Table 2 indicate that we cannot reject the null hypothesis on the basis of the available data at a 5 percent level of significance.

The above considerations therefore suggest that the long-run consumption function for India can best be approximated by a linear functional form with zero intercept. Two observations follow from this conclusion.

(1) The evidence presented indicates that consumption functions derived from lengthy time series data for both the United States and India exhibit similar characteristics: a secular constancy of the average and marginal propensities to consume. One serious qualification, however, is the fact that the per capita income range in the U.S. was \$350–\$850 for the period 1897–1949, whereas the same range for India for the period 1919–60 was 60 Rs–89 Rs. In the former there is a 142 percent increase in the level of income, whereas in the latter the maximum increase is 50 percent. Moreover, the constancy of the Indian propensities to consume is not associated, as is the case for the U.S., with substantial increases in per capita income over the period under study. Indeed a plot of national income per capita in 1938 Rupees/year versus time in years, as shown

[5]United Nations, *Yearbook of National Accounts Statistics*, 1965.

[6]N. V. A. Narasinham, *A Short Term Planning Model for India*, North-Holland Publishing Co., Amsterdam, 1956, Table 1.

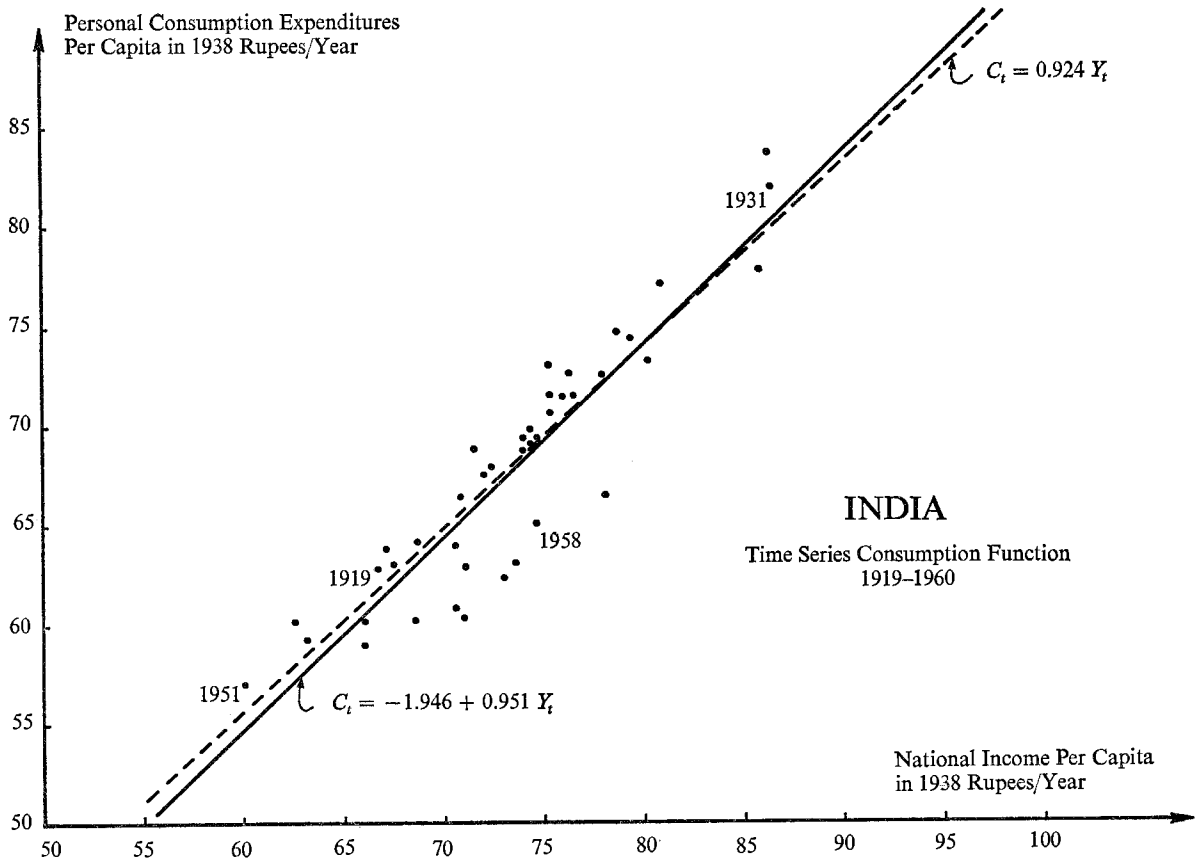

Figure 1. India Time Series Consumption Function 1919–1960

TABLE 1

TIME SERIES DATA FOR INDIA

1919–1960

Population Index*	Year	National Income $\times 10^9$ Current Rupees	Price Index 1938 = 100	National Income in 10^9 1938 Rupees	Private Consumption Current Rupees	Private Consumption 1938 Rupees	Per Capita National Income 1938	Per Capita Consumption
83	1919	43.1	210	20.5	40.1	19.1	66.8	62.2
83	1920	44.4	213	20.8	40.9	19.2	67.8	62.3
83	1921	41.3	179	23.1	37.8	21.1	75.4	68.9
83	1922	41.4	176	23.5	38.2	21.7	76.6	70.7
84	1923	37.6	162	23.2	34.6	21.3	75.4	69.2
85	1924	37.8	168	22.5	34.8	20.7	71.1	66.6
86	1925	37.9	172	22.0	34.8	20.2	70.0	64.1
86	1926	38.1	164	23.2	35.1	21.4	73.6	68.0
87	1927	37.9	153	24.8	34.8	22.7	77.9	71.4
88	1928	36.1	152	23.8	33.1	21.8	74.0	67.7
89	1929	38.0	154	24.6	34.9	22.7	75.5	69.5
90	1930	34.6	130	26.6	31.9	24.5	80.6	74.5
91	1931	28.4	96	29.6	26.2	27.3	89.0	82.0
92	1932	28.1	95	29.6	26.3	27.7	88.1	82.5
93	1933	26.0	92	28.3	24.2	26.3	83.0	77.2
95	1934	25.3	90	28.1	23.4	26.0	80.8	74.8
96	1935	26.1	96	27.2	24.2	25.3	77.6	72.2
97	1936	26.4	95	27.8	34.5	26.8	78.4	75.5
99	1937	28.7	103	27.8	26.4	25.6	76.6	70.6
100	1938	27.7	100	27.7	25.3	25.3	75.6	69.1
101	1939	27.6	101	27.3	25.0	24.8	73.8	67.1
104	1940	30.8	120	25.7	27.5	22.9	67.6	60.2
105	1941	34.4	132	26.0	30.0	22.7	67.5	59.0
106	1942	44.0	160	27.5	37.4	23.4	70.8	60.3
106	1943	73.8	221	34 3	66.6	30.1	88.4	77.5
107	1944	79.8	244	32.7	69.9	28.6	83.5	73.0
107	1945	79.1	247	32.1	70.2	28.4	82.0	72.5
108	1946	74.5	270	27.6	68.2	25.3	70.0	64.0

87	1947	85.5	302	28.3	80.5	26.7	88.9	83.9
88	1948	93.0	372	25.0	87.7	23.5	77.6	73.0
92	1949	95.4	385	24.8	89.3	23.2	73.9	69.0
97	1950	92.9	408	22.7	86.0	21.1	64.0	59.4
98	1951	98.8	447	22.1	91.7	20.5	60.0	55.5
101	1952	98.2	390	25.2	87.3	22.3	68.1	60.4
103	1953	104.8	389	26.9	93.9	24.1	71.4	64.0
104	1954	96.1	348	27.7	83.3	23.9	72.6	62.8
107	1955	99.8	355	27.3	84.5	23.8	69.7	60.8
109	1956	113.1	382	29.6	95.2	24.9	74.2	62.4
111	1957	113.9	389	29.3	95.6	24.6	72.2	60.6
113.5	1958	126.0	403	30.3	108.5	26.9	73.2	64.9
116	1959	129.5	407	31.8	108.7	26.7	75.0	62.9
118	1960	141.6	414	34.3	118.6	28.7	79.0	66.2

*_Note_: Population Index of 100 = 366 million in 1938.

TABLE 2

REGRESSION RESULTS FOR THE TIME SERIES CONSUMPTION FUNCTION IN INDIA 1919–1960

Functional Form	Estimated Coefficients		T-Statistics		R-squared	Sum of Squared Residuals
	B_1	B_2	B_1	B_2		
$C_t = B_1 + B_2 Y_t$	−1.946 (4.620)	0.951 (0.062)	−0.421	15.200	0.852	255.799
$C_t = B_2 Y_t$	—	0.924 (0.005)	—	−176.806	0.851	256.934

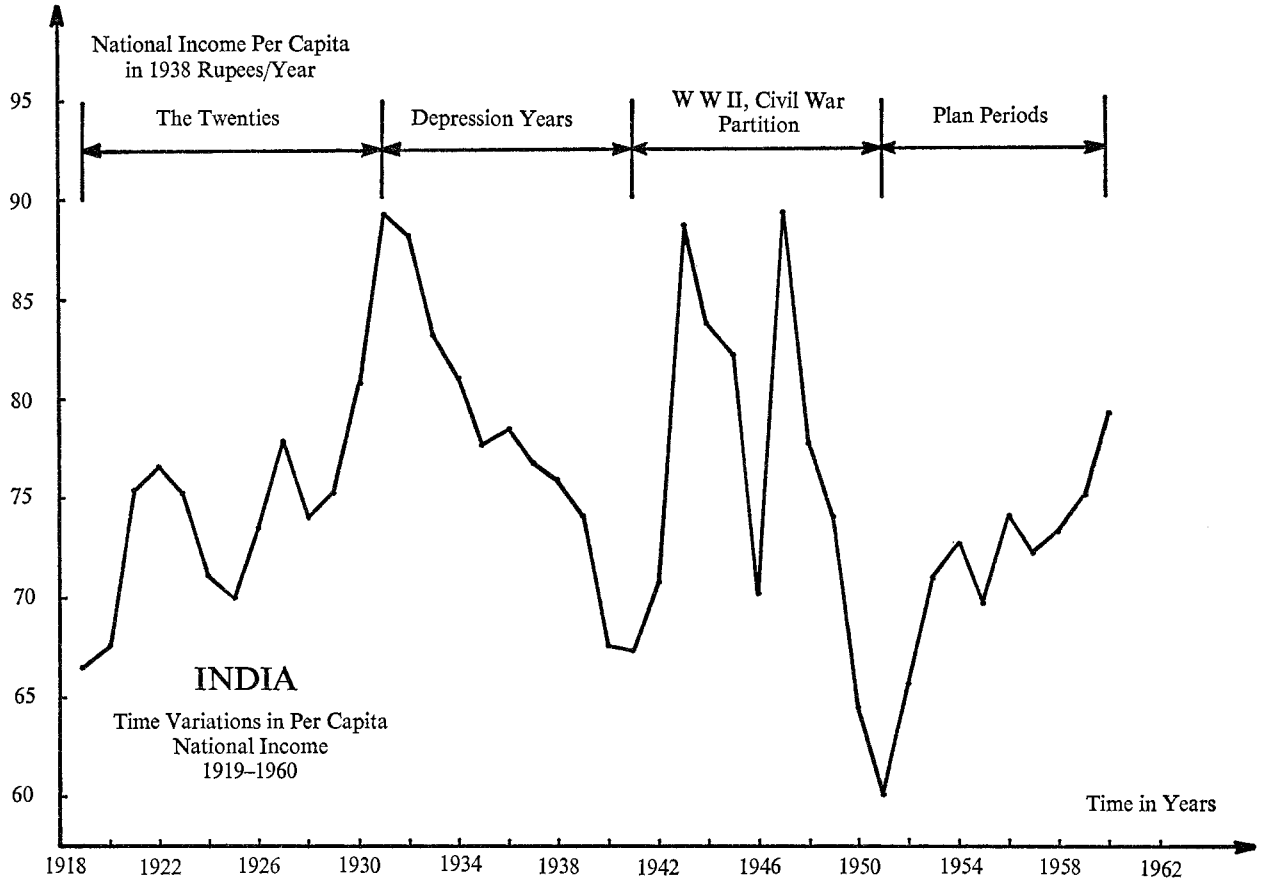

Figure 2. India Time Variations in Per Capita National Income 1919–1960

in Figure 2, shows that over the period 1919–60 there were only cyclical fluctuations in per capita income with no evidence of secular growth. This contrasts sharply with evidence presented for the United States.[7] These differences in growth potential, however, do not seem to affect the over-all constancy of the savings ratio observed in both cases.

(2) India and the United States seem to exhibit the same inconsistencies between time series data and cross-sectional data. In both cases cross-section data suggest a decreasing average propensity to consume whereas time series data suggest a constant average propensity with rising income levels.[8]

III. Reconciliation of Time Series and Cross-Section Average Propensities to Consume

1. *Theoretical Considerations*

Basically there are two different hypotheses advanced in the United States to reconcile differences which may exist between time series and cross-sectional variations of the average propensity to consume with income.

According to Friedman the short-run functions C_1, C_2, C_3 shown in Figure 3 and estimated from cross-section data contain a statistical bias leading

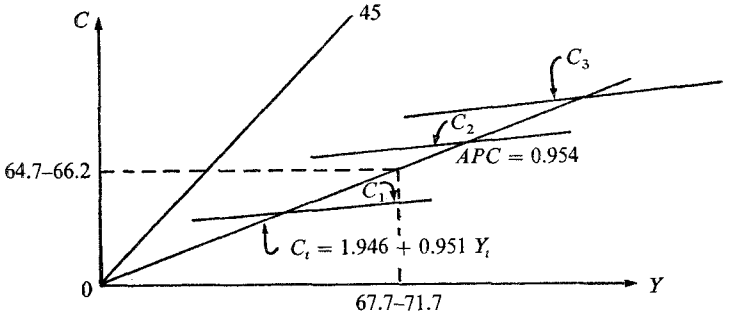

Figure 3. Relationship Between Long-Run and Short-run Consumption Functions

to an overestimation of saving at higher income levels and an underestimation of saving at lower income levels. Only at the sample average do transitory income elements cancel each other out and give us the true average propensity to consume. With aggregate time series data, on the other hand, transitory income elements tend to cancel out automatically by virtue of the very large size of the sample. A lengthy time series would therefore reflect the relationship which exists between permanent consumption and permanent income. According to Friedman this relationship is proportional, of the form $C_p = kY_p$.

The Indian time series estimate of $C_t = -1.946 + 0.951\,Y_t$ seems consistent with this hypothesis. However, the evidence presented elsewhere on cross-sectional data suggests that there is more than a statistical bias in the observed differences between time series and cross-sectional consumption functions in

[7]M. Friedman, *op. cit.*, 117.

[8]F. Vakil, "The Role of the Distribution of Income in Economic Development: Some Empirical Evidence" (unpublished Ph.D. Dissertation, University of California, Berkeley).

India.[9] Indeed, the permanent income hypothesis implies that the basic reason for the differences is in the use of measured income obtained from cross-sectional data to estimate the consumption function. It is suggested that the use of permanent income as the independent variable would rotate the functions C_1, C_2 and C_3 in Figure 3 to such an extent that they would coincide with $C_t = -1.946 + 0.951\,Y_t$. Using the average income of broad occupational groups as a proxy for permanent income resulted in a partial counterclockwise rotation but not enough to coincide with the time series function.[10] The statistical problem implied in the permanent income theory offers partial explanation for the differences but does not account for all the divergences. We therefore have to look somewhere else for a fuller explanation.

This explanation can be found in the crux of Duesenberry's hypothesis, namely that in the United States there has occurred over the period 1897–1949 an upward drift of the cross-section consumption function. Indeed, periods of steadily increasing or decreasing income levels are seen to set in motion an adjustment mechanism which operates to shift the cross-sectional functions in such a way as to maintain the constancy of the average propensity to consume. Thus at any one point of time cross-sectional relationships may well be characterized by

$$C = g_1(Y) \tag{1}$$

but over time it is necessary to introduce a shift parameter γ,

$$C = g_2(Y, \gamma) \tag{2}$$

because income alone does not explain consumption behavior. Tastes, for example, may operate to shift (2) upwards as a result of consumer desires for higher quality goods; or in underdeveloped countries, where rising income levels are by no means a certainty, this shift parameter γ might be tied to some concept of an average standard of living $\bar{Y}$ in keeping with the country's resources. Under such conditions a reconciliation between time series and cross-sectional evidence is possible because the two propositions

(1) at any one moment the proportion of income saved will be higher for the higher income groups than for low income groups;

(2) if income increases, while the proportional distribution remains constant, the ratio of aggregate saving to aggregate income will be constant;[11]

are no longer contradictory.[12]

[9]For a more detailed analysis of the implications of the permanent income hypothesis on cross-sectional estimates of the consumption function, see F. Vakil, "The Propensity to Consume Permanent Income in India," *Economic Development and Cultural Change*, April 1973.

[10]F. Vakil, *Ibid.* p. 520.

[11]J. S. Duesenberry, "Income-Consumption Relations and Their Implications," in M. G. Mueller, ed., *Readings in Macroeconomics*, Holt, Rinehart and Winston, Inc., New York, 1966, 75.

[12]It is well to note, in addition, that the average propensity to consume from time series comes from the motion of aggregates over time. Behind each aggregate set of observations lies a whole host of factors including variations in the APC with income classes. It is thus erroneous to predict variations of aggregated cross-sectional variations of APC with income classes. The point to be stressed here is that cross-sectional concentration of saving is somewhat different from the concept of income concentration of saving among a given group over time, and there is no reason to suppose that the same households who account for a major part of the saving in a cross-sectional sense would continue to do so temporarily.

2. *Empirical Evidence*

The evidence presented in favor of a Duesenberry type explanation will follow two lines of approach: (1) Are there any similarities between the average propensity to consume derived from nation-wide cross-sectional surveys?[13] (2) Are there any shifts in the cross-sectional function over time associated with changes in the level of per capita income?

(1) It would be convenient to have broad cross-sectional surveys at different points of time over the period 1919–60. Unfortunately all that is available on a comprehensive basis are the Urban Saving Survey of 1960 and the All-India Rural Household Saving Survey of 1962, both conducted by the NCAER. Combining the results should give us an indication of the average propensity to consume in India for the years 1960–62.[14] Table 3 presents estimates of the

TABLE 3

COMPARISON OF AGGREGATE AVERAGE PROPENSITY TO CONSUME (APC) FROM CROSS-SECTIONAL AND TIME SERIES STUDIES

Urban Weight*	Rural Weight*	Urban APC	Rural APC	Aggregate APC	Time Series APC
0.186	0.814	0.978	0.949	0.954	0.951

*Rural and urban weights are defined in terms of the approximate percentage of rural and urban families in India for the period 1960–62.

aggregate propensities from cross-sectional data as well as from time series. It is quite clear that the cross-sectional and time series average propensities are similar.

Moreover, Table 4 indicates that the per capita income and consumption figures derived from cross-sectional data also correspond to the figures obtained from the aggregates for the year 1960.[15] The per capita consumption expenditure figures in 1938 Rupees are quite close—64.0 from cross-section and 66.2 from time series. The per capita income figures, however, show a greater divergence—67.7 from cross-section and 79.0 from the aggregates. It is overstated when we note that the cross-sectional figure represents disposable income per capita and the time series figure national income per capita. For the period 1919–60 national income figures were used in the time series analysis mostly because of their availability; it was noted that the corporate sector and the tax burden being relatively unimportant for most of the period under study, there would be only small differences in the final results. While this is true for most of the

[13]It has been suggested previously that the cross-sectional function traces out the time series function secularly, and therefore at the point of intersection the average propensity to consume of the total cross-sectional sample is equal to the time series propensity. Per capita income and consumption expenditures obtained from the aggregates and the cross-sectional samples should also correspond fairly closely.

[14]*All India Rural Household Survey*, National Council of Applied Economic Research, New Delhi, India, 1964. Urban Income & Saving, National Council of Applied Economic Research, New Delhi, India 1962.

[15]It is assumed that rural incomes have not increased significantly from 1960 to 1962. In the light of Indian conditions, this is not an unreasonable assumption.

TABLE 4

COMPARISON OF PER CAPITA PERMANENT INCOME AND CONSUMPTION EXPENDITURES FROM CROSS-SECTIONAL AND TIME SERIES DATA

Type	Average Income of Family	Average Consumption of Family	Average Family Size	Price Index (1938 = 100) in 1960	Per Capita Income in 1938 Rupees	Per Capita Consumption in 1938 Rupees
Urban	1,861.5	1,801.4	5.00	414	90.0	87.5
Rural	1,328.0	1,260.6	5.20	414	63.0	59.8
Urban and Rural	1,390.0	1,327.0	5.16	414	67.7	64.0
Times Series (actual 1960)				414	79.0	66.2

period, there has been, under the plan period (1951–60), an increase in the role of government and an increase in the size of the corporate sector. Thus for the year 1960 one would expect the per capita disposable income figure to be lower than the per capita national income figure. Taking the per capita consumption expenditures in 1960 as a true figure—66.2—the predicted per capita income figure from the time series regression would be 71.7 Rupees. This is actually a more representative estimate of per capita disposable income, because the regression is more heavily weighted with points where the differences between disposable and national income are not significant (i.e., the period 1919–51). Thus one can conclude that there is close agreement between per capita income and consumption figures derived from cross-section and time series data; that when plotted on the same graph these two sets of observations represent the intersection of the time series and cross-section function at a common value of the average propensity to consume; and that the separate evidence for the equality of the average propensities to consume corroborate the above.[16]

(2) Having established the correlation between cross-sectional and time series functions at one point of time—the year 1960 in this case—there remains the question of shifts in the cross-sectional function over time. It has been argued that such shifts are responsible for the constancy of the average propensity to consume over time, even though at any one point of time the average propensity is lower for upper income groups than for lower income groups. Referring to Figure 3 we would expect that a rise in per capita income would shift C_2 to C_3, while maintaining the correspondence between the time series and cross-section average propensities, so long as other factors which affect the savings ratio do not change radically; or if they should change they do so marginally and/or in an offsetting fashion.[17]

A proper test of this hypothesis would require at least another comprehensive set of urban–rural cross-section surveys for India during the period 1919–60, and in a year when per capita incomes were different than in 1960. Such data is, unfortunately, unavailable. What is available is a whole set of Family Living Surveys for Industrial Workers in different years—1926, 1933–35, 1950–52 and 1958–59—and during the period 1919–60 which covers the time series analysis.[18] It is worth noting, at this point, that the secular constancy of this time series average propensity is in itself a confirmation of the fact that the other factors, mentioned above, on balance are not changing significantly enough during this period to affect the over-all average propensity to consume. All that

[16]See Figure 3 for a graphical conceptualization of these results, at the intersection of the time series function and the overall cross-section function (urban and rural) which is assumed to be C_2.

[17]Such factors are noted by Duesenberry (*op. cit.*, 111) to be: interest rates, income expectations, the distribution of income, the rate of growth of income and the age distribution of the population. Add to those the factors noted by Friedman (*op. cit.*, 119): interest rate, ratio of nonhuman to human wealth, urbanization, size of consumer units and the role of the state in the provision of security.

[18]See the following: *Report on an Enquiry into Working Class Family Budgets in Ahmadabad 1926 and 1933–35*, Bombay, Government Central Press, 1928 and 1937. Labour Bureau, *Family Living Survey Among Industrial Workers 1951–53 and 1958–59*, Ministry of Labour and Employment, Government of India, 1954 and 1959.

is required, therefore, to corroborate the above explanation is some evidence of cross-sectional shifts of the consumption function over time.

Table 5 indicates the regression results for industrial workers in constant 1938 prices for both linear and loglinear functional forms. A simple Chow test

TABLE 5

REGRESSION RESULTS FOR INDUSTRIAL WORKER FAMILIES IN CONSTANT 1938 PRICES

Survey	Functional Form	Estimated Function	Sum of Squared Residuals
1958–59	Linear	$C = 11.49 + 0.837Y$ (1.505) (0.037)	525.680
	Log-linear	$\text{Ln } C = 1.065 + 0.751 \text{ Ln } Y$ (0.102) (0.029)	0.2760
1950–52	Linear	$C = 4.25 + 0.766Y$ (0.784) (0.025)	88.370
	Log-linear	$\text{Ln } C = 0.425 + 0.851 \text{ Ln } Y$ (0.045) (0.014)	0.0400
1933–35	Linear	$C = 10.18 + 0.665Y$ (0.655) (0.009)	5.9008
	Log-linear	$\text{Ln } C = 0.855 + 0.752 \text{ Ln } Y$ (0.075) (0.019)	0.0076
1926	Linear	$C = 5.61 + 0.684Y$ (0.695) (0.020)	3.871
	Log-linear	$\text{Ln } C = 0.750 + 0.745 \text{ Ln } Y$ (0.065) (0.019)	0.0478

indicates whether any two sets of data came from the same relation. Obviously if we reject the hypothesis of equality between the sets of coefficients in the two relations then we can conclude that there has been a shift; conversely if the data does not allow for rejection of the hypothesis then we may conclude that very little evidence exists for such a shift. Table 6 presents the results of the Chow test for both linear and loglinear functional forms; they indicate that the hypothesis of equality between the sets of coefficients of cross-sectional functions in different years is rejected at a 1 percent level of significance regardless of functional form. One can therefore conclude that the cross-sectional consumption function is not stable over time. A plot of the loglinear forms corroborates this conclusion as shown in Figure 4.

Moreover there is some evidence to suggest that the shift parameter γ in equation (2) is closely linked to some concept of an average standard of living ($\bar{Y}$). Thus over time the cross-sectional function might look like:

$$C = g_2(Y, \bar{Y}) \tag{3}$$

One possible index for measuring the variations in $\bar{Y}$ over time is average per capita income in constant prices. Such a series is shown in Table 1. Table 7 indicates the correlation between variations in the value of the intercept from

TABLE 6

F STATISTICS FOR THE CHOW TESTS OF EQUALITY BETWEEN COEFFICIENTS OF CROSS-SECTIONAL CONSUMPTION FUNCTIONS FOR INDUSTRIAL WORKERS

Surveys	Functional Form	$m+n$	Q^3/k	$Q^2/(m+n-2K)$	F	$F\,0.01$
1926 and 1933–35	Linear	17	24.36	0.75	32.4	6.70
	Log–Linear	17	0.281	0.0010	28.1	6.70
1933–35 and 1950–52	Linear	36	25.1	2.95	8.7	5.34
	Log–Linear	36	0.0203	0.0015	13.5	5.34
1950–52 and 1958–59	Linear	58	621.7	11.40	54.6	5.01
	Log–Linear	58	0.7963	0.0033	240.0	5.01
1933–35 and 1958–59	Linear	40	358.7	14.78	24.3	5.25
	Log–Linear	40	0.2177	0.0029	75.0	5.25

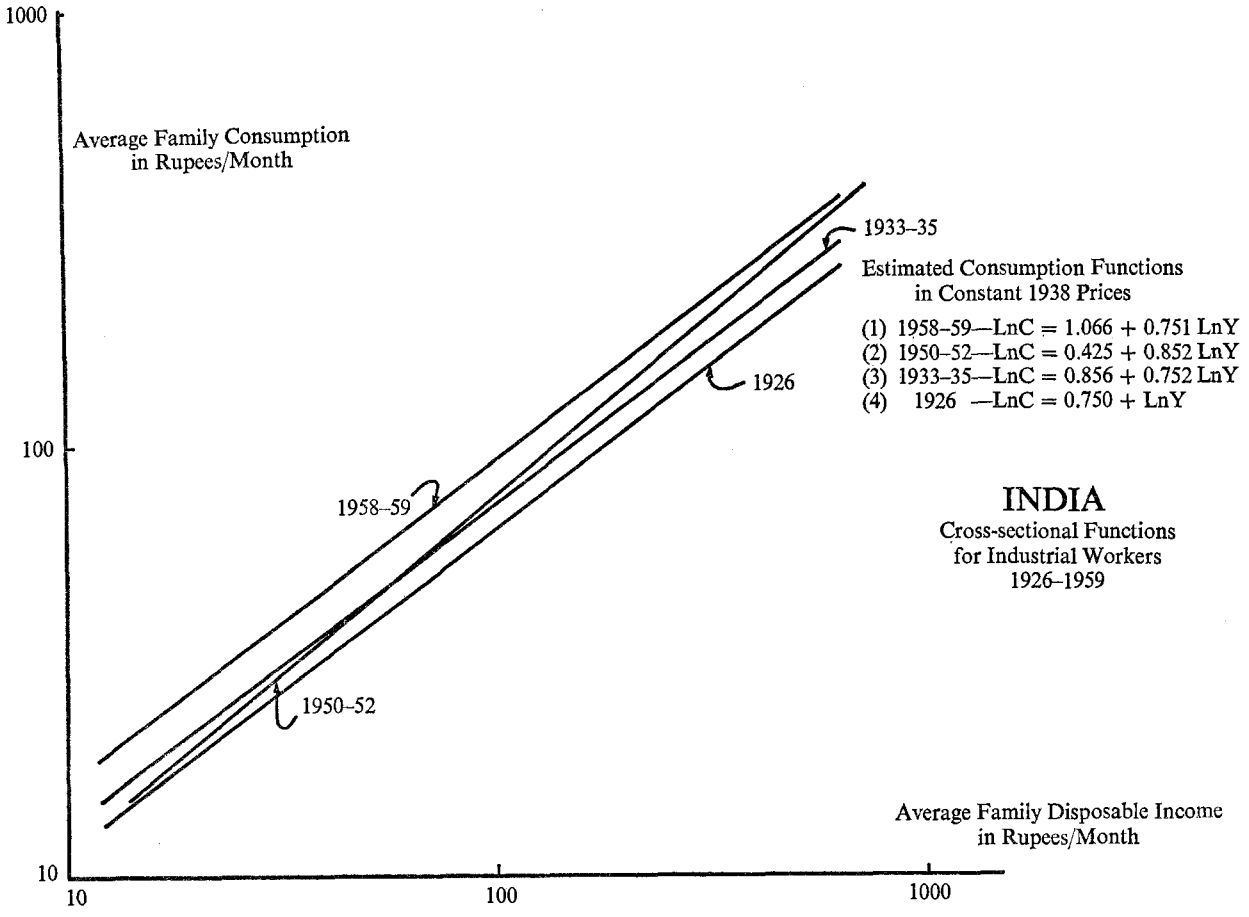

Figure 4. Cross-Sectional Functions for Industrial Workers 1926–1959

TABLE 7

VARIATIONS IN THE INTERCEPT FROM LINEAR CONSUMPTION FUNCTION WITH VARIATIONS IN PER CAPITA INCOME OVER TIME

Period	Average Per Capita Income 1938 Prices (Rupees)	Value of Intercept in 1938 Prices (Rupees)
1958–59	74.08	11.49
1950–52	61.80	4.25
1933–35	78.30	10.18
1926	72.40	5.61

the linear regression for industrial workers and per capita income. In order to interpret the results they must be placed within the time series variations in per capita income shown in Figure 2. Thus the 1920's represent a period of growth in the Indian economy. Per capita income increases fairly steadily until 1931 when the depression years set in. One would expect the cross-sectional function to be shifting upward concurrently, as $\bar{Y}$ increases. Table 7 indicates that from 1926 to 1933–35 the intercept shifts upwards from 5.61 to 10.18 in constant 1938 prices. Figure 4 shows clearly the shift (if we assume a loglinear form) in the cross-section function from its 1926 position to its 1933–35 position. Our expectations based on (3) are therefore confirmed for this period.

The following period 1933–52, according to Table 7, suggests that the decline in per capita income, presumably resulting from the impact of civil war and partition in the late 1940's, is accompanied by a downward shift of the cross-section function. The intercept values change from 10.18 in 1933–35 to an average 4.25 in 1950–52. This again supports the hypothesis. However, a cursory look at Figure 4 suggests that only part of the 1950–52 cross-section function shifts below the 1933–35 function (a sort of rotation). One possible explanation is that $\bar{Y}$ does not take into account the distribution of income over groups and the ability of certain groups to refrain from lowering their consumption standards in the face of adverse economic conditions. In this specific case, upper income groups, who have reached a certain "standard of living" during the prosperity associated with the war years (see Figure 2), were presumably in a better position to withstand the negative economic impacts of the civil war and its aftermath. For the bulk of the population, however, the cross-section function did shift downward with the cycle in per capita income.

Finally, during the plan period 1951–60, India exhibited a fairly steady growth of per capita income. One would therefore expect over the period an upward shift in the consumption function. Table 7 corroborates this with an increase in the intercept from 4.25 in 1950–52 to 11.49 in 1958–59. The shift is also pronounced for the loglinear form as shown in Figure 4. An inconsistency, however, exists if we assume a direct relationship between $\bar{Y}$, as measured by per capita income, and the level of the consumption function. Indeed as shown

in Table 7 and Figure 4, the lower per capita income figure in 1958–59 is associated with a higher cross-sectional function than its counterpart of 1933–35. The inconsistency disappears if we introduce a sort of Duesenberry "ratchet effect" to explain that over the business cycle consumers (in this case industrial workers) resist lowering their previously achieved consumption standards. Even in an economy such as India, where no substantial secular growth but only cyclical fluctuations in per capital income have occurred, consumers are unlikely to reduce voluntarily their standard of living from the peak achieved during the previous boom. In a developed society, the reluctance to adjust to lower consumption standards is more feasible. In a developing country, on the other hand, it is not always possible to avoid reductions—the 1950–52 function of Figure 4 being an example—when the country's available resources are taken into account.

The evidence presented suggests that there is some relationship between $\bar{Y}$ and the level of the consumption function. However, a Duesenberry "ratchet effect" indicates that a more proper representation of (3) should include a time trend variable t,[19] such that

$$C = g_3(Y, \bar{Y}, t) \tag{4}$$

What is clear, however, is that the direction of the shift in the cross-section function (i.e., upwards or downwards) is positively correlated with the direction of change in $\bar{Y}$; and that the cross-section consumption function does shift over time.

IV. Conclusions

The following conclusions follow from the previous sections:

(1) Both India and the United States seem to exhibit a secular constancy of the average propensity to consume. In the case of India the average propensity to consume is about 0.95 and the saving ratio 5 percent. This constancy is maintained in the face of no substantial increase in per capita income during the period under study, and of large fluctuations in the average standard of living (Figure 2).

(2) The same inconsistencies between the implications of time series and cross-sectional variations of the average propensity to consume with income were found to exist for India and the United States. This suggests that differences between developed and developing countries with respect to consumption theory may be very slight.

(3) The permanent income hypothesis provides only a partial explanation of the inconsistencies noted above.[20]

(4) Reconciliation is achieved by providing evidence of a shifting cross-sectional consumption over time. Broad cross-sectional surveys taken during the years 1960–62 indicated close agreement between the cross-sectional estimates of

[19]Another possible explanation is to suggest that adjustments in the consumption function level lag behind per capita income fluctuations over the cycles. In this case with an n year lag we would have: $C_t = g_4(Y_t, \bar{Y}_{t+n})$ . . . (5) where t represents the year of the cross-section study.

[20]For further elaboration on this point, see T. Mayer, "The Propensity to Consume Permanent Income," *American Economic Review*, December 1964.

per capita income, per capita consumption and average propensity to consume and their time series counterparts. This in turn provided evidence to suggest that the cross-sectional function traces out the time series function.

(5) Indeed this latter point is corroborated by the evidence presented in favor of a shifting cross-sectional consumption function. Furthermore the shifts were seen to be associated directly although not proportionately with the fluctuations in per capita income over the period 1919–1960.

(6) Finally one major difference between developed and underdeveloped countries is suggested by the Indian evidence. Whereas in the United States the cross-sectional function has shifted upwards continuously over the last century or so, the same function in India has fluctuated upwards and downwards according to the cycles shown in Figure 2. In a wealthy country it seems much easier for consumers to resist lowering previously achieved consumption standards in the face of cyclical macro-economic conditions. In an economy like India, where secular growth is by no means assured, it is not always likely that consumers can avoid a general reduction in the standard of living, i.e., a downward shift of the consumption function.