

PUERTO RICAN CONSUMPTION EXPENDITURE
PATTERNS IN SERVICES:
A Review and Re-examination

by

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The chief object of the American...occupation...(is to)...
bestow the immunities and blessing of our enlightenment
and liberal institutions and government.

-- proclamation issued by General
Miles on the capitulation of Ponce
on July 28, 1898.

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Summary

This paper opens by examining the recent record of economic growth in Puerto Rico, changes in structure of output and employment and the gross flows to and from the Island--in both financial and human terms. We then review the record of personal consumption expenditures in Puerto Rico through time series of national accounts and a comparison of budget studies administered in 1941, 1953 and 1963. The 1963 survey is analyzed in more detail using multivariate functions and many socioeconomic and demographic variables. The results are then compared with other developing countries. Finally, the distribution of consumption is examined by income class to trace the class-character of the import leakage.

The expenditure patterns summarized in the budget proportions and elasticities, however, may bear little relationship to the real needs of the Puerto Rican people. Despite the changes in disposable money incomes, a comparison of social indicators for Puerto Rico during this period reveals that much remains to be done, especially in the service sector, an observation not easily quantified by the conventional techniques presented here.

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Puerto Rican Consumption Expenditure Patterns in Services:
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by

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Introduction: The Puerto Rican Economy

The economic growth of Puerto Rico--once heralded as a model for the Third World--has in recent years dropped out of the sight of those observers who are supposedly interested in the conditions of economic progress. Yet it was Puerto Rico's development program which pioneered in many of the devices which today are commonplace throughout the Third World. These "motors of growth" include tax-holidays, industrial promotion, tourism, and enclave industries, to name but a few of the programs once held central to the "success" of the Puerto Rican experience. But rather than examine Puerto Rico's actual history for what it shows, economists have been quick to write off Puerto Rico as "the special case" due to her open and stable arrangement as a "commonwealth" within the U.S. market, and it is currently the fashion to ignore the Puerto Rican experience.

Because Puerto Rico has traveled the farthest in the shortest time along a particular development path, I will argue that the Island's experience demonstrates the limits, not of the special case, but of the general one for a wide range of developing economies. Because the failings of the Puerto Rican path are glaring and well-known (they range from high unemployment to human rights violations), it may well be important to minimize the Puerto Rican experience and look elsewhere for less prominent examples. As the original case of the "labor-surplus" economy, the experience of Puerto Rico demonstrates the bankruptcy of the very model that has become the standard operating paradigm for viewing development problems throughout the West.¹

¹See R. Weisskoff (1978b) for a more extensive critique of the Puerto Rico in the Caribbean contrast to Reynolds (1965), Baer (1959), Reynolds and Gregory (1965). See also Weisskoff (1976) and Weisskoff and Wolff (1977).

Early in its history, Puerto Rico's Operation Bootstrap presented an image of a society which, through its own efforts, was rapidly industrializing-by-open-invitation. Industries of all sorts, but especially those in search of cheaper labor, flocked to Puerto Rico, bringing their capital and know-how, training the labor force, and, as agreed, were rewarded with high profits which were not to be taxed.

The success of Puerto Rico caught the attention and imagination of economists interested in other areas. Sir W. Arthur Lewis, the author of what has become known as "the labor-surplus model," saw Puerto Rico's "export promotion" campaign as the strategy for the small, densely-populated islands. As early as 1951, he held Puerto Rico up as the example for the rest of the Caribbean:

...What should be done is to try to persuade existing suppliers with established channels in Latin America, to open factories in the islands to supply their trade...It is what Puerto Rico is doing, in its invasion of the U.S. market, and it is one of the outstanding lessons of the Puerto Rican experience...²

Based on the early experiences of Lewis in the British West Indies and on the writings of Reynolds on the American West Indies (Puerto Rico)³, the labor surplus paradigm has achieved widespread popularity today. The "labor surplus" vision maintains that a poor country begins with a significant share of its workers receiving a reward which exceeds the value of their marginal product. As the high-technology modern sector expands, people are drawn out of their traditional occupations in search of a better life and higher earnings. Those left in agriculture or handicrafts maintain production, even without the

² Lewis (1951), p. 30. Emphasis added. The modern reader cannot help but comment on the two-way nature of the "invasion".

³ See Lewis (1954) and Reynolds (1965).

contribution of those who have migrated, while the adventurers who seek urban livelihoods eventually find more productive work. Their numbers also serve to keep down the supply price of labor offered to the modern sector. This process of migration from the countryside to the city and the growth of the modern sector is thus named "development with unlimited supplies of labor," and holds out the vision that when that process reaches a conclusion, the labor force would find itself prosperously engaged in the cities or on modern estates and the rural people enticed out of their backland hideaways.

Only as the labor "surplus" was depleted would wages be forced up. The significance of the gap between the backward and modern sectors would disappear with the diminished importance of the former, and the distribution of income within the society would become more equal.⁴

I will argue that not only has the labor surplus model been misapplied worldwide, but that the history of the very area which inspired its birth contradicts those qualities which supposedly were to have been achieved. The record of Puerto Rican growth stands as testimony to the theories of these economists whose focus on "surplus labor," rather than on surplus-value, has served, unwittingly perhaps, as apologists for the dismemberment of a society.

⁴See Weisskoff (1970) and Weisskoff and Figueroa (1977). As all the surplus labor could hardly be absorbed in the manufacturing sector at once, so it falls to the service sector to provide the buffer for the migrants as they seek opportunity in the modern sector.

In recent years the labor surplus model has become more embellished and generalized, and, while propelled initially on the experience of the world's smallest economies, it has finally been applied to the largest of nations.

See Reynolds (1975) on China. He writes, "China is still a 'labor-surplus economy' in the sense that there are many rural workers whose marginal product is below their consumption" (p. 425). The marginalist's vision knows neither geographic nor historical boundaries! The view of the present writer, based on his own travels and reading, is that the economy of People's China totally contradicts the basic propositions of the labor-surplus model.

From 1940 to 1977, the GDP/capita for Puerto Rico more than quadrupled in real terms or nearly trebled since 1950 (see Table 1, line 1). The population on the Island since 1950 has increased by 50 percent, while the rate of natural increase has fallen by 40 percent (lines 2 and 3). Yet relatively few net jobs have been created. The labor force participation rate has fallen steadily from 53 percent in 1950 to 42 percent by 1977. The unemployment rate, while variable throughout the period, has never fallen below 10 percent and in recent years has risen to 20 percent (lines 4-5). Thus, the share of adults who are not looking for or finding work has ranged from one-half to two-thirds of the adult population! (line 6).

Seen in retrospect, the Puerto Rican strategy of development had never intended to increase employment. Its focus rather was to raise the incomes of those few who were employed.⁵ As the agricultural sector collapsed from 18 to 3 percent of GDP between 1950 and 1977, manufacturing did expand from 21 percent to 36 percent of GDP during the same period (lines 7a and b).

⁵ Demas (1976) summarizes the experience aptly:

Most plans in underdeveloped countries are in fact aimed at increasing per capita income--even though lip service may be paid to other objectives, such as a more equal income distribution, employment creation, and greater national control of the economy...The fact is that employment is regarded as a by-product of general economic growth...Economic growth and employment creation are really two separate things... (p. 42).

Demas cites Puerto Rico as evidence that:

...high investment does not necessarily lead to high employment; high wages paid to foreign-owned, capital intensive industries raise the supply price of labor and restrict absorption...(with the) exaggerated impact of the value of the "consumer society" depressing the savings rate (p. 86).

This observation is often turned on its head, and the high wage rates to the few are then blamed for the limited spread of manufacturing!

Table 1: Economic Change in Puerto Rico: General Indicators

	1940	1950	1960	1970	1977
1. GDP/capita (\$ at 1954 prices)	269	399	630	1,070	1,086
2. Population (thous.)	1,859	2,206	2,342	2,711	3,310
3. Rate of natural increase (per 1,000)	20.8	29.0	25.8	18.7	17.4
4. Labor participation rate (%)	52.2	53.0	45.2	44.5	41.9
5. Unemployment rate (%)	15.0	12.9	13.1	10.3	20.1
6. Non-working adults (%) (non-particip. plus unemployment)	55.6	53.8	60.7	60.0	66.5
7. Industrial origin of GDP (%)					
a. Agriculture	-	100	100	100	100
b. Manufacturing (incl. construction)	-	18	10	3	3
c. Services (incl. govt.)	-	21	27	32	36
	-	61	64	65	61
8. Employment structure (%)					
a. Agriculture	100	100	100	100	100
b. Manufacturing (incl. construct.)	45	36	23	10	6
c. Services (incl. govt.)	23	23	25	30	26
	32	41	52	59	69
9. Gross public debt/gross domestic product (%)	-	-	-	35	80
10. The bottom lines: (millions of 1954 dollars)					
a. Gross investment in Puerto Rico		1950-59	1960-69	1970-77	1950-77
b. Gross profits in Puerto Rico		780	2,741	2,836	6,357
c. Net public transfers		3,098	4,446	4,457	11,999
d. Remitted profits		534	2,013	2,875	4,596
e. Net out-migration (thous. people)		544	197	4,868	7,415
				-107	636

Sources: Puerto Rico, 1978 Governor's Report.

Lines 1-2: Table 1, rows 15 and 26.

3: Table 24, row 6.

4-5: Table 25, rows 5 and 6.

6: Calculated as $(100 - 1 \text{ p.p.r.}, \text{ line 4}) + (1 \text{ p.p.r.} \times \text{unempl. rate, line 5})$.

7: Insurance and real estate; services; commonwealth, municipal and federal government.

8: Table 26, rows 1-27. Agriculture includes fishing and forestry; manufacturing includes home needwork.

9: Services include trade, finance, transport, communications, public utilities, other services, and public administration (rows 17, 20-24, and 27).

10 a-d: Calculated from Table 30, row 1 and Table 1, row 1.

1950-1969: Annual flows were obtained by taking decade benchmark figures from the Governor's Report 1978, deflating them to 1954 prices, and interpolating to obtain annual estimates. Annual flows were then summed.

1970-1977: Annual flows given in the Governor's Report 1978 were deflated, then summed. Basic series for line 10a from Table 12, row 7; line 10b from Table 6, row 3; line 10c from Table 21, row 21 and Table 27, row 34; line 10d from Table 6, row 30. Deflators for line 10a are from "Total gross domestic investment," Table 22, p. A-23, row 1.

10e: Rate of natural increase per 1,000 population (NRI) for benchmark years was interpolated to obtain an annual NRI which was then applied to decade population estimates to obtain an "adjusted" annual population.

The difference between the "natural" and "observed" populations for 1960 and 1970 were then taken as an estimate of outmigration.

1971-1977: Annual NRI were applied to each previous year's recorded population; the difference between the "predicted" and "recorded" is taken as an estimate of outmigration. Basic series for NRI from Table 24, row 6 and Population from row 1.

Manufacturing, however, never fully absorbed those released from agriculture, and the share of the labor force engaged in manufacturing has never risen above 30 percent. It has remained, then, for services, not manufacturing, to pick up the "surplus" labor, its share of employment rising from 41 percent in 1950 to 69 percent by 1977. The service sector, in the labor surplus model, has become the employer of last (or perhaps first) resort (Table 1, lines 8b and c).

The "hollow prosperity" of the Puerto Rican model has attracted the attention of other Caribbean economists, who at one time had viewed Puerto Rico as the trend-setter. "It is possible for a small Caribbean island to achieve a relatively high per capita income and become 'prosperous,'" writes Demas,

...by literally selling-out its national patrimony to unscrupulous foreign investment and permitting the introduction of tax havens, casinos, free ports and numbered bank accounts...a highly artificial pseudo-prosperity...not by any stretch of the imagination..."economic development"...not internally-generated self-sustaining and soundly-based economic growth, full employment and an attitude of independence and national self-reliance and self-respect.⁶

But the Puerto Rican model, with its emphasis on export industries and rapid growth, has not been without its beneficiaries. All during this period of "attracting" private funds to build industry, the government of Puerto Rico was borrowing heavily to fuel its agencies and state corporations, and by 1977, this "public" debt rose from 35 to 80 percent of gross domestic product⁷ (Table 1, line 9).

⁶Demas (1976), p. 107.

⁷ The system of public credit, i.e., of national debts, whose origin we discover in Genoa and Venice as early as the middle ages, took possession of Europe generally during the manufacturing period...national debts, i.e., the alienation of the state...marked with its stamp the capitalistic era. The only part of the so-called national wealth that actually enters into the collection possessions of modern people is--their national debt...And with the rise of national debt-making, want of faith in the national debt takes the place of blasphemy against the Holy Ghost, which may not be forgiven. Marx (1867), p. 654.

The real motivation of Puerto Rican development, indeed of all Caribbean development outside of Cuba today, is perhaps best summarized in the quest for profits. The area's voracious appetite for both labor and capital was virtually unlimited, we are reminded in the history of the Caribbean, and the wealth of the Caribbean came not from looting or mining gold, but through the labor of slaves, coolies, free-holders, colonos, and rural proletarians.⁸ Yesterday's "staples" in Puerto Rico have been coffee, tobacco, and sugar; today's are manufactured goods. Tomorrow's may be copper and petroleum.⁹

The final tally, "the bottom lines," if you will, are very simply calculated. From 1950 to 1977, private investment of nearly \$6 billion (estimated in constant 1954 dollars) has earned nearly \$12 billion in gross profits (Table 1, lines 10a and b). This has been underwritten by enormous transfers from the public sector of the U.S. to Puerto Rico totaling nearly \$4.6 billion during the same period (line 10c).

Of the \$12 billion of private profits, \$7.4 billion has been remitted from Puerto Rico. This is the scale of financial exports. The human exports, the present writer conservatively estimates, have totalled at least 636,000 people from 1950-77, an equivalent of 19 percent of the 1977 population or nearly 30 percent of the 1950 population (line 10e). This "Puerto Rican diaspora," the true "bottom line," is but a hint of the total human cost that is the "other side" of this profitable Caribbean paradise.

⁸As the Demarara planter remarked to Anthony Trollope, "Give me my heart's desire for coolies, and we will supply the world with sugar." Quoted in Beachley (1957), p. 99.

⁹See Tanzer (1978).

Consumption Expenditure on Services: Time Series

But what has this introduction to the Puerto Rican economy to do with the Demand for Services? On the one hand, the creation of the dual-economy within Puerto Rico--the growth of modern manufacturing together with other low productivity sectors--will itself be reflected in the pattern of consumer demand, the distribution of that demand, and changes in demand during the period. On the other hand, so many of the economist's summary tools for measuring consumer demand--Engel curves and expenditure systems--and the sophistication of these concerns, such as the correct econometric specification, totally miss the basic point which cries out to be investigated. That point is not how have families in the past spent their money, but what are the true needs of the people and how are these to be met.

Nevertheless, the historical record, which is assembled here, does give us some idea of the changes in the consumption expenditure patterns that have taken place during the past decades and which have accompanied the rise in incomes, unemployment, and outmigration.

The time series of personal consumption expenditure drawn from the national accounts statistics (Table 2, line 5) reveals clearly the declining share of food expenditures and the rising shares of service and to a lesser extent, transportation expenditures. In terms of elasticities, two studies based on similar annual time series data but fitted to different models (Table 2, lines 1-2) both confirm the low expenditure and price coefficients for the food and housing categories and the high expenditure elasticities for services. However, the present author (1971) found a low price elasticity of demand for services (-.78) compared to the -1.34 estimated by Lluch (1977) (lines 1-2, col. 12).

Table 2: Comparison of Elasticities for Puerto Rico Consumption Expenditures

	Food		Clothing		Housing		Durables		Transport		Services	
	Exp.	Price	Exp.	Price	Exp.	Price	Exp.	Price	Exp.	Price	Exp.	Price
1. Puerto Rico, 1950-65 (Weisskoff) ^e	.47 ^a	-.25	1.29	-1.61	.33	-.38 ^b	2.56 ^b	-.97 ^b	2.00 ^b	.19	1.74 ^b	-.78 ^b
2. Puerto Rico, 1955-67 (Lluch) ^c	.49	-.50	1.06	-.86	.94	-.78	.98	-.80	1.43	-1.11	1.68 ^d	-1.34 ^d
3. Developing Countries ^f (Weisskoff) e 16 LDC	1.07	-.88	.79	-.55	.39	-.31	.93	-.55	1.27	-.41	.99	-.64
4. Developing Countries (Lluch) 4 LDC \$1,000 - 1,500 per cap.	.67	-.40	1.09	-.53	.93	-.52	1.70	-.75	1.60	-.73	1.26 ^d	-.65 ^d
5. Budget Shares for Puerto Rico												
1940	49.0		11.1	10.4			13.7		5.7		10.2	
1950	45.2		9.9	10.1			12.3		7.0		15.6	
1960	37.5		10.3	9.8			13.4		9.6		19.4	
1970	26.2		11.1	11.2			17.1		12.0		22.5	
1977	25.4		10.6	12.7			15.0		12.2		24.0	

Notes: ^aSignificantly different from zero at 90 percent level.

^bSignificantly different from zero at 95 percent level.

^cCoefficients derived from estimated parameters. Only R-squares and Durbin-Watson statistics given.

^dElasticity derived by weighting estimates for personal care, recreation, and other services by their respective budget shares given in Table 3.3, p. 40.

^e"Within countries" model for short-run variations. Population included as a third explanatory variable but coefficient omitted in this table.

^fAll coefficients significant at 95 percent level.

Models, Variables, and Sources:

lines 1 and 3: Elasticities estimated directly from first-differences of the logs of per capita variables taken around the mean of the first differences. Population entered as a third variable. From Weisskoff, "Demand Elasticities for a Developing Economy" (1971), Table 14.8, rows 6 and 1.

lines 2 and 4: Elasticities calculated from estimated parameters in the Extended Linear Expenditure System (ELES). See Lluch (1977), Table 3.12-3.13, rows 10 and 20.

line 5: Calculated from Puerto Rico, 1978 Governor's Report, Table 11. Budget shares comparable to the categories above.

Food includes Alcoholic Beverages and Tobacco. Durables include Household Operations and Miscellaneous. Services includes Personal care, Medical care, Business services, Recreation, Education, Religious organizations, and Foreign travel.

How do the elasticities for Puerto Rico compare to estimates for other developing countries? The Puerto Rico coefficients of the present author (lines 1 and 3) indicate a lower expenditure elasticity for food relative to the pooled 16 country sample, but higher expenditure elasticities for durables, transport, and services than the pooled coefficients. This might be the result of the higher income in Puerto Rico relative to the other sampled countries and to the particular life-style of that Island. The Lluch (1977) sample of four countries is more homogeneous in income range but not necessarily in life style.¹⁰ His expenditure elasticity for durables in Puerto Rico is lower than the pooled pattern, but his expenditure and price elasticities for services in Puerto Rico are higher than the four country sample (lines 2 and 4). Despite these differences, it may be safe to conclude that the Puerto Rican expenditure elasticity of demand for services is high, perhaps close to two, while the price elasticity is significant and probably closer to unity.

A third study done by a Puerto Rican scholar working in the U.S., provides more detail on service subcategories (Table 3A). Espadas (1970) has estimated high expenditure elasticities of demand for personal care, transportation, religious organizations, and foreign travel and significantly high price elasticities for personal care and foreign travel. The changes in the expenditure shares (Table 3A, cols. 3-6) indicate increases in almost all categories of services, except for medical care, with the most notable gains in the shares spent on transport and recreation.

¹⁰ The four include Ireland, Puerto Rico, Italy, Israel, and the U.K. Weisskoff's (1971) sample includes Nigeria, Rhodesia, Jamaica, Puerto Rico, Honduras, Ecuador, Peru, Dominican Republic, Thailand, Ceylon, Korea, Israel, Taiwan, Greece, and Ireland.

Table 3A: Income Elasticities for Puerto Rico, 1947-65

	Income- elasticity	Price- elasticity	Budget Shares		
			1947	1956	1965
1. Food and Tobacco	.46 ^a	.04	47.9	42.9	33.9
2. Clothing	.69 ^a	-.23	9.6	9.8	11.3
3. Rent	.54	.73 ^a	8.4	10.2	10.0
4. Housing Operations	.68 ^a	-.29	10.1	12.1	13.4
5. Services					
a. Personal Care	1.10 ^a	-3.32 ^a	2.0	1.6	2.5
b. Medical Care	.46	.42	3.6	4.1	3.8
c. Personal Business	-	-	.9	1.0	2.4
d. Transportation	1.52 ^a	.27	6.5	8.9	11.9
e. Recreation	.86 ^a	.69	5.8	6.5	8.7
f. Education	-	-	.5	1.0	1.5
g. Religious Org.	1.03 ^a	.89 ^a	.2	.3	.3
h. Foreign Travel	2.09 ^a	-1.87 ^a	3.7	3.9	5.4
6. Broad Categories					
a. Durables	1.25 ^a	-.20	6.7	10.3	15.3
b. Non-durables	.57 ^a	.08	65.8	60.6	53.2
c. Services	.66 ^a	.22	27.5	29.1	31.3

^a Significant at the 95 percent level.^b Parallel categories not available from published data.

Sources: Orlando T. Espadas, "Consumption Patterns" (1970). Elasticities from Table 7, p. 46, constant and Ag.-Nonag. coefficients omitted. Budget shares from Table 6. Budget shares for 1977 calculated from 1978 Governor's Report, Table 11.

Table 3B: Significant Changes in Elasticities for Services

	A 1947-55		B 1956-65		C 1947-65	
	income	price	income	price	income	price
33. Stationery and writing supplies	-.49	-.90	.88 ^a	-.75 ^b	.24	-.65
34. Miscell. household paper products	1.77 ^a	.42	-1.74 ^a	-1.03 ^a	.51	-.93 ^a
42. Telephone	2.59 ^a	-.64 ^a	.32	.22	1.68 ^a	-.74 ^a
46. Parcel post imports	1.81 ^a	.64	-1.04	.90	.60	.28
54. Accident and health ins.	.85 ^b	-.05	3.74 ^a	-.35 ^a	2.06 ^a	-.35 ^a
63. New cars	3.15 ^a	-5.97 ^a	-.03	.01	2.39 ^a	-1.53 ^b
67. Oil	1.00 ^b	-3.49 ^a	2.80 ^a	.06	2.11 ^a	-.59
68. Auto insurance	1.89 ^a	-1.33	.99	-.87 ^b	1.75 ^a	-.74 ^a
70. Públicos and taxis	.51 ^a	.96 ^a	1.83 ^a	.93 ^b	.95 ^a	-.19
76. Magazines and newspapers	2.08 ^a	-.57	-.53	.02	1.16 ^a	-.43 ^b
82. Photographic studios	-.32 ^a	.01	-.07	.04	-.68 ^b	.19 ^b
93. Foreign travel	.91 ^a	3.78 ^a	3.00 ^a	-2.82 ^a	2.09 ^a	-1.87 ^a

^a Significant at 95 percent level.^b Significant at 90 percent level.

Sources: Espadas (1970), double-log model. Coefficients of constant and Nonag./Ag. population variables omitted. Columns A, B, and C are from Appendices B, C, and A, respectively. The equation for which differences between the two periods are significant are indicated in text Table 10, p. 51.

Espadas' (1970) study is of special interest because it provides evidence as to shifts in expenditure patterns during the course of the 1947-1965 period. By estimating regression equations for each period and by comparing the coefficients to the equation for the overall period, Espadas finds very few significantly different elasticities. Those that do show significant shifts during the 1947-65 period, however, are concentrated in the service sector (see Table 3B). For example, Espadas finds a significant rise in the expenditure elasticities of demand for accident and health insurance, públicos and taxis, and foreign travel.¹¹

Consumption Expenditure: Cross-Sections

A second major source of consumption expenditure data is from budget surveys. The present author has studied the 1963 family survey (see Appendix A for a summary of that survey). Here, we present a summary of those findings.

The budget shares for 1963 and the time series of shares from the national accounts expenditures for the three aggregated sectors are presented for comparison (Table 4). Since the national accounts categories could not be disaggregated ("transport" is a mixture of manufactures and services, as is "household operations"), we can little more than underscore the increasing share of services, foreign travel, and the "hybrid" category as well. The 1963 budget shares, however, emphasize the declining importance of food and the rising share of manufactured purchases from the low to middle income groups (\$1,500 - 5,000 per family). Among the higher income families, the food share continues to decline and the services share rises significantly.

¹¹ No Durbin-Watson statistics are presented and the fits are unusually high.

Table 4: Budget Shares Over Time for Three Major Sectors, 1940-1977

	Food	Manufactures	Services	Hybrid ^a	Foreign travel	Totals ^b
1940	49.0	12.3	19.3	18.1	1.3	100.0
1950	36.2	20.0	23.0	18.2	2.7	100.0
1960	29.6	18.1	25.4	23.1	3.8	100.0
1970	19.9	19.5	27.8	26.9	5.9	100.0
1977	20.3	17.0	32.0	25.9	4.7	100.0

Budget Study--1963

All heads	41.7	23.9	35.8
By income level			
low	48.3	19.6	33.8
medium	41.5	25.8	33.9
high	28.8	26.9	45.7

^aIncludes Household operations, which includes furniture purchases as well as service items, such as heat and light, also Transportation includes new car purchases, together with taxis and public transit.

^bMay not sum due to rounding.

Food: includes food and beverages.

Manufactures: includes alcoholic beverages and tobacco; clothing and accessories; miscellaneous.

Services: includes personal care, housing, medical care, business services, recreation, and religious organizations.

Hybrid: includes household operation and transportation.

Source: Calculated from Puerto Rico, 1978 Governor's Report, Table 11, for 1940-1977. Budget study shares calculated from raw data of the families.

Table 5: Expenditure Elasticities for Three Sectors by Income Level, 1963 (All Puerto Rico)

Demand for:	Income level	β_1 Expend. elasticity	β_2 Urban/rural dummy	β_3 Wage/Nonwage dummy	d_1 Constant	R^2	# cases ^b	$\sum \beta_i [C_i/E]$ Sum Exp. Elast. ^a	P-Ratio income levels
All families:									
1. Food	all	.757	-.085	.094	.686	.552	2158	1.015	
2. Manufactures	all	1.162	-.065	.192	-2.706	.698	2158		
3. Services	all	1.178	.128	-.170	-2.287	.871	2158		
By income level:									
4. Food:	low	.912	-.109	.015*	-.216	.501	392	1.012	6.27**
	middle	.765	-.071	.116	.620	.384	996	1.003	
	high	.706	-.003*	.073	.940	.515	770	1.003	
5. Manufactures:	low	1.003	-.133	.266	-2.271	.465	392		33.86*
	middle	.956	-.062	.100	-1.175	.536	996		
	high	.863	-.088	.049*	-.271	.575	770		
6. Services:	low	1.076	.146	-.133	-1.619	.687	392		15.08*
	middle	1.295	.122	-.144	-3.144	.830	996		
	high	1.243	.120	-.108	-2.763	.906	770		

Form: $C_i = \alpha_i + \beta_1 \log E + \beta_2 D_1 + \beta_3 D_2 + \nu_i$
 C_i = consumption expenditure per person;
 E = total consumption expenditure per person;

D_1, D_2 = dummy variables.

*Significant at 90 percent level.

**Significant at 95 percent level.

Notes: "°" indicates insignificant coefficient at 90 percent level.

D_1 is unity for urban families; zero for rural.

D_2 is unity for wage earning heads; zero for nonwage earners.

α_i refers to weighted sum of expenditure elasticities of the three sectors for all families (line 1) and for different income levels (lines 4a-c).

The expenditure elasticities for the three sector model (Table 5) follow the broad time series pattern in that the food coefficient is less than unity (line 1, col. 1), but the manufactures and service expenditure elasticities are high and similar in value (1.2). The coefficients on the dummy variables (all are significant) suggest that rural families spend more on services and less on food and manufactures, while wage earners spend less on services and more on the first two categories. That the weighted sum of the elasticities is close to unity (col. 7) indicates the log-log model gives a reasonable estimate of the expenditure system without constraining the coefficients to pre-specified ranges.

The elasticities estimated from families stratified by income (Table 5, lines 4-6) show a clear fall in the food and manufactures elasticities as income rises. The expenditure elasticity for service at first rises with the middle income level and then declines slightly with the highest strata, which gives the best fit of all.¹²

The three sector model is further disaggregated into ten categories (Table 6) and the appropriate form tested with total expenditure as the single explanatory variable. Of the five forms tested here, only the log-log form assumes a constant elasticity over the entire range. These elasticities are presented in col. 1 and are compared to the elasticities estimated at the mean expenditure and consumption of the other forms. The magnitudes of the differences between the estimated elasticities suggests that some forms may be less appropriate than others for each category of expenditure.

¹²The significance of the differences between the coefficients of the overall category equation and the income-stratified equations (lines 1 and 4, 2 and 5, 3 and 6) is confirmed in F-ratios presented in col. 8).

Table 6: Comparative Elasticities for Five Forms, Consumer Expenditures for 1963.

Category	Elasticities					R ²					# cases
	1	2	3	4	5	1	2	3	4	5	
	log-log	log-inverse	semi-log	linear	hyperbola	log-log	log-inverse	semi-log	linear	hyperbola	
1. Food	.69	.29	.72	.53	.22	.77*	.64	.68	.72	.39	769
2. Alcoholic Beverages & Tobacco	.72	.28	.86	.63	.27	.25*	.18	.18	.20	.10	507
3. Clothing	.92	.34	.93	.69	.25	.69*	.54	.51	.54	.28	765
4. Housing	1.12	.40	1.34	1.28	.30	.80*	.63	.48	.76	.22	773
5. Furniture	.77	.40	1.22	1.39	.39	.23	.21	.14	.34*	.06	652
6. Medical Care	.77	.29	1.05	.97	.26	.36*	.28	.10	.15	.05	695
7. Personal Services	1.43	.51	1.02	1.58	.36	.79*	.58	.41	.70	.16	760
8. Auto Purchases	.92	.34	.80	.80	.23	.26	.20	.26	.29*	.14	107
9. Auto Operating	.83	.43	.79	.67	.31	.46*	.41	.35	.37	.20	283
10. Other Transport	.84	.29	1.50	1.27	.35	.33	.20	.24	.36*	.08	569

equation elasticity

Forms: 1. log-log: $\log C_1 = \alpha_1 + \beta_1 \log E$ 2. log-inverse: $\log C_1 = \alpha_1 + \beta_1/E$ 3. semi-log: $C_1 = \alpha_1 + \beta_1 \log E$ 4. linear: $C_1 = \alpha_1 + \beta_1 E$ 5. hyperbole: $C_1 = \alpha_1 - \beta_1/E$

Method: For each form, coefficients for total expenditure, urban-rural dummy, wage/nonwage dummy, and constant term were estimated: $C_1 = f(E, D_1, D_2)$. Elasticities were then estimated at the means of the relevant variables.

The double-log form (col. 1), is convenient to estimate, demonstrates reasonable coefficients across the range of categories, and fits the best in a majority (7 of 10) of cases. (The highest R^2 are indicated by an asterisk in cols. 6-10.) The log-log elasticities are less than unity for all categories except housing and personal services. Both the semi-log and linear (cols. 3-4) forms indicate high elasticities also for furniture, medical care, personal services, and other transport (lines 5-7, 10).

Expenditure Patterns for Socio-Economic Groups

A more comprehensive view of family expenditure should seek to identify the full range of social and economic variables which, in addition to income level, influences the distribution of consumption. Especially under circumstances of rapid social change, we expect family size, occupation, location, and social characteristics in some way to influence private consumption. An alternative approach might seek to characterize income and expenditure levels in terms of a particular constellation of social traits. It could be argued that each family's budget would then be divided among categories based on total income, yielding an additive set of elasticities.

The view adopted here is the former, namely that socio-economic variables enter directly into the expenditure relationship and that decisions by the family to make specific purchases are themselves socially-determined made on the basis of considerations other than total budget.¹³ Furthermore, the importance of installment purchases for durables and the general pressure on the middle income groups to maintain a U.S. style of consumption at lower absolute incomes suggest that socio-economic variables ought to be included

¹³See Gordon Lewis (1968), Ch. 9, "Class and Community" for his caricature of living patterns.

directly in estimating the expenditure relationship category by category.

The expenditure equation is of a double logarithmic form extended with a set of additional variables:

$$\ln C_i = \alpha_i + \beta_{1i} \ln E + \beta_{2i} \ln D + \sum_j \gamma_{ji} X_{ji} + \sum_k \rho_{ki} \ln Z_{ki} + \mu_i$$

where C_i is consumption expenditure per consumer unit on the i -th category, E is total expenditure per consumer unit, D is net increase of indebtedness incurred by the family for specific consumption uses during the year. X_{ji} refers to a set of dummy variables which identify locality, occupation and sex of the head of household. A final group of variables, Z_{ki} , appear in log form and refer to family size and education of head. The specific variables appear in the headings of Table 7. For each class of consumption, only significant variables have been retained in the final estimating equation.

Of the expenditure elasticities of demand in column 1 of Table 7, the coefficients for food, alcohol and tobacco, and housing are significantly less than unity. The highest expenditure elasticities are found for furniture, personal services, and transportation. The low elasticity of demand for housing may reflect the availability of low-interest Government mortgages.

The second coefficient, β_{2i} , is a measure of the elasticity of expenditure with respect to overall indebtedness incurred for all consumer purchases. The family may be able to increase its purchases of specific durables because available credit brings its acquisition within the immediate range of the family's budget. Only the "debt-elasticity" of demand for furniture is significantly positive, a category notorious for selling on installment plans. Medical services and transportation (which includes auto purchase and operation) demonstrate inelastic but positive coefficients.

In examining the measure of the socio-economic variables on spending patterns, we may focus on the direction of influence of each characteristic

Table 7: Socio-economic Patterns of Consumer Demand for Puerto Rico, 1963

Category	Elasticities		Geography		Occupation			Demography			Housing			R ²
	β_1 Tot. exp.	β_2 New debt	Urb. zone	S.J. area	Un-empl.	Mgr. collar	White collar	Log age	Log fam. size	Log educ. yrs.	Ten-ancy	Comp. bath	Log rent incl. elect. rooms	
	710	716	102	103	411	440	441	442	110	511	512	520	541	
1. Food	.79	-.01	-.09	-	-	.07	.05			-.07	.59			.557
2. Alcoholic Beverages & Tobacco	.84	-	-	-					.73		-4.11			.143
3. Clothing	1.15	-.01	-	-.08					-.82	.44	-3.78			.640
4. Housing	.80	-	.13	.12	-.24	-.17	.22	.28	-.09	-.33	-.63	.38	-.18	.762
5. Furniture	1.47	.15	-	-.19					-.19	-.37	-5.92		.16	.378
6. Medical Care	1.16	.02	-	-.37							-4.58			.222
7. Personal Services ^a	1.34	-.02	.22	-	-.09				.19	.10	-5.51			.690
8. Transport	1.32	.02	-.31	-	-.04		.14	.34		.15	-5.64			.515

^a Includes Recreation and Miscellaneous.

All coefficients significant at 95 percent level.

Dummy Variables:

Codes for Dummy Variables: 1 =

urban S.J.
rural non-
metrop.male
femalerents bath yes
owns none no

on each category. For example, families located in an urban zone (unit value for variable 102) spend less on food and transport and more per consumer unit on housing and personal services than rural families. Families residing in the San Juan Metropolitan area spend more on housing and less on clothing, furniture and medical than families living outside the Metropolitan area.

Alternatively, we might be more interested in particular categories and the direction of influence of certain characteristics. Expenditures on personal services, for example, are influenced negatively by the addition of new debts (variable 716) and unemployment of the head (var. 411) and positively by an urban location, a male head of household, family size and educational level of the head. The housing equation (line 4) shows the impact of the most extensive array of variables in a statistical sense. In other words, expenditure on housing relates to a pattern growing out of the differentiated characteristics examined here, while expenditure on the other categories tends to be more homogeneous, at least in terms of these socio-economic variables.

Time Series of Budget Shares

The time sequence of the Puerto Rican budget surveys from the official results of 1941, 1953, and 1963, indicates extraordinary changes, especially when compared to the U.S. pattern for 1960-61. The high shares for food and alcohol (51 percent in urban Puerto Rico in 1941; 69 percent in the rural highlands) reflect the absolute poverty in the early years and the dependence on marketed imports.¹⁴ That share fell to 45 percent in 1953 and 35 percent in 1963.

¹⁴ Hanson and Perez wrote of the 1941-42 living patterns:

Although slightly over half of this expenditure went for food--a much larger proportion than is spent by the average wage earner family in the States--the food purchased was insufficient to provide adequate nutrition...

The main items in the Puerto Rican diet have been rice, which

Table 8: Budget Shares for Puerto Rico, 1941-63, and Comparison to the U.S.

Category	Wage Earners		All Families			
	Puerto Rico urban	Puerto Rico rural	Puerto Rico total	Puerto Rico total	Puerto Rico total	U.S. all families
	1941-42	1941-42	1953	1963	1963	1960-61
	(1)	(2)	(3)	(4)	(5)	(6)
1. Food	50.8	68.5	42.6	32.8	41.7	24.5
2. Alcoholic Beverages & Tobacco			2.7	2.6	7.5	3.3
3. Clothing	8.6	6.2	13.8	11.7	12.3	10.3
4. Housing	14.9	5.6	12.2	13.9	15.5	23.6
5. Furniture	3.4	1.1	6.2	7.1	7.5	5.3
6. Medical Care	5.1	5.0	3.0	3.5	6.0	6.7
7. Personal Services	13.4	9.4	12.6	17.3	8.9	8.8
8. Auto Purchases	3.8	4.2	2.3	11.1	1.0	13.7
9. Auto Operating			1.6		2.1	
10. Other Transport			2.8		3.3	
Average family exp. (\$)	\$571	\$294	\$1,725			\$5,047
Average family size	5.1	5.6	5.0			3.2

Source: cols. 1-2: 1941-42 from Alice Hanson and Manuel Perez, Incomes and Expenditures of Wage Earners in Puerto Rico, P.R. Dept. of Labor, 1947, Table 17, pp. 34-37.

3: 1953 from P. Rico Dept. of Labor, Income and Expenditure of Families in Puerto Rico in 1953, Report A-4, Table 1, p. 14; and Table 7, p. 21.

4: 1963 from P. Rico Dept. of Labor, Income Expenditure of Families in Puerto Rico, 1963, Report 4A, Table 4-A, p. 5.

5: 1963 from raw data of survey.

6: U.S. Dept. of Labor, Consumer Expenditures and Income, 1960-61, BLS Report No. 237-93, Feb., 1965, p. 2.

The gradual rise in the expenditure share on clothing from 9 and 6 percent in 1941 to 14 percent in 1953 and 12 percent in 1963 may reflect the switch from home-made to factory-made garments. The rising shares devoted to housing from 12 percent in 1953 to 14 percent in 1963 may reflect the increasing urbanization and apartment rentals, although the Puerto Rican shares for all years are still considerably below the 24 percent share in the U.S. for 1960-61.

The rise in the furniture share from 3 percent in 1941 to 6 percent in 1953 and 7 percent in 1963 reflects the shift toward appliances, while the low and stable proportion on medical care (3 percent in 1953 and 3.5 percent in 1963) may reflect the improvements in public health care. The budget shares spent on personal services increased from 13 to 17 percent over the decade and the share of transport expenses rose from 6.7 to 11.1 percent from 1953 to 1963.

Striking comparisons may be drawn between the 1963 official budget shares (col. 4) and the U.S. shares for 1960-61 (col. 6). In contrast to Puerto Rican families, U.S. families spend greater shares of their budgets on housing and transport, and less on food, clothing, furniture, and personal services. These proportions may have changed significantly in the past 15 years for Puerto Rico, although no recent budget surveys have been administered.

was almost entirely imported; beans, of which about 60 percent were imported, and salted codfish, all of which was imported...

The great difficulty these families had in making ends meet is indicated by the large amount of their indebtedness in relation to their incomes...The debt for food alone represented more than 4 percent of average earnings and over twice as much as one week's cash income...

...about 70 percent of the value of foods consumed by all Puerto Rican wage earners was purchased. Over 15 percent was received in the form of food as pay, gift, or relief, and 13 percent was home produced....

...the diets of Puerto Rican wage-earner families are poorly balanced...As compared with the standards set by the National Resources Planning Board..., they were markedly deficient in high-grade proteins, calcium and in vitamins A, C, and riboflavin.

International Comparisons

How do the consumption patterns of the Puerto Rican families, estimated from the 1963 budget survey, compare to expenditure elasticities estimated from other developing countries? The Puerto Rican coefficients do fall within the general patterns: the food, alcohol, and housing coefficients are less than unity, and the clothing, furniture and service elasticities are all greater than unity (Table 9, lines 1-10). Puerto Rico's housing coefficient (.80) is lower than most other studies, except Ireland, 1965-66 (.57) and considerably lower than the four Latin American cities (line 10a-d). The personal service elasticity for Puerto Rico (1.35) is lower than the other budget surveys, except for Nairobi (1.26) and higher than the "other" category for the four Latin American cities. Puerto Rico's transport elasticity (1.32) is higher than Buenos Aires and Nairobi, but lower than the other coefficients.

In one sense, the estimates for Puerto Rico are far more comprehensive than those reported in the other surveys, as many socio-economic dimensions are accounted for in the Puerto Rican case. All coefficients implicitly represent the expenditure changes when all other characteristics, from relative prices to social composition, remain unchanged. The Puerto Rican equations merely specify the parameters, while in the other countries, the effects of these dimensions are included in the elasticities themselves. Yet, as in most of modern economics, the wrong variables are held constant, for these variables, such as residential location, age and occupational structure, and housing characteristics, may indeed be the most dynamic. Rather than pay all the attention to expenditure elasticities, perhaps far greater stress should be placed on the socio-economic characteristics of consumption and how these become transformed during a country's growth.

Table 9: International Comparison of Expenditure Elasticities

	1	2	3	4	5	6	7	8
	Food	Alcohol, & Tobacco	Clothing	Housing	Furniture (Durables)	Medical	Personal Services	All Transport
1. Puerto Rico, all	1963	.79	.84	1.15	.80	1.47	1.16	1.32
2. Argentina	1963	.50	-	.98	.75	2.13	-	.89
3. Ireland	1951-2	.61	.87	1.58	.72	2.00	1.40	2.13
4.	1965-6	.51	.96	1.14	.57	1.20	1.95	2.00
5. Israel	1963-4	.52	-	1.10	.98	2.04	1.84	-
6. Mexico	1963	.81	-	.69	1.20	2.11	-	-
7. Jamaica--metrop.	1957	.55	1.19	1.00	1.18	1.56	2.42	1.69
8. Jamaica--rural	1957	.86	1.49	1.22	.94	2.05	1.54	1.71
9. Nairobi	1963	.48	1.11	1.64	.83	1.95	1.20	1.16
10. Latin American cities						Other:		
a. Bogotá	1967-8	.82	-	1.09	1.00	1.13	1.01	
b. Caracas	1966	.71	-	1.05	1.05	1.23	1.18	
c. Guayaquil	1967-8	.86	-	1.10	1.12	1.26	1.08	
d. Lima	1968-9	.64	-	1.10	1.07	.97	1.07	

Sources: line 1: Weisskoff, present study, Table 7.

2: OAS, (1963), Ch. VI. Income, not expenditure, estimates for Buenos Aires.

3-4: Pratsche (1969), Table 7, pp. 10-17.

5: Liviatan (1964), Table 1, p. 15.

6: Banco de Mexico (1966), Table 32, p. 407.

7-8: Harris (1964), Tables 6-7.

9: Massell and Heyer (1969), Table 2, p. 218.

10: Howe and Musgrove (1977), Tables 7.10-.13, pp. 182-5.

Conclusions

Three broad classes of conclusions remain to be noted. The first deals with the distribution of expenditure and the possible impact of redistributing income on consumer demands. The second deals with altering the expenditure patterns directly and the impact of the Federal Food Stamp Program. The third set of conclusions deals with the differences between effective consumer demands, as revealed through their expenditures, and basic human needs, which, in finding an adequate expression through the market, are consistently overlooked in the kinds of budget analyses performed here.

The Distribution of Expenditures

The emphasis thus far--both in our review of the Puerto Rican studies and in the international comparisons--has fallen on aggregate expenditure patterns. The time series data have addressed the aggregate tendencies without regard to changes in the microeconomic structure, except insofar as these affect the global aggregates. Even in the detailed study of the Puerto Rican cross-sectional budget data, we still have confined our analysis to countrywide events, while appending a wider range of financial, demographic and social characteristics relating to the global patterns.

Nevertheless, in every society, conflict persists over the disposition of the fruits of that society, both in terms of income and the consumer goods which are available. We would expect the conflict to be especially acute in a society such as Puerto Rico in which changes in income have been occurring rapidly and actual physical displacement of its citizens has taken place on a massive scale.

The usefulness of the Engel curves and the emphasis on expenditure patterns as an analytic tool obscure the real conflicts over pieces of the

economic pie. The smooth curves gloss over the severe differences in the standards of living within a society and tend to eradicate these differences, leaving a single family of curves for all people. The only conflict in this analysis is whether the form of the "gloss" is hyperbolic or logarithmic, while the true hyperbole lies in the degree of homogeneity that the "family" of Engel curves depicts. A more realistic view of the underlying heterogeneity may be seen when the array of these summary Engel curves are juxtaposed to the distribution of the people and the expenditures from which those very curves are constructed, as in Figure 1.

The traditional Engel relationships are sketched in the top part of the figure. Despite the varying slopes and upward reaches of some of the functions in the highest income classes, two-thirds of the population, which accounts for 31 percent of the income and 39 percent of expenditures, are to be found among the very poorest four classes. In the lower part of Figure 1, we plot the corresponding expenditure levels and number of people whose habits are summarized in the Engel curves in Part A. In all ways, the distributional curve underlies the "visible" consumption pattern.

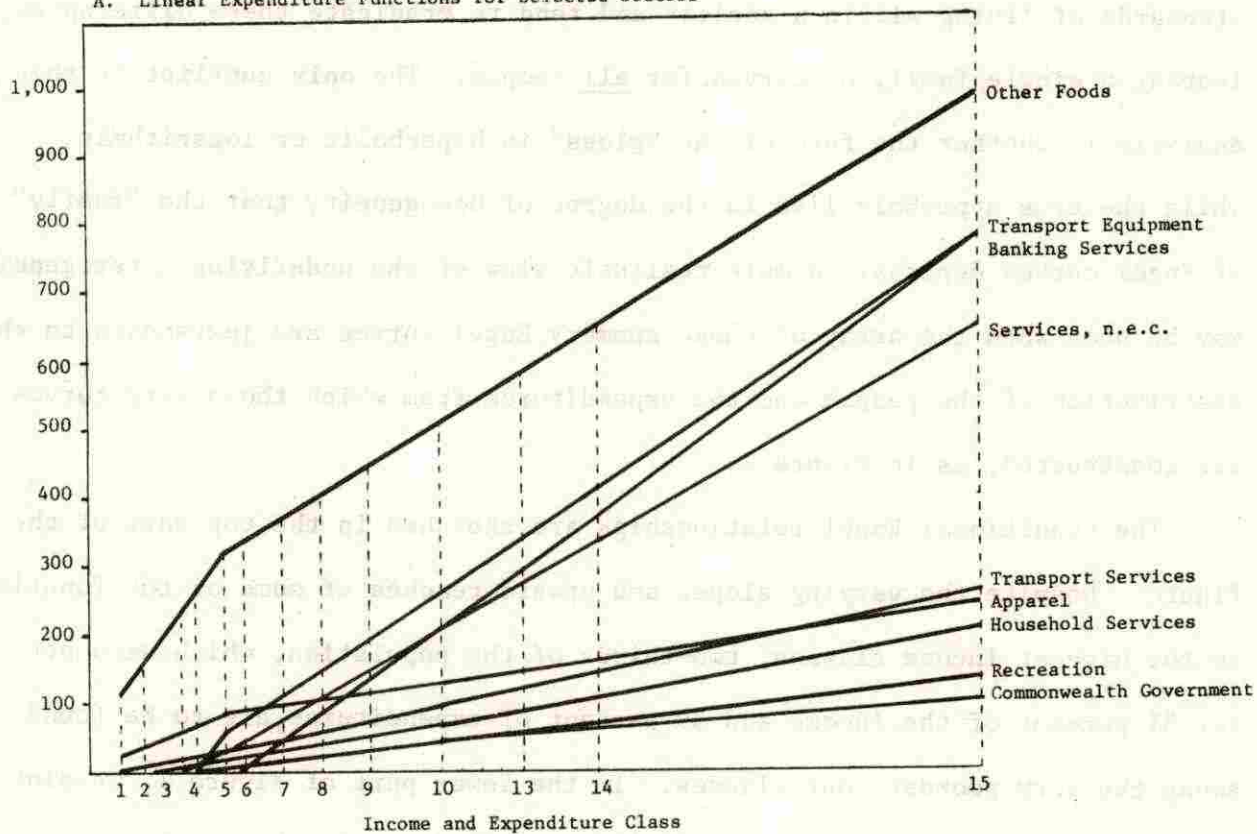
It may be remarked that the distribution of expenditure is less unequal than the distribution of income (see Table 10) and therefore less cause for concern. Such observation blantly ignores the desperation associated with poverty in Puerto Rico, the consequences of indebtedness, and the pressures, real or fancied, to consume. Rather than compare the distribution of consumption relative to incomes, as is customary in Lorenz curve analysis, the distribution of the income is superimposed on the corresponding consumption shares (see Figure 2). The area between the two curves for each \$400 interval reflects the net indebtedness of each income group.

Another way of investigating the class-character of consumption is to utilize the Engel-format, estimate global functions, but then return to the

Figure 1

Expenditure Functions and the Distribution of People

A. Linear Expenditure Functions for Selected Sectors



B. Distribution of Population by Expenditure Level

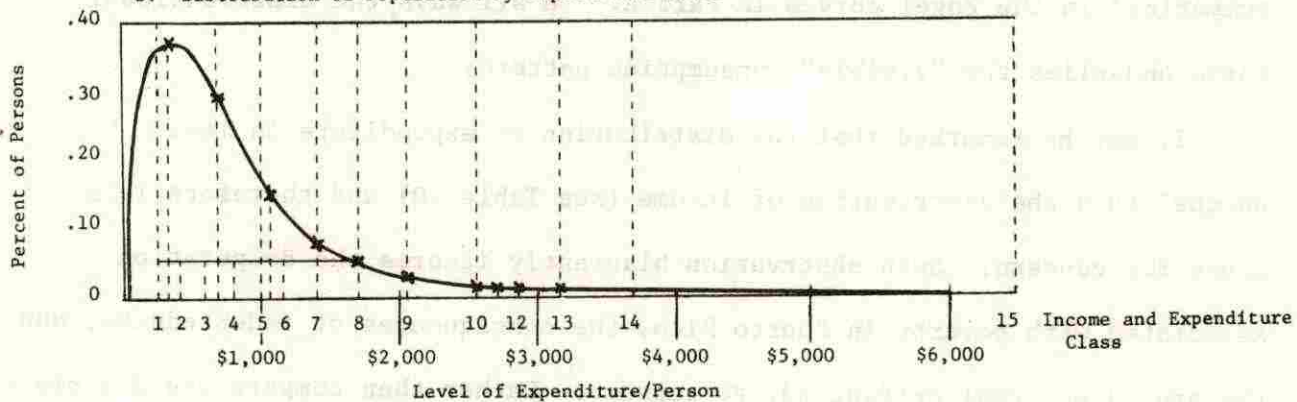
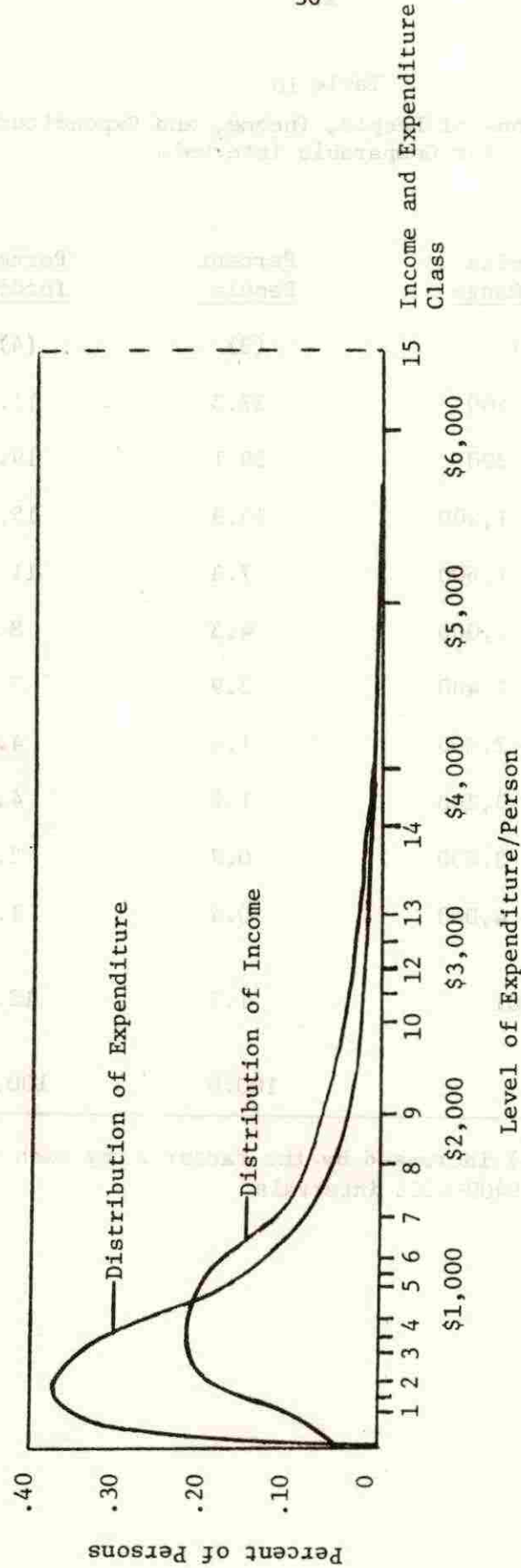


Table 10
Distributions of People, Income, and Expenditure
for Comparable Intervals

<u>Income Class</u>	<u>Per Capita Income Range</u>	<u>Percent People</u>	<u>Percent Income</u>	<u>Percent Expenditure</u>
(1)	(2)	(3)	(4)	(5)
1-2	\$ 1 - 400	37.3	11.5	16.4
3-4	401 - 800	29.1	19.2	22.7
5-6	801 - 1,200	13.9	15.9	16.6
7	1,201 - 1,600	7.3	11.8	9.9
8	1,601 - 2,000	4.3	8.8	7.0
9	2,001 - 2,400	2.9	7.4	5.6
10	2,401 - 2,800	1.4	4.4	3.7
11	2,801 - 3,200	1.2	4.1	3.3
12	3,201 - 3,600	0.7	2.7	1.9
13	3,601 - 4,000	0.4	1.8	1.2
14-15	> 4,001	1.5	12.4	7.9
Totals		100.0	100.0	96.2

Note: Column 5 = (col. 4) increased by the factor λ by each income class prior to aggregation to \$400-wide intervals.

Figure 2
Distributions of Population and Expenditure by Corresponding Income Levels



social groups and the expenditure proportions unique to each class. This line of analysis, in fact, was pursued by the present author in order to incorporate the consumption characteristics of each income class into a multi-sectoral simulation framework.¹⁷

The results of this analysis are summarized here (Table 11). In this form, the family expenditures are reclassified by their input-output sector, and the distribution of total expenditures across the sectors for each of three classes (cols. 1-3) incorporates the results of the linear expenditure functions with varying threshold intercepts.¹⁸ We note that the share of expenditures on primary sectors declines from 65 to 22 percent of consumption as per capita income rises, while the share of expenditure on services rises from 18 to 56 percent from the lowest to the highest class. The share of expenditure on the 14 durables sectors is relatively stable around a fifth of total expenditure across the income classes.

The distribution of the import leakage due to the direct imports to consumption by class are summarized in cols. 5-7 of Table 11. These shares of direct openness reflect the changing importance of spending on the three broad sectors and the relative openness of each sector. We note that imports

¹⁷ See Weisskoff, Colonial Industrialization in the Caribbean (forthcoming). The link between families and their expenditure on all goods was investigated directly and in considerable depth by econometric study of the original expenditure records of 2,659 families on an array of nearly 900 different items specified for each family member for the year 1963. The richness and detail of these primary observations permitted the reconciliation in its original form of the expenditure on items that a family actually purchased with the industry which actually produced the commodity. (A summary of the reconciliation and alignment of the input-output sectors with the budget survey items is provided in the Appendix B.)

¹⁸ See Appendix B for Methodology, and Appendix C for coefficients and statistical tests. Note in text Table 11 that the Overall Economy row for cols. 1-3 represent the weight of expenditure of these income classes relative to all classes. Per capita expenditure on goods of all sectors for all income classes appears in Appendix D.

Table 11

Distributions of Expenditures and Imports (Household Openness) for Three Consumption Patterns

Sector ^a	Distribution of Expenditures by Sector ^d			η_{ie} Expenditure Elasticity at mean ^e	Distribution of Direct Household Imports by Sector			Direct HH Import Total HH Expend. ^f
	Class 1	Class 5	Class 15		Class 1	Class 5	Class 15	
Overall Economy: 49 Sectors	3.4	9.8	6.0	.98	41.8 ^f	35.2 ^f	28.1 ^f	39.7
13. Primary Sectors, 1-13	65.0	47.2	21.9	.44	56.6	45.1	28.5	52.3
14. Durables Sectors, 14-27	18.9	22.0	21.9	.94	30.2	36.1	45.7	62.9
22. Service Sectors, 28-49	16.3	29.8	56.2	1.57	13.3	18.9	25.8	13.2
Primary Sectors								
1. Agriculture, n.e.c. ^b	.3	.4	.3	.77	3.8	4.6	4.6	27.1
4. Alcoholic Beverages	.4	.8	.8	.99	.3	.6	.8	7.4
5. Non-alcoholic Beverages	.4	.3	.1	.33	.2	.2	.1	7.5
6. Beer and Malt	.8	.8	.5	.68	.3	.3	.3	3.9
9. Processed Foods	45.2	32.6	15.1	.44	24.2	18.9	11.6	53.2
10. Tobacco Products	1.9	1.3	.5	.36	3.4	2.5	1.3	78.8
11. Textiles	1.6	1.1	.4	.37	7.0	5.1	2.8	80.9
12. Apparel	11.7	8.2	3.6	.41	11.6	8.8	5.1	51.9
13. Leather	2.7	1.7	.6	.30	5.8	4.1	1.9	73.4
Durables Sectors								
15. Furniture	3.3	2.8	1.7	.60	2.1	1.9	1.5	24.4
16. Paper Products	.5	.4	.2	.52	.8	.7	.5	71.7
17. Printing and Publishing	1.1	1.2	.9	.74	.5	.5	.5	26.1
18. Chemicals	4.2	3.1	1.5	.46	8.6	6.9	4.4	56.3
19. Petroleum and Coal	1.4	2.1	1.8	.88	.7	1.1	1.2	12.8
20. Mineral Products	.3	.2	.0	.35	.6	.4	.2	65.5
21. Primary Metals	.1	.1	.1	.82	.1	.2	.2	85.6
22. Fabricated Metals	.2	.3	.3	.88	.8	1.3	1.5	85.5
23. Machinery, n.e.c.	.7	.6	.3	.57	1.5	1.3	1.0	79.0
24. Electrical Machinery	4.4	3.3	1.6	.47	7.3	6.0	3.9	69.3
25. Transport Equipment	.0	5.6	12.1	1.69	.0	8.8	25.2	88.4
26. Scientific Instruments	.7	.5	.3	.54	1.3	1.2	.9	37.8
27. Other Manufacturing	2.0	1.8	1.1	.62	5.9	5.8	4.7	70.0
Service Sectors								
29. Construction	.3	.1	1.0	1.08	.0	.0	.0	0.0
33. Transportation	.0	3.0	3.9	1.23	.0	3.8	6.6	17.6
34. Communication	.0	.0	.8	1.15	.0	.1	.2	8.4
35. Banking	.0	.0	12.1	5.79	.0	.0	.0	0.0
36. Insurance	.0	2.2	6.9	2.06	.0	1.9	8.0	75.7
37. Real Estate	7.6	6.4	3.7	.57	.0	.0	.0	0.0
38. Personal Services	3.1	3.9	3.2	.81	.0	.0	.0	0.0
39. Business Services	.0	.0	.0	.49	.0	.0	.0	0.0
40. Medical Services	.5	3.1	3.7	1.14	.0	.0	.0	0.0
41. Services, n.e.c.	.0	3.0	10.0	2.07	.0	.0	.0	0.0
42. Hotels and Restaurants	.0	.5	2.4	2.43	.0	.0	.0	0.0
43. Recreation	.0	1.4	2.0	1.31	.0	.0	.0	0.0
44. Electricity and Gas	2.6	2.2	1.3	.58	.0	.0	.0	0.0
45. Water and Sanitation	.9	.8	.5	.63	.0	.0	.0	0.0
46. Commonwealth Government	1.1	1.7	1.5	.88	.0	.0	.0	0.0
47. Household Industry	.0	1.3	3.1	1.79	.0	.0	.0	0.0
48. Federal Government	.2	.2	.1	.64	13.3	13.1	11.0	82.3
Totals ^c	100.0	100.0	100.0	-	100.1	100.1	100.0	-

Notes: a. Sectors on which household expenditures were recorded in the 1963 Budget Survey.

b. "Not elsewhere classified."

c. Totals may not sum to 100.0% due to rounding.

d. Totals for "overall economy" (line 1) represent the weight of total expenditures for each income class/all income classes calculated on a per capita basis.

e. Totals for "overall economy" and sectoral aggregations (lines 1-4) are weighted by the average expenditure (per person) on each sector.

f. Share of direct imports/total expenditures on all sectors.

of the first thirteen primary sectors as a share of total household imports decline with rising per capita income despite the heavy import bias of these sectors. The share of aggregate service sector imports rises from 13.3 percent of household imports for the lowest class to 25.8 percent for the highest class (Table 11, line 4). Imports of services accounted for 13.2 percent of total household expenditure on those sectors (col. 8), a fraction considerably lower than the 52.3 percent share for the primary sectors and 62.9 percent for the durables sectors. These shares reflect the joint effects of the pattern of Engel curves and the direct import openness of the sector itself.

The insurance sector (row 36) may be seen as further example. From the Engel patterns, we note that the lowest class 1 consumer spends effectively an insignificant share of his total budget on insurance (col. 1, row 36), compared to 2.2 percent and 6.9 percent for classes 5 and 15, respectively (cols. 1-3, row 36). The overall elasticity for household expenditure on insurance is 2.06 (col. 4), and spending on this sector accounts for 1.9 percent and 8.0 percent of total imports of classes 5 and 15, respectively (cols. 6-7). Of the total household consumption of insurance, 75.7 percent is imported (col. 8), the remainder supplied locally. A similar analysis can be followed for each sector and for the aggregates.

It should be noted that the import openness of consumption and the class character of expenditure say nothing about the indirect import content or the domestic interindustry multiplier of each sector. The magnitude of this local impact must be traced through the input-output system. What is important here, however, is the extent to which household demand gets siphoned off by imports before the expenditure ever gets channeled into the Island's economy.¹⁹

¹⁹For analysis of the interindustry leakages, see Weisskoff and Wolff (1977).

Conclusions: The Food Stamp Program and Consumer Demand

It is perhaps the extension of the Federal Food Stamp Program to Puerto Rico more than any other single event that may have altered expenditure patterns in recent years. Set up using similar qualifying standards that apply to the 48 continental states and Washington, D.C.,²⁰ Federal transfers to Puerto Rico for food stamps in fiscal year 1976 totaled \$629 million and amounted to 9 percent of Puerto Rico's total disposable income for the year. 1,672,000 people or 53 percent of the population participated in the subsidy program, which absorbed more than 10 percent of the resources devoted to the entire U.S. program for the year²¹.

Analyzed in conventional terms, it is thought that families using food stamps "would consume about 30 percent more foods and 1.6 times more nonfood items," estimated from a small sub-sample in 1977.²² The subsidy to low-income families is seen as an income supplement in the face of falling earnings and rising unemployment but of a more complicated nature because of its "tied" nature to food purchases. In the short run, therefore, the enormous inflow of Federal funds ostensibly tied to food would have the effect of shifting families along the relevant portion of their Engel curve and also may shift the curve due to the constraint placed on the use of the subsidy.

But surely the shock of a half-billion dollars in food stamps has been more profound than a pure cash subsidy and a partial shift in the budgets of

²⁰See C. T. Forman, "Food Programs in Puerto Rico," Food and Nutrition Service, U.S. Department of Agriculture (1976), p. 2.

²¹Other food programs which also apply to Puerto Rico include school breakfast and lunch programs, food distribution, programs for summer food and child-care, and non-food assistance and supplemental food programs (WIC), all of which accounted for \$80 million in 1976.

²²See Choudhury (1978), p. 142.

low-income families. Surely, with the freeing up of more disposable cash, we may be observing a movement away from traditional diets toward import-intensive or North American goods of all sorts. Yet little evidence on the entire "reshaping" of consumer demands has been published.

Concluding Speculations

Whatever the explicit expenditure patterns--and their implications for the service sector--there remains the vast area of human needs which are only partially met through market forces in the economic system. Only those needs translated into marketable qualities, either as objects or through people ("services") are ever considered in the kinds of consumption expenditure analyses presented thus far in this paper.

Yet there remains in Puerto Rico a reservoir of such needs which have largely escaped our attention. That Puerto Rico enjoys but 42 percent the U.S. per capita income and that 64 percent of Puerto Rican families earned incomes below the U.S. poverty line in 1970 says nothing about the system of social services, the distribution of collective consumption, and the health, education, and housing needs of her people (see Table 12, lines 1, 5-17). For example, despite the impressive gains in reducing infant mortality over the years, the Puerto Rican rate in 1973 of 24.7 deaths per thousand stood one-and-a-half times higher than the U.S. rate for the same year.

Within Puerto Rico, the availability of basic services also appears unevenly distributed. The Island-wide median level of schooling is barely seven years, and this varies from a median of 11 to 4 years across the range of municipios. Likewise, literacy ranges from 96 to 80 percent and enrollment of school-age children ranges from 92 to 75 percent among the municipalities. The rate of persons to medical doctors ranges from 291 per 1,000 to 15,000, with a median municipio showing 3,195 persons per physician. The death rate

varies from 2.77 to 9.57 per thousand and infant mortality from 10.1 to 54.4 per thousand (Table 12, lines 10-13). Certainly within the Island of the poor, pockets, if not whole regions, of extreme poverty still persist!

Even in terms of housing, rural electrification may have reached 79 percent of families in the most backward areas, but 82 percent of the homes lack some sanitary facilities in the most backward municipios. In half the municipios, more than 18 percent of homes lack running water, and in the poorest of areas, 47 percent of homes still lack water (lines 16-17).

The point here is simple: that for all its growth of income, for all the profits made in Puerto Rico and the enormous capital formed there, for all the outmigration of people to the United States, this particular path of development which links a small economy to the machinery of a mighty industrial metropolis has led to results which now must be openly questioned. Who has benefited from all this "growth"--and who has lost? What has the wealth actually bought for this society, which is now housed--poorly, admittedly--both in Puerto Rico and in the slums of major cities in the United States?

The final irony in terms of the demand for services is that formerly, the need for services enjoyed some relief through outmigration, especially from rural areas, and that movement was thought propitious, especially in light of the vision of the labor-surplus model. That people were leaving Puerto Rico to seek work and make homes elsewhere meant that the casualties of a society would be exported through the "escape valve" and would thus be someone else's problem. Rather than gear up its service sector for the massive outflows that were occurring and attempt to school and train its people for the "jump" to the United States, Puerto Rico has allowed the great differentials to persist. Now that the tides of migration have been reversed,

the Island must face up to the great remedial tasks which this earlier neglect has let compound: to provide the basic needs for people who have suffered deprivation both in their own country and in what once was viewed as the land of promise.

Oh, poor Puerto Rico, Puerto Pobre,
nailed with the nails of torment
by your traitorous sons who hammer
your bones on a cross of dollars.

--Pablo Neruda

APPENDIX A

Expenditure Survey Data, 1963

Detailed budget data for 2,659 households were collected by the Bureau of Labor Statistics of Puerto Rico for the year 1963 from a two part sample designed to blanket the full income range. One third of the households were selected from a list of 1961 income tax returns stratified into seventeen levels according to net income, while the remainder consisted of households chosen from the January 1964 labor force survey, excluding any units in which any member had appeared in the 1961 tax lists. All data refer to expenditures in 1963 and were collected in 1964, using records and repeated interviews. The original data tapes, consisting of 400,000 card impressions, were made available to the author for the purpose of studying multivariate consumption patterns.

The data set available for each family consisted of a possible 900 pieces of information, depending on the complexity and diversity of the families' expenditures and sources of income. Two criteria which differ from the Labor Department procedure were followed in editing and aggregating family data. First, each expenditure category includes the imputed value of goods and services produced by the household, or received in kind as earnings. Food expenditures, for example, include the market value of home grown produce, and clothing expenditures include an estimated value for home made goods and for goods received as partial payment for work. Housing expenditure includes annual repayment of the borrowed principal in the case of home-ownership, net rent in the case of apartments, or the imputed rental value in the case of full ownership.

The second major criterion which guided the aggregation of minor expenditures was the financial situation associated with each of the major commodity

groups. Many purchases are undertaken only because credit is designated for particular commodities, as is typical for housing or consumer durables. This type of "tied" commodity loan thus allows increased expenditure in certain areas without increasing total income, although the availability of the credit may be based on the family's income. The aggregation of individual items was therefore made in such a way as to correspond to those broad categories for which data on "commodity loans" had been gathered.

Constrained by these two criteria of aggregation--the appropriate imputation of consumption in kind and the retention of credit data for broad groups of consumption--a set of sixty expenditure variables were constructed from more than 360 specific coded items for each household in the sample. "Total expenditures" for each family, therefore, include all monetary and nonmonetary consumption, and "total family income" refers to a conventional notion of monetary income but with the additional imputations for income in kind.¹⁵

Since the aims of the Puerto Rico survey of 1963 were to gather comprehensive data on the general living conditions of families as well, more than sixty additional pieces of information were included in the questionnaire. These served to identify each family according to several geographic and social dimensions, emphasizing specific housing and occupational characteristics. Unfortunately, information on individuals within the family group had not been retained, and the researcher must rely solely on characteristics of the head of the family. The completed data set, including the socio-economic and dummy variables, and the different forms of logarithmic transformations for the aggregated consumption expenditures resulted in the construction of 388 variables on the 2,659 cases.

¹⁵Total money income calculated in the survey includes money, wages and salaries, net profits from earned businesses, net income from roomers and boarders, rents, interest and dividends, inheritances, money gifts, lottery winnings, cash settlements, all taken before subtraction of income taxes and after occupational expenses. See Puerto Rico Department of Labor (1963), p. V.

Since these cases were formed from several separate stratified samples, each observation has been weighted by the number of families which each case represents in the universe. These are the same weights ("ponderación") applied by the Bureau of Labor Statistics in tabulating aggregate family expenditures and income. In addition, all expenditure data are deflated by the number of adult consumer units by allowing children under 14 years of age to represent half an adult and infants less than one year to represent one fifth an adult.¹⁶

¹⁶Recent budget studies introduce family size as an explanatory variable without any correction for age composition. See Pratschke (1969), Massell and Heyer (1969), and Massell (1969). Since precise age and sex composition for each family is not available and since consumption data is reported for the family and not for each member, we were unable to standardize expenditures in unit-consumer scales. See Prais and Houthakker (1955), Chapter 9.

Appendix B

Alignment of Sectors and Commodities from 1963 Input-Output with Items from the Family Expenditure Survey, 1963

Input-Output, 1963			Expenditure Survey Items ¹ , 1963	
Sector		Commodity		
No.	Name	Nos.		
01	Agriculture, nec	8, 11	Flower seeds; bulbs; expenses for home-grown foods. Charcoal; firewood; natural flowers; pets.	
04	Alcoholic Beverages	61-3	Wine. Rum; rum in restaurants. ² Other liquor.	
05	Non-alcoholic Beverages	81	Soft drinks.	
06	Beer and Malt	101	Beer in restaurants. ²	
09	Other Foods	177, 185, 188	Pet foods. Ice. All foods; food prepared outside the home at work, school, other ² ; food given as gifts.	
10	Tobacco	191, 193	Cigars; chewing tobacco. Cigarettes.	
11	Textiles	201-2, 204-6	Household fabrics; clothing fabrics; other. Sweaters; hosiery; socks. Rugs; other floor covering. Thread. Oil or plasticized cloth; clotheslines.	
12	Apparel	222-5, 227-8	Specified for women, men, children, and infants and by family member: coats, jackets, suits, dresses, skirts, blouses, shirts, robes, slacks, formal wear, uniforms, work clothes, bathing suits, aprons, bibs, men's and women's underwear, nightgowns, pajamas, dress gloves, work gloves, ties, sports wear, other clothing. Handkerchiefs, kerchiefs, ribbons, garters, suspenders, etc. Rain hats and coats, hats, caps. Also sheets, pillowcases, blankets, mosquito netting, bedspreads, mattresses, throw pillows, towels, slip covers, curtains, drapes, table cloths, etc. Also hammocks, cots, diapers.	
13	Leather	244, 247	Specified by family member: shoes for work, dress, house; slippers; boots. Also musical instrument cases; luggage; trunks; wallets; belts; billfolds.	
15	Furniture	281-4, 286	Furniture sets specified by room; chairs, table, sofa, bed; dressing table; wardrobe; chest; buffet; stool; cabinets; playpen; rental furniture. Outdoor furniture; misc. Wire springs and frame; mattress. Desk. Blinds: venetian, cloth, wood, metal.	

16	Paper	306	Household paper products (toilet paper, plates, cups, kleenex, napkins, towels).
17	Printing	321-2	Newspaper; magazines (subscription and newstand); comic books; other. Books; schoolbooks.
18	Chemicals	347-9, 353	Medicines. Hand soap; detergents and household cleansers. Toothpaste; shaving creme and shampoo; home permanents; cosmetics, lotions, etc.; shoe polish. Sickroom supplies.
19	Petroleum	361-3	Gasoline. Oil. Kerosene; fuel oil; grease.
20	Non-metallic Minerals	382, 385	Glasses; crystal; baby bottles. Set of dishes; cups and plates; platters and bowls; cooking utensils of clay and glass.
21	Primary Metals	402, 403	Nails and tacks. Pressure cooker.
22	Fabricated Metals	422-3, 430, 433	Scissors; razor blades and nail file. Garden tools; other hand tools; occupational tools. Kettle and frying pan; washtub and board. Ironing board.
23	Machinery, Excluding Electrical	427, 442, 456, 458	Gas stove; kerosene stove; oven. Grass cutter. Typewriter. Air conditioner.
24	Electrical Machinery	463-8, 471-4, 476, 478	Sewing machine. Refrigerator; freezer. Toaster; electrical stove; small electrical appliances; blender. Dishwasher; vacuum; clothes washer; drier; washer-drier; mangle; iron. Electrical fan. Light bulbs; lamps. Radio; transistor radio. TV; console. Records. Hi-fi and stereo; intercom. Auto batteries. Motorized tools.
25	Transport Equipment	481, 485, 488, 490-1	Basic sales price of auto. Cost of additional equipment; auto parts; accessories. Boat and yacht. Motorcycle. Baby carriage; bicycle.
26	Professional, Scientific Instruments	503, 505-6	Eyeglasses. Camera. Clock; wristwatch.
27	Other Manufacturing	522-3, 525-6, 528-32, 535-6, 539-40, 544	New and used tires; retreads; tubes. Rain, beach, and sport shoes. Portable icebox; clothes basket, plastic bassinette. Jewelry; costume jewelry. Silverware. Piano and organ; other musical instruments. Toys. Sports equipment. Art supplies. Pins and accessories. Brooms and mops. Combs and brushes. Linoleum. Candles and matches. Pipes and lighters; parasol; straw hats.
29	Construction	572	Repair and maintenance of house.
33	Transportation	591-3, 595-7	"Public"; taxi. Bus; jeep; private auto of friends; donations of transportation services. Moving expenses; shipping. Launch; ship travel. Airplane. Train.
34	Communication	601	Home and public telephone; telegraph.

35	Banking	611	Interest to banks, loan companies, and individual (user); bank service charges; safe-deposit box rental.
36	Insurance	612-4	Individual and group life insurance; premiums, annuities and other personal policies, dividends not applicable to premiums. Premiums for hospitalization, medical, and disability insurance. Furniture insurance; auto insurance.
37	Real Estate	621, 624	Rents paid and imputed; tenant expenditures; summer home rental. Rental commissions.
38	Personal Services	631, 633-5	Laundry and ironing; dry cleaning; other garment services. Haircut; shave; permanents; hairwash and set; massage; other. Shoe repair; shoe shine; sewing of household fabrics; furniture rental; sewing and tailoring. Burial expenses.
39	Business Services	643	Refuse collection.
40	Medical Services	651-4	Medical office and house calls. Dental services. Hospital room charges; other hospital charges. Chiropractor; optometrist; lab fees; home nurse; "curanderos y espiritista"; other medical services.
41	Other Services	661-5, 667	Auto rental (w/o chauffeur). Parking and garage. Furniture, watch and jewelry repair; TV installation and initial services; TV, radio, musical instrument repair; auto repair; other auto operating expenses. Legal expenses. Daycare; education tuition; dance and music classes; other education. Dues for social clubs, unions; donations: church; civic; educational and medical; political; other.
42	Hotels	671	Lodging for students; work; travel.
44	Amusements	694	Movies; sports events; net losses on games of chance (excluding lottery); other; horse rental and maintenance.
45	Electricity	701, 702	Electricity. Piped, bottle gas.
46	Water	711	Water services.
48	Office Supplies	722	Paper and Christmas cards.
50	Commonwealth Government	734	Lottery ticket purchases.
51	Household Industry	741	Domestic servants.
52	Federal Government	752	Postage

1. Listed by order of corresponding commodity in the input-output scheme. Items separated by semi-colons fall in same commodity class. Items separated by a period indicate new commodity within broad sector.

2. Subtracting retail services from purchase.

Appendix C

Estimates of Linear Expenditure Functions for 41 Sectors (OLS)*

Sector	α Constant	t-Value	β Slope	t-Value	R^2	F-Value	Elasticity Mean	Average Expenditures
Primary Sectors								
1. Agriculture, n.e.c.	1.06	2.35	.0024	13.82	.2597	191.01	.766	4.52
4. Alcoholic Beverages	.12	.13	.0079	21.84	.3912	477.31	.989	11.19
5. Non-alcoholic Beverages	1.90	7.59	.0007	6.71	.1295	45.09	.330	2.84
6. Beer and Malt	2.97	3.89	.0046	15.06	.2813	226.99	.683	9.37
9. Processed Foods	208.83	43.92	.1156	60.86	.7640	3704.58	.436	370.02
10. Tobacco Products	8.95	13.67	.0036	13.79	.2592	190.30	.360	13.98
11. Textiles	7.64	19.10	.0031	19.58	.3561	383.56	.366	12.01
12. Apparel	54.78	23.78	.0268	29.17	.4936	851.20	.406	92.21
13. Leather	12.91	27.47	.0040	21.08	.3795	444.44	.300	18.42
Durables Sectors								
15. Furniture	13.54	5.69	.0146	15.35	.2892	235.78	.600	33.89
16. Paper Products	2.21	15.80	.0017	30.97	.5162	959.74	.522	4.62
17. Printing and Publishing	3.79	6.91	.0078	35.63	.5697	1269.58	.742	14.67
18. Chemicals	18.98	23.49	.0115	35.72	.5707	1276.27	.459	35.07
19. Petroleum and Coal	3.35	2.97	.0170	37.78	.5923	1428.06	.876	27.09
20. Mineral Products	1.34	12.18	.0005	11.78	.2235	138.94	.350	2.06
21. Primary Metals	.29	1.66	.0009	13.20	.2488	174.35	.815	1.59
22. Fabricated Metals	.49	.63	.0026	8.42	.1618	70.98	.881	4.13
23. Machinery, n.e.c.	2.95	4.84	.0028	11.39	.2164	129.84	.567	6.83
24. Electrical Machinery	19.98	12.10	.0129	19.56	.3558	382.88	.474	37.98
25. Transport Equipment	-73.24	-7.95	.1290	35.04	.5633	1228.25	1.687	106.62
26. Scientific Instruments	2.90	6.95	.0025	14.86	.2779	221.06	.544	6.37
27. Other Manufacturing	8.16	8.05	.0097	23.93	.4221	572.86	.624	21.69
Service Sectors								
29. Construction	-1.00	-.74	.0097	17.84	.3280	318.53	1.080	12.51
33. Transportation	-10.16	-2.52	.0395	24.61	.4319	605.85	1.230	44.94
34. Communication	-1.46	-3.22	.0080	44.03	.6506	1938.76	1.151	9.68
35. Banking	-165.08	-12.60	.1431	27.34	.4696	747.62	5.789	34.47
36. Insurance	3.51	-15.51	.0760	54.14	.7252	2931.22	2.060	51.48
37. Real Estate	32.30	9.78	.0311	23.58	.4170	556.24	.573	75.67
38. Personal Services	9.15	4.94	.0296	39.97	.6139	1597.88	.813	50.41
39. Business Services	.08	2.05	.0001	3.55	.0690	12.62	.491	.17
40. Medical Services	-6.02	-1.51	.0366	23.01	.4087	529.65	1.136	45.08
41. Services, n.e.c.	-78.88	-11.94	.1092	41.38	.6271	1712.49	2.074	73.14
42. Hotels and Restaurants	-21.71	-8.57	.0265	26.17	.4537	684.95	2.427	15.21
43. Recreation	-6.77	-3.74	.0207	28.54	.4855	814.95	1.308	22.08
44. Electricity and Gas	11.16	18.30	.0111	45.62	.6638	2081.45	.581	26.67
45. Water and Sanitation	3.39	12.00	.0041	36.63	.5804	1341.80	.630	9.17
46. Commonwealth Government	2.65	2.00	.0140	26.49	.4581	701.79	.880	22.16
47. Household Industry	-20.20	-7.95	.0329	32.44	.5338	1052.75	1.787	25.67
48. Federal Government	.65	6.34	.0008	19.91	.3613	396.65	.636	1.79
Totals							.980	\$1,357.47

*Weighted directly by the number of families in the universe to which sample family corresponds.

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