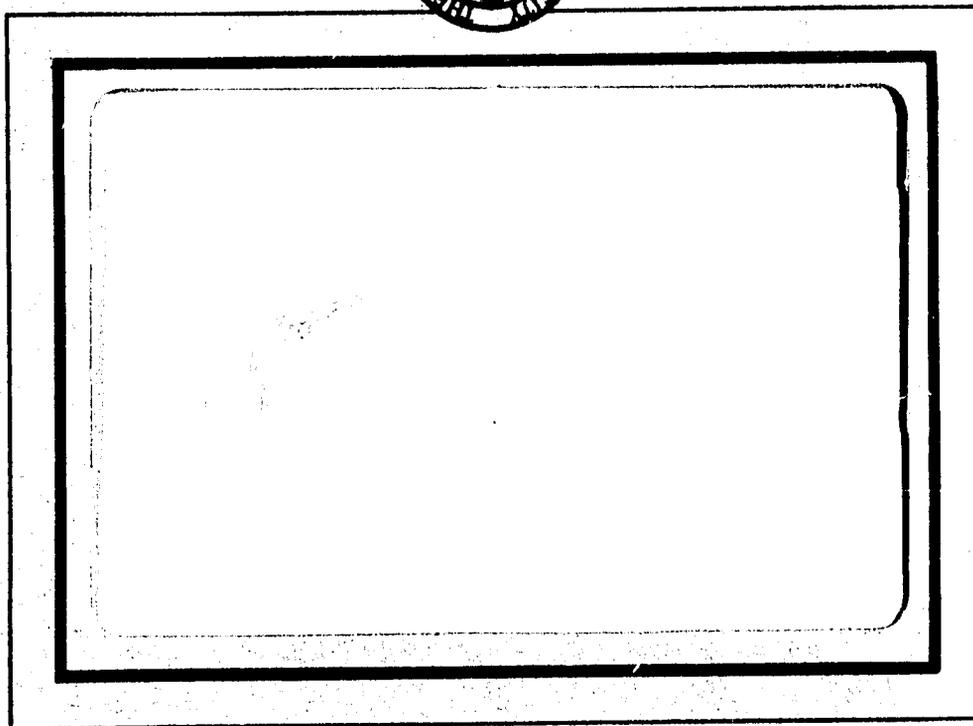


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An Analysis of the Saving Behavior of a Group
of Colombian Artisan Entrepreneurs

by

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An Analysis of the Saving Behavior of a Group
of Colombian Artisan Entrepreneurs

Donald Huddle

Abstract

That the poor save less than the rich has been an accepted "fact"--one which has had important implications for income redistribution policies.

The present study analyzes the saving behavior of a relatively low income group in Colombia which is differentiated from other income groups in that it is one of self-employed artisans and craftsmen. The working hypothesis was that ownership of the factors of production and "own" investment would result in higher marginal saving rates vis-à-vis other low income groups. Saving was broadly defined as including added flows of cash and bank accounts, educational services, inventories of raw materials and finished goods, and future services of durable goods and housing stock additions.

In 1975-76 the author and a team of Colombian assistants administered questionnaires to artisan-craftsmen producing and selling in urban fairs. The sample data showed that the artisan-craftsmen did, in fact, exhibit substantially higher saving behavior than did other similar groups. But the major elements of saving occurred in educational services in addition to "own" investment in simple equipment and inventories. These results are consistent with the very high private returns from these investments. The lack of availability to wage earners of "own" investment explains much of the large saving differentials between the two groups. But, in addition, artisan-craftsmen seem more aware of the returns on private education than wage earners with similar income. The fact that they have smaller families also implies a greater "ability" in terms of per capita family income to invest in their children. One immediate policy implication is that the Colombian government should loosen its previously tight and restrictive lending to small scale rural and urban artisan-craftsmen. Private monopolistic moneylenders are not geared to productive type lending on any reasonable scale nor are their high interest charges conducive to such investment.

**An Analysis of the Saving Behavior of a Group
of Colombian Artisan Entrepreneurs**

1. Introduction

The present paper explores the possibility of improving the distribution of income and the level of living of one subgroup of low income workers in Colombia. Rather than examining the implications of direct income redistribution on factor payments and the income of the poor, we look at the obverse side, that of savings propensities. Although the poor as an aggregate save less than do higher income groups, i.e., ceteris paribus marginal savings rates are positive and rising throughout the relevant range with respect to income, the working hypothesis of the current study was that one low income sub-group--artisans and small scale traditional producers--has substantially higher saving rates than does the general low income group. This behavior is believed to be explained by the artisan's possibility of profitable 'own' investments in his productive process. If this sub-group has higher savings rates than other low income groups (and of even higher income groups) a case can be made improving the imperfect market conditions which they face in buying raw materials, selling their final product, and in obtaining credit. Data are generated here which facilitate an assessment of savings and investment expenditures. Artisan savings are analyzed as components of

financial saving, education expenditures, expenditures on inventories of raw materials and finished goods, and expenditures on rental services in housing. An increased size of the artisan sector will in itself create direct employment and shift factor intensities toward labor. The efficient expansion of artisan production would improve both employment and income for a large subgroup which is among the poorest and most neglected in Colombia.

2. Savings Behavior: the Background

Previous empirical research on savings levels has been greatly constrained by the lack of disaggregated and microeconomic level data. Beginning with Ricardo,¹ it has been virtually a postulate in economics that the rich save more than the poor. The few empirical studies related to this postulate tend to show that savings may depend upon the type of income. For instance, Houthackker's² well-known study suggests that savings out of employment income tends to be zero in a majority of countries. More recently, J. G. Williamson supported these findings in a cross-sectional analysis.³

The present research is both complementary to and differs from the above studies.⁴ It is complementary in the sense that savings are

¹David Ricardo, Principles of Political Economy.

²H.S. Houthackker, "An International Comparison of Personal Savings," Bulletin of the International Statistical Institute (1961).

³J. G. Williamson, "Personal Savings in Developing Nations: An Intertemporal Cross Section from Asia," Economic Record (June, 1968).

⁴The emphasis here precludes an extensive consideration of related considerations such as how a structural change in the economy affects savings rates. For example, the two-gap model which suggests that in a situation of foreign exchange shortage savings might decline due to their redundancy. Cf. Hollis Chenery and Alan Strout, "Foreign

believed to vary with income, but different in that savings are also seen as being dependant upon the source of income, e.g., in this case self-employment versus wage earnings. Thus, we postulate that relatively low income recipients may have high savings rates if they are self-employed. This juxtaposition is not usually perceivable in empirical studies simply because typically available data are quite aggregative. Artisans and the self-employed are lumped together with the much larger class of low income wage labor. In the current sample most artisans hire little outside labor and utilize household family labor at no explicit wage rate. Production may be part-time, and can involve solely the labor of women and children. Such producers cannot be easily described within the capitalists neoclassical model, for not only is very little in the way of capital, buildings, and machinery involved, but there being no explicit wage, neither can profitability be computed.

The incentive to save may nonetheless be provided by the possibility of 'own' investment--the primary distinguishing feature of the rural small scale, non-wage household producer in contrast to the wage earner. While the household producer cannot determine the narrow profitability of his current production and of a marginal expansion, he can often determine whether his time at the margin will be better spent, say, in agriculture or in producing added units of the product. In the case of the wife, there is the choice between leisure, producing more of the

Assistance and Economic Development," American Economic Review (September, 1966). Nor, as a further example, the effect of currency overvaluation on domestic savings. Cf. S. R. Lewis, "Domestic Savings and Foreign Assistance When Foreign Exchange is Undervalued," Research Memorandum No. 34, Center for Development Economics, Williams College, 1969.

product, versus more household services, e.g., cooking, serving, cleaning, spending more time with the children, etc. In the case of the children, the choice of attending school versus direct production is often the most real one.

The urban artisan more often employs wage labor, works full time at one activity, utilizes family labor less, has more machinery and better understands and accounts for prices and costs. In other words, he is more likely to more closely resemble a small capitalist who has some notion of his operation's profitability. Whether he will, at a given real income level and with equivalent expectations as his rural counterpart, have a higher average and marginal savings rate is unknown, a priori.

The primary "raison d'etre" for disaggregating small scale producers from the mass of relatively low income families is twofold. First, theoretically they are as a subgroup within the aggregate an exception to the functional relationship usually posited between savings and income (positive and proportionally rising). Second, their existence may pose policy alternatives not now perceived by LDC governments as well as implications for the negative impact of current policies upon this sector's savings and investment, and the consequent quality of life.

An early forerunner who challenged the applicability of the neoclassical framework for analyzing rural household production was Chayanov.¹ While his criticisms of the neoclassical framework were

¹A. V. Chayanov, The Theory of Peasant Economy, edited by Thorner, Kerblay, and Smith (Homewood, Illinois: Richard D. Irwin, Inc., 1966).

based upon the small agricultural householder, it is also applicable to the traditional household artisan. A comparison of the standard literature with his household model leads to different implications. For instance, much of the standard literature is critical of government policies which reduce the openness and competitiveness of the market.¹ Availability of credit at market determined interest rates is expected to reduce market fragmentation and to lead to more efficient utilization and distribution of credit, to raise production, and the quality of life. Never mind the virtual impossibility of this outcome in the typical rural area where the available and potential alternatives are those of replacing the private (quasi monopolistic) moneylender with a public (quasi monopolistic) moneylender, the end result of which may make little difference to the small rural producer. But the rural producer himself may be qualitatively different than would be a capitalistic producer. Not just that he may not know his cost structure due to a complete lack of accounting expertise. He may not borrow more, even with substantially lowered interest rates, simply because not having the categories "wages" and "profits" he may not be aware that there has been any shift in real variables (those being availability of household labor, the provisioning of the household, and the long-term conditions in the market where he sells his product). Inasmuch as very little capital is involved in his operation, especially physical capital, the potential improvement of the household will not be self-evident. The more direct route here toward improving saving, investment,

¹Cf. G. Grown, Pricing Policies and Economic Development: Korea in the 1960s (Baltimore: Johns Hopkins Press, 1972); and Raymond F. Mikesell and James Zinzer, "The Nature of the Savings Function in Developing Countries," The Journal of Economic Literature, Vol. II, No. 1 (March, 1973).

and the quality of life will be toward increasing access to markets, income and/or reducing costs at first and then making credit available as well as encouraging 'own' investment. We come across a seemingly paradoxical phenomenon in countries where credit itself may generate savings. Where the poor have market opportunities, but cannot save in order to expand due to their subsistence levels, credit can itself be instrumental in creating a sufficient surplus to repay the loan, the net outcome of which is generated savings.

The above discussion neglects the similar elements of the small capitalistic sector and the small household producer such as saving via purchase of durables, education services for their offspring, and housing, all of which are believed to be important channels of saving in many developing economies.¹

In sum, while there is an important and growing literature on saving and saving behavior, which we have only touched upon here, it is mainly highly aggregative and almost totally neglects the important subgroup of small traditional producers in which capital and wage labor play a small part. But a subgroup containing up to 15 percent of the working population in many Asian, African, and Latin American countries should be researched much more thoroughly than it has to date.

3. The Data

Data for the study were provided by questionnaires administered in Bogotá at a national fair at which there were some sixty artisans

¹For a discussion of some of these factors see Mikesell and Zinzer, op. cit.

selling their products. A sample of artisan producers was taken which included information on: place of production, type of establishment, years of operation, the product and description of how the product is made, type of organization, the number of workers, members of the family, where training was received, monthly income for qualified and for nonqualified workers, the hours of work per day, the days of work per week, sales during the past month, and average sales over a longer period of months, children of less than fifteen years, the number of children studying at the time, and the total income per month of the artisan and his family. There followed questions on the expenditures per month on food, rent, education of the children, clothing, improvements of the household, and any other items (including medical expense). Did the family save? How much was saved per month? How much was invested or expended on raw materials, final products, and equipment? Was financing from their own income or from private or official entities. Where and when did they receive their last loan; what was the interest rate paid on this loan; and how much interest was paid per month? Did they want additional loans and, if so, how much? Finally, what were the principal problems of their business?

In total our group completed twenty-nine entrepreneurial questionnaires at the fair, each of which took between two and two and a half hours. Products included macrame, leather purses and wallets, sweaters, wool shirts, dresses, wool shawls, wool ruanas, sport clothing, basketry, hats, ceramics, other leather products, wood products, jewelry, and furniture. The majority of the artisans were from Bogotá, but others were from Boyacá, Tolima (La Chamba), Quindio, Choco, and Cundinamarca.

Stated income levels varied substantially. At one extreme was an income in basketry-making of 1600 pesos (U.S. \$53) per month¹ for a family of two. Conversely, there was a stated income of 20,000 pesos per month (one for a family of ten). Three families had a stated income of 20,000 pesos per month; in per capita terms the high-low total family income ratio was about two and a half to one. The highest income levels were in leather products and in clothing. The monthly average family income of the twenty-five families was 7,548 pesos (about U.S.\$2500 per year). This varied from a low family income of U.S.\$530 per year to a high family income of U.S.\$6670 per year.

Artisan family sizes varied significantly, from a single producer to a family of twelve. The mean number of persons per family was 4.68, which is smaller than the average family size in Colombia itself. Education was a very sizable expenditure for the nineteen families who had children in school, varying from 50 pesos per child to as much as 2,800-4,000 pesos expended over a ten-month period. Average educational expenditure was 630 pesos, and for 19 families with children the average was 839 pesos per family.

Evidence on the potential savings of entrepreneurial families in the form of housing and household improvement was very scanty. Only five families indicated expenditures here, and these were small. One family spent 2,000 pesos in the last year, and the other four families spent only between 100 and 500 pesos per year. Thus, housing improvement (as compared to education) was an insignificant category of expenditures.

¹At the prevailing Colombian peso-U.S. dollar rate of P30/\$ in 1976.

Savings behavior varied substantially. A number of families had no stated financial savings. Only eleven families admitted to cash savings, and these were either very small and erratic or relatively large (5,000 pesos) saved in banks. Average saving for this group was 1,855 pesos. For all sample families, average family saving was only 850 pesos, less than U.S. \$30 total per family. Alternatively, investment (particularly in inventory, and to a lesser extent in simple tools and machinery) was substantial--from about 3,000 pesos in inventory to 140,000-200,000 pesos per year. The twenty-four acceptable answers in the area of investment, particularly in inventories, show that the average annual investment per family was 40,117 pesos, a large amount compared to the other categories. The total investment in inventory and tools was more than five times the stated family income for the twenty-five sample families.

Almost all artisans were dependent upon their own funds for all working capital and tools. Though many artisans wanted credit at current market interest rates,¹ market credit was unavailable except in several exceptional cases. Nine of the poorer artisans did not wish any loans because 'loans were too hard to repay,' a phenomenon probably explained by uncertain markets, lack of cost and profit data, and the riskiness of their marginal condition. Nine artisans referred to their major problem as credit and the lack of working capital in preventing better income levels and sales. Six mentioned the lack of frequent opportunity for direct sales, and the concomitant lower income and return when selling to an intermediary. Direct sales, especially at regional and national fairs where demand was good, yielded a price

¹The going loan rate of financial institutions and public agencies as contrasted with the local moneylender.

30-60 percent greater than did sales to a local middleman. Five artisans found lack of transportation and its costliness as the greatest obstacles. Another five mentioned the cost of raw materials and the lack of quantity discounts available to them as opposed to large producers who could buy in much greater bulk, as well as the quality of raw materials themselves. This was especially serious in leather products where the local quality was much lower than at a larger tannery.¹

In summary, large variations existed among artisans. Rural areas were represented, but Bogotá artisans predominated. Much saving was via children's education. It was equal in amount to the average level of total "money" saving. Thus, for artisans with children a fundamental form of saving and investment occurred via education. Saving and investment in the form of household expenditures (housing, durable goods, and household improvements) was small, except for 20 percent of the households. On the other hand, investment (particularly in the form of finished inventories) was quite substantial and represented five and a half times the level of income per annum of the sample families. Almost 70 percent of the artisans wanted loans, which were not available to them; they perceived credit and the lack of working capital as being major problems. Thus, the situation has been one in which many small artisans have, by limiting their consumption, accumulated a small investment fund, in the form of inventories and raw materials. However, they have been able to expand only slowly due to the limitational factors of large family size and educational expenditures on children. "Own savings have provided an insufficient volume of funds to realize the artisan's real

¹An interview with the leather products specialist at the Corporacion de Financiera Popular could not explain the anomaly of using poorer leather at the slight existing price differential. Other than habit, convenience, and information we could not think of any important 'real'

potential for expansion. Government loans have not been forthcoming despite frequent publicity to the contrary.

4. Sample Size-Sample Design: The Implied but Unrecognized Trade-offs

The relatively small size of the present sample may seem problematic. A larger sample size would have been desirable if time and money were not important constraints. Given these constraints, however, the decision was made to maximize the depth and quality of questionnaire data by an 'adequate' sample size rather than by maximizing the sample size with weaker, lower quality data. Our position has been that probing and deepening the information of the producing micro unit would increase confidence that our limited data would be both conceptually sound and would correspond closely to our theory. By spending more time with each artisan we eliminated many sources of miscommunication, cross-checked many figures for consistency (e.g., counted inventories on the spot) and discovered purposeful misinformation.

One observer's comment that "economists usually use a cannon to kill a fly" is misplaced when it is applied without discrimination to small sample size per se. Along with Richard Baseman, I would argue that only through careful statistical design can we obtain the data which will permit unambiguous hypothesis testing.¹ All too often, economists use data gathered for purposes unrelated to the theory they are purporting to test. Thus, by

obstacles relative to the added benefits of selling at much higher prices.

¹Cf., Richard Baseman, "Economic Theories and Their Technological Application: The Role of Observational Concept Formation" Mimeo., 1971), p. 61. Baseman has also published a number of other papers on this topic which are too extensive to be quoted here.

example, in a study dealing with savings especially when applicable to peasants and rural people one should break the theoretical construct down into "meaningful" empirical categories which will in turn relate one to one with the theory being applied. We did this by examining both stock and flow data on cash on hand, cash in banks, lending, inventories of finished goods and raw materials, educational expenditures, the value of equipment, durable consumer goods, and home improvements and purchases. In a study which utilized budget data only on consumer expenditures and income, the results could be very misleading. Even narrowly conceived savings functions which would not recognize home ownership as saving durables, and educational expenditure would differ considerably because funds expended upon inventories and lending could easily slip into consumption categories.

In conclusion, we often view sample size N as being much more critical to confidence in results than quality of data and design of the sample. The former is quantifiable whereas the latter is not. However, letting such trade-offs go unexamined has been a potentially serious error, one to which economists and increasingly other social scientists are susceptible as broad survey data are utilized as inputs.¹ Knowledge of how data are gathered and the design of the sample are attributes which official statistics seldom yield to their users.

5. Analysis of the Questionnaire Data and Average Saving Rates

The questionnaire data have been collated in Table 1 and are shown by enumerated families 1-27. Table 2, based on Table 1, shows two definitions

¹The expected dialectical processes are also at work. Reactions to this trend of quantification have been found in the newly coined "science" of ethnomethodology among sociologists which takes as its focus the investigation of the datum of our knowledge. Blumer, Cecoril, and Leiter have written extensively on this topic.

TABLE 1: Questionnaire Results
(Monthly in Pesos)

Family	Product	Location ([R]-rural)	Family income (per mo.)	Educa- tion	House- hold	Inven- tory ¹	Finan- cial saving	Per Capita family income PC/Y	Per capita sales	Family size	Wants loan	Major prob- lems ²
1	Macramé, purses, wallets	Bogotá	4,000	1,000	100	+350	+ 0	570	450	7	yes	RH-CR
2	Purses, sweaters	Boyacá [R]	6,000	1,000	300	+470	+500	1,200	2,000	5	no	RH
3	Wool shirts, dresses	Bogotá	7,000	120	500	+200	+150	3,500	3,500	2	yes	DS
4	Sweaters, shawls	Bogotá	6,000	400	500	+440	+175	3,000	3,000	2	no	Service
5	Dresses, sweaters	Bogotá	6,000	200	-	0	+25	3,060	3,000	2	no	None
6	Shawls, etc.	Bogotá	7,000	250	-	+700	+250	3,500	3,500	2	no	None
7	Sweaters, etc.	Bogotá	9,600	280	-	+115	+90	1,200	950	8	no	DS
8	Wool runas, etc.	Bogotá	4,500	800	-	+250	-25	375	375	12	yes	WK
9*	" " "	Cundinamarca [R]	-	-	-	-	-	-	-	4	yes	TR
10	" " "	Bogotá	20,000	2,800	-	+850	+215	4,000	4,000	5	yes	None
11	Sport clothing	Boyacá [R]	2,000	100	-	+40	+ 0	333	333	6	yes	TR
12	" "	Tolima [R]	6,000	-	-	+95	+30	1,000	1,000	6	no	TR-DS
13	Baskets	Quindío [R]	2,100	50	-	+45	+ 0	525	525	4	no	TR-DS
14	Baskets	" [R]	1,600	-	-	+200	+35	800	800	2	-	DS
15	Baskets	Boyacá [R]	7,000	-	-	+60	+ 0	875	875	8	-	DS
16	Baskets, hats, etc.	Choco [R]	7,000	1,000	2,000	+50	+15	740	889	9	yes	CR, RH
17	Ceramics	Bogotá	8,000	400	-	+140	+ 0	2,000	2,000	4	yes	CR
18	Leather	Bogotá	2,000	300	-	+215	+10	2,000	2,000	1	no	DS
19	Leather	Bogotá	20,000	2,000	-	+1270	+80	4,000	4,000	5	?	RH
20	Leather	Bogotá	6,000	700	-	+550	+30	1,200	1,200	5	yes	DS
21	Leather	Bogotá	8,000	-	-	+870	+50	4,000	4,000	2	yes	CR, RH
22	Leather	Bogotá	9,000	300	-	+1180	+ 0	1,500	1,500	6	yes	RH cost
23	Leather	Bogotá	4,000	50	-	+290	+ 0	1,000	1,000	4	no	None
24	Leather	Bogotá	20,000	4,000	-	+1050	+75	2,000	2,000	10	yes	CR
25	Wood	Bogotá	4,500	4,500	-	+475	+ 0	2,250	2,250	2	yes	CR
26	Wood	Cundinamarca [R]	4,500	-	-	+545	+20	2,250	2,250	2	yes	TR cost
	MEAN		7,207					2,250	2,250	4.8		

¹ These data indicate changes in expenditure on inventories and equipment.

² RH means raw materials, CR- credit, DS- direct sales, WK- working capital, TR- transportation.

* Note that 9 has no firm data for the variables and is therefore not a part of the regression equations.

TABLE 2: Small Scale Savings Behavior: Colombia
Average Savings
(in thousands of 1976 pesos)

(1) Family income	(2) Average monthly income	(3)* Average family savings	(4) Saving rate (3)/(2)	(5) Per Capita income range	(6) Average per capita income	(7)* Per Capita average saving	Per Capita saving rate (7)/(6)
> 0-2	1.87	+ .3	.16	0- < .5	.354	.05	.14
> 2-4	3.37	.595	.177	.5 < .75	.548	.108	.197
> 4-6	5.44	1.82	.335	.75- < 1.	.738	.138	.188
> 6-8	7.33	.723	.099	1.- < 1.5	1.120	.163	.145
> 8-10	9.3	.982	.106	1.5 < 2.	1.5	.247	.165
>18-20	20.0	4.446	.222	2- < 2.5	2.1	.339	.161
				2.5- < 3.	-	-	-
				3 - < 3.5	3.	.320	.167
				3.5- < 4.	3.5	.418	.119
				4.	4.0	.821	.205

*(3) Total saving in the concept used here--inclusion of financial saving, expenditure on education, and net expenditure (in addition to depreciation) on equipment and addition to inventories.

SOURCE: Derived from questionnaire data in Table 1.

of average savings by class. Column 1 sets out family income ranges, and in column 5 per capita income ranges for families. The left-hand side--using the family income ranges 0-2, 2-4, etc. through 18-20 (the final category)--and following that with average monthly income in column 2 and average family savings in column 3, yields the derived average family savings divided by the average monthly income from which is found an average savings rate for each. These categories indicate less than a smooth functional relationship between saving and income both because of different family sizes and the small sample size.

The results show one surprise--the lowest income category was not dissaving; it was saving at a rate of 16 percent. As family income rises saving also rises, more than proportionally through the third income category, reaching a saving rate of .335. In the next category, the rate falls below .10. Then the rate rises again. Thus, the sample distribution of saving by income classes is bimodal. Within each set of income classes, saving rates rise with income as traditionally expected. But the entire function drops at the mid-point of income classes. The per capita income classes have similar characteristics though not so consistently. One feasible explanation of these results is that the lower income classes were rural and that rural families have been found elsewhere to save more at a given income level than have urban families.¹ As we reach the mid-income range, urban families predominate and so we perceive a sharp downshift in saving rates.

¹Cf., Jean Crockett and Irwin Friend, "Consumption and Saving in Economic Development," Paper presented at the International Conference on "Income, Consumption, and Prices" (ECIEL), Hamburg, W. Germany, October, 1973.

Table 3 indicates total savings rates found by other investigators in Colombia over various periods of time. A comparison of these data is instructive. Previous studies show that for exclusively Bogotá savers the breakeven point in 1976 pesos was P97,560 whereas it was P68,292 for all urban savers in the population. The break-even point for all non-Bogotá savers including rural areas was P39,024. As one proceeds from Bogotá to non-Bogotá area savers the break-even point diminishes, that is, people are saving higher relative amounts outside of the large cities and outside of Bogotá as compared to Bogotá. Alternatively, DANE figures in 1976 pesos indicate a break-even point in Bogotá of 116,640 pesos, and for all non-Bogotá of 42,000 pesos. Comparatively speaking, the artisan break-even point in 1976 pesos was about 36,000 pesos, far lower than for non-artisans. Thus, the artisan break-even point was about 1/3 of that for the Bogotá residents (or a little over one-half for that of all urban areas in our sample) and less than all non-Bogotá in both the CEDE and DANE samples. It is instructive to note that our sample was heavily drawn from Bogotá; hence, the basis of comparison is closer to the all-Bogotá sample, rather than the all-rural/non-Bogotá samples, which emphasizes the strength of artisan saving behavior in our sample.

A second basis of comparison involves comparing the savings rates for Colombian groups in linear, double log, and constant elasticity regression analyses, with the saving functions of artisans. In Table 3 the average propensity to save varies from 8.6 percent in Bogotá, a 12.9 percent simple average in three other cities, 15 percent in Landau, and 18.7 percent in Mikesell and Zinzer. Saving rates in the artisan sample are analyzed below.

TABLE 3: Saving Rates for Colombian Groups
(all figures in terms of 1976 peso categories)

	Family Income Levels (thousands of pesos)					Total
	<29.2	>29.2-68	>68-<116.6	>116.6-<194	>194	
Bogota S/y	-20.14	-4.22	- 0.78	7.7	15.38	6.40
Non-Bogota	- 6.1	1.45	11.29	17.44	30.54	13.4

SOURCE: Modified from DANE Boletín Mensual de Estadística, no. 264-265, pp. 76-78 as presented in A. Berry, "Notes on the Saving Process in Colombia," Yale University Discussion Paper (Mimeo. 1974).

Study	Model	Avg. Propensity to save	Marginal Propensity to save
Chenery & Ekstein ¹ (1954-64)	linear	.	.090
Mikesell & Zinzer ²	linear	.187	.151
	double log ³	saving elasticity of .854 indicates MPS < APS.	
Landau (1963) ⁴		.15	
Berry: ⁵			
Bogota	ELES	.086	.149
3 other cities*		.129	.226

* Barranquilla, Cali, Medellín simple average.

¹ Cited in Mikesell and Zinzer, op. cit., T-1, p. 4;

² Mikesell and Zinzer, T-2, p. 5.

³ Mikesell and Zinzer, T-3, p. 5.

⁴ L. Landau, "Differences in Saving Ratios among Latin American Countries," Unpublished Ph.D. dissertation, Harvard University, 1969, T-13.1, p. 301.

⁵ A. Berry, op. cit., T-5, p. 31.

The basic multiple regression equation used to analyze the sample data on artisan savings was:

$$S_i = [Y_1, Y_2, F_1, F_2, D_1 \dots D_4] \quad i = 1-7 \quad (1)$$

where the dependent variables are:

S_1 = Financial savings concept 1.

S'_1 = Financial savings concept 2.

S_2 = Education expenditures

S_3 = Gross expenditure on inventories of raw materials, equipment, and finished goods.

S_4 = Net expenditure on inventories of raw materials, equipment, and finished goods.

$$\div S'_5 = S_1 + S_2; S'_5 = S'_1 + S_2$$

$$S_6 = S_5 + S_3; S'_6 = S'_5 + S'_3$$

$$S_7 = S_6 + S'_3; S'_7 = S'_6 + S_3$$

and the independent variables are:

Y_1 = Family income

F_1 = Family size

D_1 = the dummy variable for loans.

In addition, the importance of location was tested by segregating observations into Bogotá and non-Bogotá as proxies for urban and rural.

The variations S_{1-7} and the 3 independent variables Y_1, F_1, D_1 permitted an exploration of the basic relationships of the cross section data by family and producer type. In addition, the dummy variables $D_1 - D_4$ allowed analysis of major product types--clothing, baskets,

leather and wood, and whether or not artisans with loans performed differently than those without loans. All saving and other variables were in flow terms.

In total, 75 regressions were run for differing forms of savings, with and without dummy variables, and for particular product groupings. A sample of these results is shown in Table 4.

In summary the results are as follows:

1. The income coefficient was consistently the most significant independent variable.
2. F_1 , family size, was a frequently significant variable, particularly for the broader definition of savings.
3. Narrower definitions of savings had lower R^2 than did broader definitions of savings. Financial savings was the least well explained variable, but it was still significant at the 5 percent level.
4. Logarithmic regressions were much less explanatory than were the non-logarithmic. As a corollary, few of the logarithmic independent variables had significant t scores, though F_1 was significant for broader definitions of savings in several instances (F_2 was never significant).
5. Dummy variables seldom had significant t scores. Only D_3 was significant in more than two regressions and D_1 and D_2 in two and one, respectively. In all cases these were for the broadest definitions of savings.
6. The signs of the coefficients were in the expected direction on all significant runs. Savings by all definitions were positively related to both concepts of income, negatively to family size, and positively to the artisans who had received loans. Broader concepts of savings had greater explanatory power than did narrower, i.e., adding equipment, raw

TABLE 4: Multiple Regression Analysis
of Artisan Saving Behavior

Dep. var.		Inter- cept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² / adjR ²	D.W
I. All observations							
S ₁	1-1	-5.7989 .019835	.10288 3.1173*			.2970 .2664	2.4883*
	1-2	-82.823 .33442	.0607 1.9879**	1053.9 3.2176*		.5220 .4785	1.9462*
	1-3	131.79 .42308	.07101 2.2396**	1031.8 3.1630*	-58.184 1.1245	.5491 .4847	1.9355*
S ₁ '	1'-1	29.084 .73522	.00549 1.2364			.0623 .0215	1.7536*
	1'-2	30.855 .76279	.00644 1.2923	-24.226 .45284		.0710 -.0135	1.7535*
	1'-3	69.321 1.3710**	.00829 1.6113	-28.199 .53258	-10.427 1.2417	.1345 .0109	1.6917*
S ₂	2-1	-490.71 2.5672*	.15411 7.1841*			.6917 .6783	2.1779*
	2-2	-506.47 2.6207*	.1456 6.1109*	215.67 .84379		.7014 .6743	2.0571*
	2-3	-793.53 3.4737*	.13181 5.6686*	245.32 1.0253	77.826 2.051**	.7512 .7157	1.9686*
S ₃	3-1	55.28 .58296	.059879 4.6868*			.4883 .4663	1.3908
	3-2	53.524 .54988	.04893 4.0773*	2.024** .18662		.4893 .4429	1.3911
	3-3	168.40 1.4124	.05445 4.4864*	12.16 .097388	-31.144 1.5726	.5431 .4778	1.6090*
S ₄	4-1	153.12 1.0588	.21382 13.174*			.8830 .8779	.8333
	4-2	144.52 .98085	.20917 11.514*	117.69 .60383		.8849 .8744	.8793
	4-3	46.08 1.3134	.21403 11.224*	107.18 .54628	-27.533 .88468	.8890	.9986 .8732

TABLE 4--continued

Dep. var.	Intercept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² adjR ²	D.W.
S ₅ 5-1	-496.51 1.2859	.25639 5.917*			.6035 .5863	2.6341
5-2	-589.29 1.7344**	.2063 4.925*	1269.6 2.8254*		.7091 .6826	2.1291*
5-3	-661.74 1.5065	.20282 4.5363*	1277.1 2.7764*	19.642 .26921	.7101	2.1230 .6687
S ₅ ' 5'-1	-343.38 .8688	.47021 10.601*			.8301 .8227	2.4966**
5'-2	-444.77 1.3124	.41548 9.9441*	1387.3 3.0952*		.8816 .8709	2.0510*
5'-3	-415.60 .94737	.41687 9.3343*	,384.3 3.0126*	-7.8910 .10828	.8817	2.0617* .8648
S ₆ 6-1	-505.55 2.3529**	.22865 9.4822*			.7963 .7874	2.3047*
6-2	-523.18 2.4080**	.21913 8.1804*	241.24 .83952	.7847	.8026	2.2212*
6-3	-616.34 2.2078**	.21463 7.5470*	250.91 .8576	25.393 .54716	.8054 .7776	2.1407*
S ₆ ' 6'-1	-461.62 2.3288**	.1596 7.1744*			.6912 .6777	2.1598*
6'-2	-475.61 2.3630**	.15205 6.1272*	191.44 .71917		.6983 .6708	2.0593*
6'-3	-724.21 2.954*	.14010 5.6142*	217.12 .8457	67.397 1.655	.7331 .6949	2.0040*
S ₇ 7-1	-308.50 1.3535	.37342 14.598*			.9026 .8984	2.0796*
7-2	-331.09 1.4472	.36122 12.806*	309.11 1.0216		.9070 .8985	2.0242*
7-7	-478.13 1.6396	.35416 11.931*	324.30 1.062	39.865 .823	.9090 .8970	1.9023*
S ₇ ' 7'-1	-441.23 1.0912	.30627 6.749*			.6645 .6499	2.6275
7'-2	-535.77 1.4913	.25523 5.7625*	1293.6 2.7226*		.7490 .7262	2.1742*
7'-3	-493.34 1.0609	.25727 5.4354*	1289.2 2.6476*	-11.503 .14892	.7493 .7135	2.1843*

TABLE 4--continued

Dep. var.	Inter- cept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² adjR ²	D.W.
<u>II. Non-Bogotá observations</u>						
S ₁ 1-1	473.45	.015535			.0017	2.9558
	.60543	.099631			-.1647	
	1-2	-385.36	.10847	1168.8	.4110	2.8033
	.47977	.77286	1.8642**	.1754		
1-3	-260.53	.40909	1867.6	-332.80	.7755	1.7348*
	.46805	2.6796*	3.6449*	2.5479*		.6071
S' ₁ 1'-1	-11.594	.019137			.0660	1.8812*
	.0786	.65090			-.0897	
	1'-2	41.357	.0134	-72.061	.1069	1.8683*
	.2145	.39795	.47883	-.2503		
1'-3	51.871	.038729	-13.194	-28.033	.1750	1.4468*
	.24938	.7689	.06891	.57437	-.4438	
S ₂ 2-1	-163.76	.095583			.2383	2.6292
	.468	1.3699			.1113	
	2-2	-423.03	.12364	352.84	.3804	2.3954*
	1.0024	1.6767	1.0712	.1326		
2-3	-416.05	.14045	391.92	-18.612	.3848	2.3931*
	.88147	1.085	.90206	.16804	-.0766	
S ₃ 3-1	134.79	.01455			.0288	1.7546*
	.77966	.42208			-.1330	
	3-2	210.40	.06369	-102.90	.0920	1.6966*
	.9412	.16303	.58972	-.2712		
3-3	248.20	.09741	108.75	-100.79	.7573	1.6782*
	1.9133**	2.7379*	.91074	3.3111*		5752
S ₄ 4-1	229.05	.18446			.7114	.9856
	.95212	3.8457*			.6633	
	4-2	297.42	.17707	93.056	.7193	.8733
	.93752	3.1942*	.3758	.6070		
4-3	343.70	.28851	166.01	-123.37	.8723	1.9391*
	1.4311	4.3801*	.75096	2.1892**		.7765
S ₅ 5-1	-808.39	.23211	1521.6		.4376	2.688
	.77231	1.2691	1.8624		.2127	
	5-2	-676.59	.54954	2259.5	-351.41	.66661
	.74739	2.2134*	2.7116*	1.6543**		.4157

TABLE 4--continued

Dep. var.	Inter- cept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² adjR ²	D.W.
S ₅ ' 5'-1	-510.96 .42362	.40917 1.9414	1428.6 1.5173		.4766 .2673	2.4582*
5'-2	-332.83 .37003	.83805 3.3977*	2.425.6 2.9291*	-474.78 2.2492*	.7689 .5956	2.3687*
S ₆ 6-1	-36.888 .06826	.12749 1.1832		.0540	.1892	2.1958*
6-2	-164.38 .22965	.14129 1.1297	173.51 .31056		.2045 -.1137	2.1439*
6-3	-109.35 .14776	.27382 1.3490	481.60 .70697	-146.72 .84489	.3250 -.1813	2.0628*
S ₆ ' 6'-1	-381.67 .64859	.13705 1.3328	280.78 .61129		.2645 -.0297	2.1983*
6'-2	-364.18 .55773	.17918 1.005	378.73 .63011	-46.644 .30443	.2812 -.2580	2.1438*
S ₇ 7-1	-84.25 .12074	.31411 2.5762*	187.72 .34466	.4171	.5836	2.1458*
7-2	-20.483 .029498	.46769 2.4557*	544.74 .85224	-170.02 1.0434	.6727 .4273	2.3931*
S ₇ ' 7'-1	-597.99 .49349	.23848 1.1263	1418.7 1.5		.3467 .0953	2.6187
7'-2	-428.39 .44631	.64695 2.4573*	2368.3 2.6805*	-452.20 2.0077**	.6746 .4305	2.1953*

III. All Bogotá Observations

S ₁ 1-1	-143.14 .38663	.11355 3.1417*			.3967 .3567	2.2771*
1-2	77.75 .17998	.12569 3.2931*		-69.11 .99348	.4366 .3561	2.2349*
S ₁ ' 1'-1	16.442 .46928	.0058068 1.6976			.1612 .1052	1.9048
1'-2	53.55 1.4221	.0078464 2.3583**		-11.744 1.9146**	.3352 .2403	1.55

TABLE 4--continued

Dep. var.	Intercept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² adjR ²	D.W.
S ₂ 2-1	-586.91 2.1502**	.16193 6.0767*			.7111 .6919	2.3030
2-2	-896.61 3.1172*	.14491 5.702*		98.016 2.092**	.7799 .7485	2.1626
S ₃ 3-1	191.71 .90696	.21244 10.294*			.8760 .8677	.9098
3-2	227.75 .89486	.21442 9.5352*	.2751	-11.405 .8591	.8767	.9537
S ₄ 4-1	113.45 .86027	.047503 3.6897*			.4758 .4408	1.5974
4-2	160.84 1.0225	.050107 3.6055*		-14.999 .58538	.4883 .4152	1.6496
S ₅ 5-1	-730.06 1.5023	.27549 5.8068			.6921 .6716	2.4582*
5-2	-818.86 1.4001	.27060 5.2367		28.105 .29501	.6940 .6503	2.4582*
S ₅ ' 5'-1	-538.34 1.1120	.48792 10.323*			.8766 .8684	2.1292*
5'-2	-591.11 1.0125	.48502 9.4025*		16.7 .17561	.8769 .8593	2.1140*
S ₆ 6-1	-576.72 2.09**	.23636 8.7737*			.8369 .8260	2.5096
6-2	763.54 2.3958**	.22609 8.0291*		59.127 1.1389	.8507 .8294	2.3384
S ₆ ' 6'-1	-570.47 2.1317**	.16774 6.4203*			.7332 .7154	2.3724*
6'-2	-843.06 2.9028*	.15276 5.9529*		86.272 1.8236**	.7844 .7536	2.2987*

TABLE 4--continued

Dep.	Inter- cept (a)	Income (b)	Loan dummy (c)	Family wage (d)	R ² adjR ²	D.W.
S ₇ 7-1	-378.76 1.2323	.38018 12.669*			.9145 .9088	2.16*
7-2	-615.31 1.7572**	.36717 11.868*	1.3126	74.867 .9130	.9239	1.91*
S' ₇ 7'-1	-616.61 1.228	.32299 6.5888*			.7432 .7261	2.3978*
7'-2	-658.02 1.0862	.32071 5.9916*	.13281	13.107 .7069	.7435	2.3934*

* = Significant t score at 1 percent level.

** = Significant t score at 5 percent level.

The starred items under D.W.--Durbin Watson--statistic indicate that one cannot accept the hypothesis that there is autocorrelation. The majority of non-starred statistics are in the range of neither acceptance nor rejection of autocorrelation.

material, and finished inventory expenditures, and home expenditures, generally added to the R^2 as did educational expenditure; but home expenditures added significantly less than did either educational expenditure or financial saving.

7. Although dummy variable analysis by product and location did not yield significant coefficients, regressions run by product groupings of clothing, leather, and wood gave acceptable results for income and, to a lesser extent, for family size. Smallness of sample size was an especially great problem here with η 's between 6 and 8.

8. In Table 5 the marginal saving rate coefficients are shown both for regression runs with and without dummy variables. The runs without the loan dummy consistently indicate high coefficients. It is these to which we refer. First, the marginal rate of financial saving across the cross section is significant and positive, being 10 percent of income. The addition of educational expenditures, however, adds greatly to this rate, bringing it up to 25.6 percent of income. Finally, expenditure on equipment and inventories has a positive income coefficient, up to 47 percent of income including gross expenditure and 30.6 percent if only new expenditures are added. In short, marginal saving rates are positive and significant if only the traditional consumer categories of financial saving is included. The rate is not, however, equivalent to the marginal saving rates found by a number of other authors for Colombia at medium and high income levels. But once either educational or inventory and equipment expenditures are brought in, the artisan cross section doubles or even triples the marginal saving rates of even much more affluent groups. (See Table 3.) Most real savings among artisans occur in nonfinancial saving categories simply

because the rate of return is much higher in education, inventories and equipment than in banks for financial earnings. Only "rainy day saving" need be kept in financial forms when the return has often not been equivalent to the rate of inflation.

6. Saving as Educational Expenditure

One question which arises in interpreting the regression coefficients is what portion of the coefficient should be classified as savings and investment as opposed to consumption? For housing rental expenditure which had a large coefficient I believe the current consumption portion is very close to one and hence discounted entirely this element of potential saving.

TABLE 5: Average Marginal Saving Rates Ranges by Concept

		<u>S₁</u>	<u>S'₁</u>	<u>S₅</u>	<u>S'₅</u>	<u>S₆</u>	<u>S'₆</u>	<u>S₇</u>	<u>S'₇</u>
I. General									
w/dummies:	Y ₁	.06	.006	.206	.152	.415	.361	.255	
w/out									
dummies:	Y ₁	.10	.005	.256	.159	.470	.373	.306	
II. By Product:									
<u>Clothing:</u>	Y ₁	.157	-	-	-	.178	.366		
<u>Leather and</u>									
<u>wood:</u>	Y ₁	.288	-	.363	.352	.514			
<u>Basketry:</u>	Y ₁ *	-	-	-	-	-			

* Problems of sample size and the matrix prevented any computer output in these cases.

SOURCES: 75 regression runs reported in this paper.

The situation is very different, however, for expenditure on education. Although conceptually educational expenditure could be either saving-investment or alternatively consumption, the relevant data militate toward considering all such expenditure as saving and investment. Rate of return data in Colombia indicate that all primary and secondary schooling brings a private rate of return of more than 21 percent, for both men and women, both before and after adjustment for participation rates and unemployment as well as social position.¹ The returns for university education drop considerably but still show a rate of return of at least 7 percent for men though the return is negative for women at this level.² These results are in line with the belief expressed in our questionnaires by parents that the education of their children is the primary way of insuring the children of a high income and a good job in the future.³ In our own sample, the great majority of students were enrolled in primary and secondary school rather than in the university. It appears that few of the artisan children plan to continue on into the university perhaps confirming the view that they are motivated primarily toward the investment in human capital rather than toward consumption aspects of education.

¹Cf., Marcelo Selowsky, "El Efecto del Desempleo y el Crecimiento sobre la Rentabilidad de la Inversion Educativa: Una Aplicacion a Colombia," Revista de Planeacion y Desarrollo, 1, no. 2 (July, 1969), pp. 5-68. T. Paul Schultz, Returns to Education in Bogotá, Colombia (Rand Corporation, RM 5645-RC/AID, 1968); Wayne Thirsk, "Income Distribution and Colombia Rural Education," Program of Development Studies Discussion Paper No. 54, Rice University, 1974, p. 22.

²Ibid., Selowsky, Tables 4 and 5.

³In Berry and Urrutia, Income Distribution in Colombia (New Haven: Yale University Press, 1977), p. 196, this is expressed much more strongly as the "only" means of saving income and securing a job. At least for the artisans I interviewed this would be an overstatement!

Social rates of return were also found to be high. Schultz concluded that the social rate of return for men was 15.3 percent for primary schooling, 26.5 percent for secondary schooling, and only 2.9 percent for university education. For women the rates were zero, 13.5 percent, and 3.6 percent respectively.¹ Selowsky concluded that the social rates of return were very similar to those he found for private returns.²

As Thirsk argued, "...further investment in this direction (education in Colombia at the primary and secondary level)...would yield returns far in excess of what is considered to be the opportunity cost of capital, 11 to 14 percent."³ Thirsk is, of course, emphasizing public expenditure on education. What our own data show is that artisans are saving and investing heavily in an area where the expected rate of return is very high if not the highest available to them and others in the Colombian economy. Though we do not have comparable data for the general Colombian population it is doubtlessly true that similar income groups are spending far less than have our sample of artisans on education for their children.

7. Saving Behavior of Bogotá and Non-Bogotá Artisans

The traditional distinction between urban and rural saving behavior was found to be valid in our sample although rural non-Bogotá artisans saved less by all definitions of saving than did Bogotá artisans as shown

¹T. P. Schultz, "Returns to Education in Bogotá, Colombia," (Santa Monica, California: The Rand Corporation, September, 1968).

²Op. cit.

³Wayne R. Thirsk, op. cit.

in Table 6, a finding which conflicts with findings for broader classes elsewhere.¹ The level of significance of the differences varied as between categories. It was most sizable for the broadest definitions of saving and least for the narrowest with several instances of overlapping. Why our Bogotá artisans saved more than non-Bogotá artisans is open to supposition.² One feasible explanation is derived from our earlier discussion of capitalist vs. noncapitalist behavior. Non-Bogotá artisans utilized more family, nonwage labor and presumably had a more difficult time making calculations regarding profits. Their incomes were also lower. Thus, ceteris paribus we would expect that their saving behavior would be less pronounced than would those of the more entrepreneurial, educated and informed capitalistic Bogotá artisans.

One implication of the substantial difference in marginal saving behavior here is that different policies might be appropriate for the two groups. Perfecting the market, lowering the cost of raw materials, and decreasing the degree of monopoly in product markets might be the most efficacious first step for rural artisans whereas increasing the flow of credit to urban artisans might be most appropriate at this stage of development. This policy differentiation is validated by the identification of prime problems of the artisans themselves. Most rural artisans saw markets, prices, and transportation as the prime problems whereas Bogotá artisans mentioned credit and working capital as a major constraint much more frequently (six versus one--see Table 1).

¹Op. cit., Crockett and Friend.

²Not all of our non-Bogotá artisans were, strictly speaking, rural but were at least from small towns of much lesser size than Bogotá. The broad category of non-Bogotá was necessary due to the already small number of artisans in the sample.

TABLE 6: Rate of Return Analysis

Art- isan sector	Monthly income	Qual- ified wages	Other income	Entrepreneurial earnings		Gross investment	Annual rate of return
1	\$ 4,000	\$ 2,000	-	\$ 2,000	x12 24.	15,000	159.6%
2	6,000	2,000	-	4,000	" 48.	15,000	320.4
3	7,000	1,000	4,000	2,000	" 24.	8,100(100)	296.4
4	6,000	5,000	-	1,000	" 12.	22,000	54.
5	2,000	2,000	-	-	-	27,000(2,000)	-
6	7,000	2,000	-	5,000	" 60.	70,000(10,000)	98.4
7	9,600	500	5,600	3,500	" 42.	6,000	699.6
8	4,500	1,000	-	3,500	" 42.	200,000(50,000)	27.6
9	54,000	20,000	-	34,000	" 408.	130,000(60,000)	536.4
10	20,000	2,000	-	18,000	" 216.	160,000(20,000)	152.4
11	1,000	500	-	500	" 6.	3,500	171.6
12	6,000	1,000	2,000	3,000	" 36.	4,200	856
13	2,100	1,000	-	1,100	" 13.2	3,000	440
14	1,600	800	-	800	" 9.6	6,000	159.6
15	1,500	1,000	-	500	" 6.	3,000	200.4
16	7,000	5,000	-	2,000	" 24.	80,000(40,000)	54
17	8,000	3,000	2,000	3,000	" 36.	5,000(3,000)	156.4
18	2,000	1,200	-	800	" 9.6	15,000	63.6
19	20,000	1,200	8,500	10,300	" 123.6	95,000(30,000)	181.2
20	6,000	1,000	-	5,000	" 60.	60,000(10,000)	117.6
21	8,000	1,000	-	7,000	" 84.	80,000(30,000)	158.4
22	9,000	3,000	-	6,000	" 72.	100,000(30,000)	98.4
23	4,000	2,000	1,000	1,000	" 12.	15,000(1,000)	85.2
24	20,000	4,000	-	16,000	" 192.	1,500,000(300,000)	156.
25	4,500	4,000	-	500	" 6.	29,500(25,000)	85.2
26	4,500	1,800	-	2,700	" 32.4	90,000	36.
27	10,000	1,600	-	8,400	" 100,8	260,000(30,000)	43.2

8. Artisans' Rate of Return

Intriguing questions arise from the data on rate of return on entrepreneurial investment in working capital and equipment. From monthly income we deducted the wages of the qualified workers where non-family labor was hired. Where only family labor was employed an imputation was made estimating the value of qualified non-family labor. Other income from non-artisan activity was also deducted leaving an estimate of the pure return on entrepreneurship, investment in working capital, and equipment. Gross investment was estimated as an average level of inventory of raw material and finished goods plus the depreciation on simple tools and equipment. A ten year life was assumed. Monthly earnings were then analyzed to yield the rate of return (Table 6).

The simple average annual rate of return for all artisans in the sample was 241.6 percent. This rate for the fifteen artisans which were believed to be extremely reliable was 282.7 percent; for thirteen artisans without "high" returns on them the return was 152.3 percent per annum. The distribution of the rate of return was uniform with the modal rate of return being close to 200 percent on capital.

What can explain such seemingly high rates of return when the opportunity cost of capital is between 11 and 14 percent in Colombia? Several factors come to mind. First, part of the return is for entrepreneurship. The deduction for a qualified worker's earnings does not take this into account. Secondly, the riskiness of the artisan trade is typically greater than for medium and large scale businesses, a fact partly exemplified by the higher rate of interest charged by the private sector for loans to artisans even considering the monopoly character of

the lender and the small size of most loans where economies of scale may be of importance. Third, our data and analysis are for a fairly short period of several months and at most a year. Even though we always took the more conservative basis of estimating income and rate of return, we do not want to imply that this has been or will necessarily be the long-term rate of return of even these artisans.

Alternatively, even if we double or triple the opportunity cost of capital for these artisans, the share remaining as a return on entrepreneurship is still close to several hundred percent per year--a return far above that of other sectors in Colombia. At the same time, the sizable rate of return is not so out of line by other criteria. Considering that virtually all of these entrepreneurs have extremely labor-intensive operations, ones in which capital is traditionally relatively unimportant, and that they are by their own admission heavily undercapitalized (below the optimum even within their own industry) the findings are not surprising. The average capitalization of all 27 artisans was only U.S.\$4,496. Excluding one very large outlier, it was only U.S.\$2,631. About half of the artisans had a capitalization of U.S.\$500 or less, these being rural and/or producers using only family labor. Thus, the large return on entrepreneurship which overshadows the more traditional capital measure of an adequate return tells us more about the nature of the sector itself and the nature of the artisan participants than anything else. Suffice it to add that the artisan entrepreneurs in our sample are abnormal even for artisans in that they are participants in national fairs--participation which required more knowledge, information, mobility, and/or entrepreneurship than the typical Colombian artisan possesses.

9. Policy Considerations for Artisans

Although perfecting the credit market is one major policy recommendation of this paper, there are several other important policy steps which could and should be taken. Perfecting and improving both the market in which artisans purchase raw materials and the market in which they sell their final product are of immense importance. Urban, national artisan fairs have been crucial to the more aware, market articulated entrepreneurial artisan because the fairs permitted a short circuiting of the mechanism by which artisans sold to monopsonistic middlemen at one-half to one-quarter the price at which they sold directly to the consumer in the fairs.¹ On the cost side, artisans purchased raw materials from monopolistic local sellers in small quantities of inferior quality at multiples of the price paid by bulk purchasers in medium and large scale industries.² Purchasing cooperatives have had some limited success here in lowering costs, but on a small scale thus far.

Serious, concerted efforts on perfecting the credit, selling, and purchasing markets would have manifold positive repercussions on the income levels of the estimated one million artisans and small scale traditional producers in Colombia. Moreover, up to one additional million potential producers could participate from both urban and rural regions of the country with the cooperation of Artesanias de Colombia, SENA, and the Museum de Arte Tradicional in Bogotá--the major teaching and design institutions in the country. In most instances, the work might be part-time,

¹Even so, prices in the fairs are typically much less than in retail shops or the government outlet Artesanias de Colombia.

²Raw material prices can be 3 to 4 times as high for some materials--leather, wool, cotton, and fics--and quality very low, as in leather, rendering the product unsuitable for exportation.

involving women and even older children. The income would be supplemental to either agricultural earning in rural areas or for unskilled work in the informal sector in the urban zone. But it could fundamentally raise the income levels of a substantial part of the subsistence group population. Given the very high income elasticities of demand in the world market for many of Colombia's artisan products, there is no reason why a substantially larger export supply of such products should depress their domestic price.¹ An expansion of domestic supply would, however, have a depressing effect unless tourism or exportation is expanded parri passu.

10. Conclusions

In general, the saving rate analysis via multiple regression both verifies and extends the analysis of the previous section--summarized in Table 2. While financial savings were not substantial, broadly defined saving rates of the sample of 25 artisan producer families was on average higher than that found by previous investigators in Colombia in Table 3. All concepts of savings-- S_6 to S_8 --were very significantly higher for small scale entrepreneurs. Although the general population has less opportunity to save and invest via inventories than do entrepreneurs, one cannot safely conclude that this difference reflects the fundamental factor in saving behavior differentials between types of income recipients. Small

¹The proviso is that sufficient efforts are made concerning product design to meet international quality standards. Most, thought not all, artisan products sold domestically tend to be inferior to those sold internationally. A large expansion of low quality goods would, in fact, be self-defeating. It is the international, and not the domestic market, to which Colombia must increasingly turn such product areas.

scale entrepreneurs more than doubled the saving rate of the general population due not only to "own" investment opportunities even at fairly low income levels, but to added marginal savings on educational expenditure for their children.

Our conclusion of doubled saving rates for small scale artisans is still subject to modification. Further work involves both multivariate analyses and derivation of 'changing' marginal savings rates by producers and income groups. An extended sample of entrepreneurs in Colombia and some follow-up on current data would be valuable. The results thus far are still based on a relatively small sample size of a special population-- that of artisans selling in urban fairs. It would be premature to extend the analysis based on the sample group to the entire population of artisans in Colombia. These and other similar producers, however, probably reflect accurately one limit of the spectrum which artisans may approximate due to the increasing numbers of local and national artisan fairs in Colombia as well as a rapid development of international markets.

We conclude that the sample, though smaller than one would wish, nonetheless indicates that the artisan saving function does lie above those previously found elsewhere for the general Colombian population, whether in Bogotá, in other major urban areas, or even in the rural areas where saving rates are typically higher than in the cities. While further work is

¹There has, in fact, been increasing competition between fairs sponsored by the government and the artisan organization as the latter becomes better developed. A great deal of conflict is being generated as artisan unions are beginning to practice self-help and challenge the government's paternalistic efforts.

necessary to more fully validate this conclusion, we can tentatively conclude that low income small scale entrepreneurs have relatively high saving rates and that these are largely explained by "own investment" in a market which, though not highly organized, has experienced rising demand.¹ This growth in demand has been seen particularly at the international level in artisan and cultural type small scale products. Traditional goods production, sales, and exportation have been growing in Colombia at a rate well over those of general manufacturing products and at a compound rate over the past ten years of approximately 12 to 15 percent per year.²

One would like to measure the effect which the availability of credit has had upon an additionally higher savings rate in this sector. Our current findings suggest that artisans with credit have significantly higher saving rates for every concept of savings than do artisans without credit. We are uncertain regarding the direction of cause and effect, however, which only time series data could definitively resolve, i.e., do higher savers receive credit from the government or do artisans save more after receiving credit. Current Colombian credit policy has channeled very few loans to artisans, despite a great deal of public fanfare about helping this sector. There is a very large and real producer demand for credit in the artisan and traditional sector. The price which the great

¹The above general conclusions are also supported by the findings of another one hundred artisans and small scale industry questionnaires which did not focus as completely as those in this paper on savings.

²Op. cit., Ho and Huddle.

majority of small scale producers are "willing and able" to pay is in the range of the going market rate; but the quantity of credit demanded is quite low at moneylender rates of interest--40 to 60 percent per annum despite the high average rate of return on capital. Risk and uncertainty are high for many artisans. Lastly, the form of savings in non-direct capital goods, working capital, and education are quite important and should be increasingly met from Colombian credit facilities if pronounced goals of providing aid and job opportunities are to be met by the government, not to mention some increase in the equality of distribution of government lending as between small and large scale sectors.

APPENDIX

Some Added Analysis of the Regression Results: Correlation between Variables

The simple correlation coefficient matrices indicate a high correlation between rent expenditure and family size which is an a priori expectation. Intercorrelation is also high between income and educational expenditure. This is in accord with what has been said on many occasions by rural and urban artesans in Colombia. Education is valued highly for their children as a means of breaking the hold of poverty. Upward mobility appears to be valued in and of itself, apparently much more so than for other groups in Colombia.

A more sophisticated test of multicollinearity using Chi-square is given by Haitovsky which uses a probability test on the determinant of the normalized matrix of the independent variables; this yields a estimate of multicollinearity:

$$\begin{array}{l} \text{limit } \chi^2 \longrightarrow 0 \\ (J) \longrightarrow 0 \end{array}$$

As the matrix approaches singularity the χ^2 approaches zero, indicating a rejection of the null hypothesis of no multicollinearity.

The results of the Haitovsky test are shown in Table A for each set of regressions described in the paper. We are able to reject the condition of multicollinearity for all concepts of saving in cases II and V. In cases III and VII we are able to reject multicollinearity only for S_1 .

TABLE A: Tests for Multicollinearity

I. These are the runs with all 25 observations straight run with all dummy variables:

	21	26	27	28	29
1.	1.1937	.6192	.6192	.6192	.6192
2.	1.0460	.5437	.5437	.5437	.5437

II. Straight run, no dummy variables. 25 observations.

	21	26	27	28	29
1.	54.6746**	20.2932**	20.2932**	20.2932**	20.2932
2.	28.7544**	14.2900**	14.2900**	14.2900**	14.2900**

III. Straight run, leather-wood, Bogotá designations. 9 observations.

	21	26	27	28	29
1.	2.8591	.2340	.2340	.2340	.2340
2.	12.2622*	.5307	.5307	.5307	.5307

IV. Log-Log run, Bogotá designation. 12 observations.

	< 21	< 26	< 27	< 28	< 29
1.	7.6128	3.4140	3.4140	3.4140	3.4140
2.	4.7644	2.3188	2.3188	2.3188	2.3188

V. Following runs have had 4 questionable cases removed
Straight run, no dummies. 21 observations.

	21	26
1.	40.6126**	18.3396**
2.	25.5992**	13.3183**

VI. Straight run. Leather-wood. 7 observations.

1.	2.0991	.0251
2.	-	.0328

VII. Straight run. Clothing. 8 observations.

1.	18.1541**	2.4234
2.	1.3719	.6671

VIII. Straight run. Baskets. 5 observations.

2.	5.9769	.6825
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