

THE POTENTIAL FOR FINANCIAL SAVINGS IN RURAL MOZAMBIKAN HOUSEHOLDS

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1. Introduction

There has recently been an upsurge of interest among development economists, governments, and international donors to increase financial savings in developing countries (DCs), particularly in rural areas and from non-wealthy households. However, a large number of DCs are unable to mobilize the potential savings of the non-corporate sector because the structure of their financial institutions, financial instruments, and interest rates are unsound (Vogel and Burkett, 1986; and Adams, Graham, and Von Pischke, 1984). It is erroneously believed that rural populations, particularly in Africa, have no margin for savings over consumption needs (Mauri, 1977; Robinson, 1994 and Fernando, 1991).

In Mozambique, as in many other poor countries, some key characteristics and policies of the financial sector, particularly financial repression, explain the poor performance of the formal financial sector (Carboni, 2001). The incapacity of private commercial and state banks to supply financial services to the rural and urban poor is an indication of their failure to perform in this developing market economy and the overall weakness of a still rudimentary banking industry.

Since most of the country's commercial banks have only been privatized recently, in 1996 or early in 1997, they are slowly adapting to the new ownership structure. Banks generally do not offer financial services to medium and small-scale farmers, and micro and small-scale entrepreneurs. Rather, banks operate primarily as deposit institutions for a few large clients and as providers of deposit services for the government. To reduce their transaction costs, banks tend to limit the number of loans and concentrate their services on a few, less risky clients. Moreover, interest rate ceilings on loans may cause banks to pay low interest rates on deposits that adversely affect the incentives to save (Berthelemy and Soderling, 2001).

Several reports have shown that in Mozambique, a large part of the economic system does not have access to formal financial services (Graham and Francisco da Silva, 1993; Larson, Zaqueu, and Graham, 1994; and Chidzero, Lassimo, Hunguana, and Cuevas, 1998). The failure of banks to manage credit and saving lines for small

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savers and borrowers has encouraged donor organizations to consider using non-government organizations (NGOs) to reach target groups, including small agricultural producers, micro and small entrepreneurs and rural traders. The majority of the population lives at the margin or even outside the boundary of the formal financial frontier. For informed decision-making, policy makers need studies addressing the issues of either savings mobilization or the determinants of household financial savings behavior in rural Mozambique.

This paper estimates the potential for financial savings in rural Mozambican households, with special emphasis on understanding the magnitude of savings, and the determinants of household savings behavior. The main objectives are to identify and estimate the determinants of household saving behavior and examine their policy implications.

2. Determinants of Saving Behavior in Low Income Countries

The financial structure has failed to mobilize potential savings in rural areas because of the lack of financial instruments tailored to saving motives and preferences for positive real interest rates (Mauri, 1983 and Patten and Rosengard, 1991). Household members make inter-temporal decisions on forgoing present consumption for future consumption (Mikesell and Zinser, 1973). The preference for future consumption instead of present consumption allows for the accumulation of wealth in the form of financial and non-financial assets. Increasing interest rates on savings make it more attractive for households to save more or, put differently, forego present consumption in exchange for greater consumption in the future.

Interest rates are commonly cited as determining the level of savings. In many DCs, the Central Bank sets the nominal interest rates on deposits and they are not flexible. Therefore, when associated with high levels of inflation, fixed rates prevent financial institutions from capturing savings because the fixed nominal rate when adjusted for inflation can become a low or even negative real rate of interest on deposits (Ziorklui and Barbee, 2003). Gupta (1970) examines the relationship between savings and interest rates, using time-series aggregate data from India. He finds that the relationship is significant only in the urban areas and not in rural areas. However, in all cases considered, the sign of the relationship turned out to be positive. Studies

of savings in 21 developing countries by Wai (1972), in 15 developed countries by Fry (1978), in West African countries by Leite and Makonnen (1986), and in several Sub-Saharan African countries by Charlier and N'cho oguie (2002) have all supported the positive relationship between interest rates and savings.

The high rate of fragmentation of financial markets in DCs makes cash and short-term deposits the most common form of financial assets. Members of households in DCs also keep their savings in the form of semi-liquid assets such as livestock and poultry, crop inventories, and gold ornaments (Meyer and Alicbusan, 1984). Households keep buildings and equipment as non-financial savings. Non-financial assets are unproductive; however, they are valuable inflation hedges for households.

Transaction costs are other determinants of savings behavior among households. They reduce the net return to deposits and have a negative impact on depositors (Gonzalez-Vega, 1994). Formal financial markets frequently have much higher transaction costs than informal financial markets. Transaction costs in financial markets comprise the explicit cost of travel and related expenses and the implicit cost of the time used in maintaining accounts. There is evidence that transaction costs influence both non-interest bearing deposits and demand and time deposits. For borrowers and depositors of financial institutions, the costs of meeting bank requirements may result in high transaction costs, and consequently, very low net returns on deposits.

The savings-income relationship has been debated and led to empirical studies using two alternative approaches: the "Keynesian Absolute Income" Hypothesis, and the "Non-Keynesian" Hypothesis, (Mikesell and Zinser, 1973). The Keynesian Absolute Income Hypothesis asserts that saving is a function of the level of one's current income. *Ceteris paribus*, saving is a function of the household's income, hence:

$$S = a_0 + a_1 I. \quad (1)$$

In this model, the intercept (a_0) is assumed less than zero, and the marginal propensity to save (a_1) is assumed to be between zero and one. The capacity to save by the household is determined by the marginal propensity to save (MPS) and the average propensity to save (APS). Thus, the savings or (consumption) function is linear with a constant MPS.

The non-Keynesian studies of saving behavior in developing countries have utili-

zed three alternatives to the Keynesian saving income relationship: (i) the Duesenberry "Relative Income" hypothesis; (ii) the Friedman "Permanent Income" hypothesis; and, (iii) the Modigliani- Brumberg-Ando "Life Cycle" hypothesis. In addition to current income, the three hypotheses take into account the rate of growth of income, the permanent or non-transitory income and the age of the household head as determinants of saving behavior.

2.1 Determinants of Household Propensities to Save

When addressing the question of what determines the household's decision to hold financial savings, a distinction must be made between what is possible for people to save and what part of their current income they are willing to withhold. The latter is called the propensity to save. Many authors, using either the Keynesian savings hypothesis or other approaches, have discussed factors determining the propensity to save. Chenery and Eckstein (1970) developed estimates of the simple linear savings function for 16 Latin American countries for the period 1950 through 1964. These authors find that, with the exception of four countries, the derived MPS is positive and lies between zero and 30 percent. The average savings rate over the period studied, for the entire Latin American region rose only slightly from 16.3 in 1951 to 16.9 in 1964 (Chenery and Eckstein, 1970).

Edwards (1996) studied Latin American savings rates for 36 countries from 1970 to 1992 and found that per capita income was the most important determinant of private and public savings. A recent study of savings rates among 27 African countries from 1960 to 1996 shows that generally savings performance is weak (Berthelemy and Soderling, 2001). They found that Mozambique had a strong economic growth rate (annual average of 6.2 percent from 1986 to 1996) financed largely by external funds and that domestic savings was low and had to increase to achieve sustainable economic growth.

Dell'Amore (1977) extensively discusses the pre-requisites needed for a household to reach a significant propensity to save. Among those the study identifies are: i) environmental factors, since the propensities to save and to consume influence each other reciprocally; ii) legal, political and social order factors; since the legal order safeguards security, stability and the inviolability of the law; iii) economic and monetary policy factors and iv) literacy levels. Because of the diverse number of factors affecting the pro-

propensity to save, the author concludes that the propensity to save does not depend solely upon the economic conditions that establish a direct connection between the volume of savings and the pattern of national income distribution (Smith, 2001).

Wai (1972) developed an integrated model of savings behavior in developing countries (DCs). Three sets of components affect the household's decision to hold financial assets: (i) the ability to hold financial assets or just save (A), (ii) willingness to hold financial assets (W), and, (iii) the opportunity to hold financial assets (O). Thus, holding financial assets by the household can be expressed as:

$$S = f(A, W, O) \quad (2)$$

Where A is the ability to hold financial savings and it is a function of income (I), dependency ratios (D), and wealth levels (w). Hence, $A = f(I, D, w)$. The willingness to hold financial savings (W) is determined by interest rates (Ri); the stage in the life cycle of the household (L); and cultural factors (C) affecting households savings behavior. Hence, $W = f(Ri, L, C)$. The opportunity (O) to hold financial savings in a financial institution is a function of the supply of financial intermediation services accessible to savers (F) and the possibility of investing (i), using the self-generated funds to finance one's own investment. Hence, $O = f(F, i)^2$.

A study of determinants of informal savings behavior in South-Western Nigeria found that savings was affected by income, age, occupation, education, and region of residence (Oladeji and Ogunrinola, 2001). They found that income and age accounted for most of the variation in the level of savings and that the MPS was positive but less than one.

The expectations for Mozambique, derived from the reviewed studies regarding the MPS and APS, are that households will have a very low marginal propensity to save. The causes for this expected low savings rate are: (i) a high bank excess liquidity rate due to a lack of credit to households; (ii) lack of appropriate financial policies to promote deposit and savings mobilization, particularly in rural areas where there is a lack of banking infrastructure; (iii) lack of appropriate and effective lending techno-

² Although there are many other factors that are believed to affect savings behavior, it is difficult to specify a variable that would give them an exact magnitude that could be evaluated and incorporated into the above equations.

logies by semi-formal financial organizations (e.g. NGOs) that are present in a large part of the rural areas; (iv) lack of diversified savings products, (e.g. time deposits, short-term deposits, etc.) since most banks only accept cash and pay no interest on checking accounts. The consequence of all these factors can be expected to result in a low marginal propensity to save for households and a high propensity to consume.

3. Research Design and Empirical Models³

The present study was carried out in the province of Nampula, Mozambique in the districts of Nampula, Muecate, and Ribaue. Eight villages (two in the district of Nampula, three in Muecate, and three in the district of Ribaue) were surveyed during three weeks in the month of August, 1998. Of the eight villages, two from the Nampula district involved interviews with some members of "Caixa das Mulheres Rurais (CMR)" who are savers in a local women's savings and credit association. A questionnaire was used to interview a random sample of 113 people from the eight villages, mostly household heads; 43 were from the periphery of Nampula, 38 in the district of Muecate, and 32 in the district of Ribaue.

3.1 *The Household Savings Model*

Drawing upon the theory and studies discussed above, the household's saving model in this study is:

$$S = f(I, PW, HS, GR, LIAB, DR, Ri, AGE, YS, DEX, DIS, SF) \quad (3)$$

I represents observed income; PW represents household physical wealth; HS represents household size; GR represents gender of the household head; LIAB represents household liabilities; and DR represents the dependency ratio, a ratio of non-working age to working age household members. Ri represents deposit rates paid by the financial institutions; AGE represents age of the household head; YS represents years of schooling of the household head; and DEX represents the donation expectation ratio. DIS represents distance to the source of any financial service- a proxy to

³ A detailed description about the survey design, data and empirical models can be found in Amimo (1999).

transaction costs; and SF represents the number of financial intermediaries available to the household.

The donation expectations concept grows out of the fact that Mozambique has gone through many years of emergency programs where donor and non-government organizations handed out "donations" either in goods or in cash through "credit programs". These programs had no true affinity with a conventional credit activity since there was no design mechanism expecting the borrower to repay the loans. Therefore, it is argued that the household's savings level is affected by the expectation of getting a donation. It is assumed that the higher the expectation of receiving a donation, the lower the level of savings. Thus, as donations to households increase, the lower is the saving of that household. The donation expectation ratio is calculated as the ratio of the value of donated assets received by the household to the value of financial asset holdings. In the model, the expectation of getting a donation is assumed positively related to the ratio.

Observed inflation rates were not included in the model for two reasons: (i) the country has been experiencing very stable inflation rates since 1996; (ii) the data used for this study is cross-sectional.

Mathematically, the above econometric model follows a quadratic functional form⁴.

The household head's age and the household's physical wealth make the model follow the quadratic functional form, while it is linear in other variables. Equation (3) therefore becomes⁵:

⁴ A quadratic form was selected because it has been assumed that when the household head is younger the will to hold financial savings increases until the function reaches a peak and then starts decreasing. This is a common characteristic of the quadratic functional form. The accumulation of physical wealth by the household also follows the quadratic functional form, i.e. it increases and reaches a peak and then starts decreasing again.

⁵ From equation (4), it can be seen that some variables originally incorporated into equation (3) were left out. These variables are: the nominal interest rate (RI), distance (DIS), source of funds (SF), household liabilities (LIAB), and the donation expectation ratio (DEX). The reasons for each omission are as follows: (1) When using informal financial intermediaries, rural households in Mozambique do not pay interest in cash since debt is acquired with reciprocal social obligations. Usually households use this reciprocity principle instead of paying interest on their loans or other obligations. (2) Most households in the sample use informal financial services from the same village, thus distance from the source of financial services was taken to be zero. (3) The sample revealed that few households, only three percent, have accounts with formal and semi-formal financial institutions. (4) Although acknowledging that households have liabilities in their portfolio, these figures were not easily available to the interviewers. Households dislike telling how much they owe. (5) Only a few households could quantify the amount of money and goods received as a donation during the season. Its small size, therefore, was believed to influence negatively the results; thus, it was removed from the function.

$$S = S_0 + a_1I + a_2PW + a_3PW^2 + a_4AGE + a_5AGE^2 + a_6HS + a_7D + a_8DR + a_9YS + a_{10}GR + \mu \quad (4)$$

The error term, μ , is assumed to be normally distributed, and it represents all other factors affecting the decision of the household to hold financial savings. Other household head variables such as the gender, the principal occupation, and the economic differences among districts were incorporated into this equation by using dummy variables⁶.

3.2 Definition and Measurement of the Variables for the Empirical Models

3.2.1 Dependent Variable

The dependent variable (S) is the respondent's financial holdings either at a financial institution or at home, during the fiscal year August 1997 to August 1998. This holding includes monthly loans granted (to parents, relatives, neighbors and friends), deposits (with banks, xitiques or roscas, moneykeepers, and traders), and any money held at home.

3.2.2 Explanatory Variables

The willingness of the household to hold financial savings is determined by the level of income, physical and financial wealth, liabilities, size of the household, the age of the household head and the dependency ratio. (I) is the household's monthly current income during the year considered above. A household's monthly current income (I) is the sum of agricultural and non-agricultural income observed during the period. Agricultural income is the sum of the total value of crops and poultry, while non-agricultural income is the sum of off-farm earnings including earnings from small businesses and remittances.

⁶ As previously discussed, the data was obtained from an independent sample survey in three districts of the province of Nampula. The three districts are believed to be different in their characteristics of household economic activities and income earnings pattern; therefore, a dummy variable, Location (D) was introduced into the model. It was assumed to be 1 if it is Nampula district, and 0 otherwise; 1 if Ribaue district and 0 otherwise; 1 if Muecate district and 0 otherwise. A dummy variable was also introduced for the gender of the household head; thus, 1 if Male and 0 otherwise.

The physical wealth of the household is a proxy for Wealth (W). Given the fact that this research intends to study the determinants of financial savings, all financial holdings by the household are incorporated into the dependent savings variable. The component of wealth that may affect the household's decision to save is physical wealth (PW), including the aggregate value of utensils, tools, agriculture inputs, livestock and poultry, land, buildings and small constructions at their current prices. The value of buildings was taken to be 20 percent of the reported value by the household. The reason for this procedure is that households overestimate their assets in order to protect themselves, and in order to get better prices in case they make any sales.

Other factors believed to influence the ability to save are demographic factors such as household size, the dependency ratio, the age and gender of the household head and the number of years of schooling of the household head. Household size (HS) is the number of members sharing the same household. The dependency ratio (DR) is the number of non-active household members (those less than 15 and over 65 years old) divided by the number of active members of the household (those between 15 and 65 years old). It is expected that as dependency ratios increase, the financial savings by a household will decrease, since consumption will be higher. Faruquee and Husain (1998) and Mohsin (2002) found this to hold in Asia and Pakistan, respectively.

The age of the household head is positively related to one's ability to hold financial savings during the working period, and negatively related after retirement. When the head of the household is very young, the head tends to take more risks in his investment portfolios. With increasing age, the head of the household becomes more aware of the risks involved. Therefore, the head tends to save more. Thus, it is expected that households with younger heads will keep less financial holdings, while those with older heads will have higher financial savings.

The willingness for households to hold financial savings with a regulated financial institution depends upon interest rates as an incentive to hold deposits. However, with a cross section study at one point in time, information on interest rate charges was not available. Furthermore, with informal financial intermediaries, interest charges may not be explicit. In Mozambique, households granting credit or depositing their money with money-keepers or traders do not always know the meaning of interest rates. Although the households are used to the practice when it refers to in-kind credit programs, financially it becomes difficult to explain their exact meaning. Therefore, the model for this study eliminated interest rates.

Education (EDU) also has an important role in the ability of the household to acquire information. Education has an impact on how the households decide to allocate their earnings. The ability to read helps households to account for risk taking. Education is measured by the number of years completed in school for the household head. It is expected that the higher the education level, the greater is the financial savings of the household.

Finally, the gender of the household head has a double influence on the levels of financial savings by the household. Female heads of households are usually required to share their time between activities that increase the income of the household and those purely for house keeping (e.g. child care, transporting water, and wood collection). Therefore, the effects of gender in holding financial savings may face conflicting time allocations and savings potential.

Female household heads tend to be more cautious in spending. Meanwhile, they tend to have lower levels of earnings. Because of this, it is expected that gender will have both positive and negative influences on savings. Gender may have a positive influence for male household heads and a negative influence for female household heads.

3.3 Expected Influence of Each Parameter on Financial Savings

From the stated objectives of this study, the analytical framework and the literature review, the variables used in the household financial savings function and the expected sign of the coefficients are shown in Table 1.

Table 1: Expected Sign of Explanatory Variables on Financial Savings, Mozambique

Variable	Expected Relation with Household Financial Savings (\$) (sign)
Income	+
Physical Wealth	(undefined)
Household Size	-
Household Head's Age	(- or +)
Household Head's Education	+
Dependency Ratio	-
Household Head's Gender	(+ or -)

4. Results

This section presents selected descriptive results from the household survey and the empirical results of the ordinary least squares (OLS) models designed to estimate the determinants of the households' decision behavior on holding financial savings either at home or with a financial intermediary.

The sample comprised household heads that were 61 percent male and 39 percent female and 60 percent, made up of active heads of household, falling within the group 25 and 44 years of age (Table 2). On average, a household was comprised of six members with a dependency ratio equal to 50 percent; within the average of six members per household, three were non-active members.

Concerning social characteristics, the sample revealed that most household heads were married at the time of the interview. Indeed, 77 percent of the respondents were married, 9.5 percent were single, and 13.3 percent were divorced or widowed. This sample composition is very close to the representative characteristics of rural households in Mozambique (Benfica, 1998). However, it is very important to clarify that marriage does not always imply fulfillment of official marriage requirements. In many rural areas of Mozambique, marriage is celebrated in a traditional fashion, with or without the presence of official authorities. The distinction between married and single used in this study is that unmarried individuals do not have partners living with them.

Illiteracy is still a problem in rural areas of Mozambique. The average number of years in school was only two; meaning on average, the head of household completed two years of school. The decomposition of the sample in schooling years showed that about 25.7 percent of household heads could not read or understand Portuguese; 56.2 percent had only primary school, i.e., one to seven schooling years; while only 2 percent had completed secondary school or higher education, 11 grades or more (Table 2).

Almost all interviewed households were poor. Indeed, socioeconomic characteristics proxied by the housing characteristics indicated that the majority of the respondents, (more than 65 percent), lived in rudimentary housing conditions, built with mud-walls, and grass roofs, with no electricity and no running water.

Although the importance of microenterprises for the rural households must be acknowledged, agriculture still constitutes the main occupational activity in rural

Mozambique. The sample revealed that agriculture was the main occupation and source of income for about 61 percent of the households. In the sample, agriculture was followed by off-farm activities, 22 percent; and salaried work, 16 percent (Table 3). These findings are consistent with previous studies (Benfica, 1998).

Table 2: Socioeconomic Characteristics of Head of Household by Location, and Stratum, Nampula, Mozambique.

	Nampula		Ribaua		Muecate		Totals	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
1. Gender								
a) Male	17	44.7	20	62.5	27	75	64	60.9
b) Female	21	55.3	12	37.5	8	25	41	39.0
c) Total	38	100	32	100	36	100	105	100
2. Age								
a) Less than 25 and over 65 years	4	10.5	2	6.2	7	20	12	11.4
b) 25 to 44	20	52.8	21	65.6	22	62.8	63	59.9
c) 45 to 64	14	36.8	9	28.2	7	17.2	29	27.6
3. Marital Status								
a) Married	23	60.5	28	87.5	30	85.7	81	77.1
b) Single	7	18.4	3	9.4	0	0	10	9.5
c) Divorced	4	10.5	1	3.1	5	14.3	10	9.5
d) Widow	4	10.5	0	0	0	0	4	3.8
4. Economic Activity								
a) Agriculture	12	31.6	23	71.9	29	82.9	64	60.9
b) Salaried Work	11	28.9	2	6.3	4	11.4	17	16.2
c) Small Business	15	39.5	7	21.9	2	5.8	24	22.9
5. Educational Level								
a) Illiterate	7	18.4	6	18.8	14	40.0	27	25.7
b) 1 to 7 years	21	55.3	22	68.8	16	45.7	59	56.2
c) 8 to 10	8	21.1	4	12.5	5	14.3	17	16.2
d) 11 to 12	2	5.3	0	0	0	0	2	1.9
6. Annual Income (000 Mt)								
a) Up to Mt 1,100	2	5.3	2	6.3	1	2.9	5	4.8
b) Mt 1,101 and more	34	90	26	81.3	32	91.5	92	87.6

Source: Household Survey, August 1998. Exchange Rate: USD\$1=12,000 Mt

Total income is the summation of all monetary income from agriculture and non-agricultural activities, including the monetary value of agricultural items produced and consumed by the household. Total income for the sample averaged Mt 7 million (US\$ 583) or US\$ 97 per household member, given an average household size of six (Table 3). Farming activities account for Mt 4,127 or 59 percent of income, and 41 percent is

from off-farm activities. There are clear differences in the household regional economies, as can be seen by the many differences in the structure and composition of total income among the districts. However, the importance of agricultural and non-agricultural sources of income varies across districts. The sample revealed that crop production is the most important source of income, and it generates about 59 percent of total household income. This pattern is consistent for the districts of Ribaué and Muecate (Table 3). In Nampula, however, crop production accounts only for 40 percent of total household income. This is due to the fact that it was only possible to interview households who were not primarily farmers.

Table 3: Mean and Median of Annual Income, Value of Physical Assets, and Savings for all Individuals in the Sample and Districts (in 000 Meticaís, Currency of Mozambique)

	Total Sample (N=105)		Nampula District (N=38)		Ribaué District (N=32)		Muecate District (N=36)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Agriculture Income	4,127	2,528	3,108	2,166	4,454	2,138	4,506	2,753
1. Agriculture Products	3,436	2,003	2,625	1,958	3,696	1,508	3,793	2,210
2. Poultry	0.691	0.525	0.483	0.210	0.758	0.630	0.713	0.543
Non-Agriculture Income								
1. Off-farm Activities	2.873	0.900	4.603	4.080	1.850	0.525	2.105	0.700
Total Income	7,000	3,428	7,711	5,718	6,305	2,988	6,611	4,970
Value of Physical Assets	4,007	1,083	6,131	1,480	3,965	1,628	1,876	1,035
1. Animals	1.815	0.780	1.890	0.280	2.303	1.180	1.379	0.785
2. Agriculture inputs	0.327	0.135	0.284	0.143	0.538	0.238	0.174	0.095
2. Equipment/Tools	0.609	0.060	0.715	0.058	0.733	0.083	0.261	0.115
3. Constructions	1.256	0.108	3.241	1.000	0.391	0.128	0.062	0.040
Other items								
1. Household savings	2,452	0.488	3,966	1,150	0.910	0.300	0.452	0.350
2. Household Liabilities	1.985	0.400	2,038	0.300	1.850	0.775	2,000	2,000
3. Donations to household	2,527	0.750	4,053	1,200	2,937	2,937	1,285	0.600

Source: Field Survey, August 1998

Note: Exchanger Rate equals US\$1=Mt 12,000

Total Income = Agriculture Income + Non-Agricultural Income

Household Saving = Agricultural inventory + Annual Investment + Financial Deposits + Any Granted Loans

4.1 Household Ability to Hold Financial Savings

The savings function, Equation (4), was used to estimate the parameters for the entire sample, including the districts; i.e., Nampula, Muecate, and Ribaue⁷. The results from the model estimation⁸ and the relevant parameters that were found to be statistically significant are defined and reported in Table 4.

Table 4: *Parameter estimates for the Household's Savings Behavior Model, Mozambique*

Variable	Coefficient	T-Ratio
Intercept	2,624,682*	4.478
Income	0.276*	2.644
Physical Wealth	-0.425	-1.002
Physical Wealth Squared	0.993**	2.385
Household Size	-0.354*	-3.085
Dependence Ratio	0.117	1.068
Age of the Head of Household	-1.650*	-2.870
Age of the Head of Household Squared	1.559*	2.828
Schooling years of the Head of Household	-0.314*	-2.821
Gender of the Head of Household	-0.050	-0.456
Nampula District	0.301*	2.497
Muecate District	-0.254*	-2.057
$R^2 = 0.657$	$F = 8.445^*$	Adj. $R^2 = 0.580$

* Coefficient significant at 1 percent

** Coefficient significant at 5 percent

The households' willingness to hold financial savings was explained by household current income, physical wealth, and household size. The coefficient for the relationship between household financial savings and reported income is positive as expected and is significant at a 1 percent level. These results support the traditional Keynesian savings theory, stating that the relationship between savings and income is positive and linear. The positive sign of the estimated coefficient for income supports the idea

⁷ The districts were included in the model as dummy variables (District). The district of Ribaue was removed from the model because it turned out to be highly correlated with the district of Nampula. Nampula district showed a positive influence on the household financial holdings, while Muecate indicated a negative effect on household financial holdings.

⁸ The Breusch-Pagan test was performed and it indicated the presence of heteroskedasticity. The correction for the problem was then performed again (Studenmund, 1985) through computing the weighted least squares (WLS) and dividing the model by the weighted variables.

that household members will put aside a part of their earnings. Thus, rural households in Mozambique do have the ability to save. The estimated coefficient for household physical wealth is negative and not significant, while the estimated coefficient for physical wealth squared is positive and significant at a 5 percent level. These results imply that physical wealth of older heads of households positively affects the decision to hold financial savings. This finding is not surprising. The amount of household holdings depends on assets that are easily converted into cash.

The estimated coefficient for household size is also significant at a 1 percent level, and the sign is negative. These results fit with the model expectations. Large rural households hold less financial savings, although they may save in different forms: e.g. crop inventory, animals and physical wealth. The estimated coefficient for the dependency ratio has a positive sign. This result is not significant and does not fit with the model expectations. A given household will be willing to hold financial savings if it has income, and if the household is not too large. The higher the household's income, the higher is the level of financial holding. Large households will tend to hold less financial savings as compared to small households.

4.2 Household Willingness to Hold Financial Savings

The household willingness to hold financial savings was expected to depend on cultural and socioeconomic factors such as the household head's age and educational level. The estimated coefficients of both age and age squared are significant at a 1 percent level (Table 4). The sign of the coefficient for age is negative, while for age squared it is positive. These results support model expectations in that it was assumed to follow the quadratic form. However, it is important to note that the signs do not follow the Life Cycle Hypothesis. Younger heads of households are expected to save more than older heads of the household. One explanation for these differences in signs is that, in rural areas, younger heads of household do not hold enough physical wealth. Therefore, it is very difficult for them to hold financial savings. Older heads of household with considerable accumulated physical wealth hold more financial savings than do younger heads of household. This situation is not uncommon in environments with high poverty.

The estimated coefficient for household financial holdings as a function of educational level is negative and significant at a 1 percent level. Higher educational levels

were expected to positively affect household financial savings. One explanation for the negative sign is that, heads of household with some schooling years in rural areas of Mozambique are those who typically hold office jobs. Most of these household members are dependent on monthly salaries. They do not hold much financial savings compared to those who depend entirely on agricultural output. Heads of household with some education in rural areas also tend to transform their financial earnings into physical wealth. An alternative explanation is that, since rural areas of Mozambique have had a "culture" of receiving donations from NGOs, some household heads may see less of a need to hold financial savings. Heads of household who can read are more aware of NGO relief activities, i.e., "hand-outs" and free assistance programs. Because they expect some gifts or donations in case of any emergency, these households may hold less financial savings at home.

In summary, age and educational levels of household heads determine their willingness to hold financial savings, either at home or with someone else. While the sign of the estimated coefficients for age fit with model expectations, the sign for educational level does not fit with conventional expectations.

4.3 The Household Propensities to Save

The marginal propensity to save was determined by the estimated coefficient for household financial savings to income, as reported in Table 4. The sign of this coefficient is positive and significant at a 1 percent level. The results fit with model expectations and agree with the traditional model for savings behavior. The positive savings-income relationship found in this study agrees with many others conducted in developing countries in the mid-1980s and early-1990s. Studies by Edwards (1996), in 36 Latin American countries; by Khalily (1987), in Bangladesh; by Traore (1989) in Togo; and by Kabongo (1991) in Zaire all found a positive savings-income relationship. However, Vasquez (1986) and Dellien (1997) found a negative savings and monthly income relationship for rural areas of the Dominican Republic and Honduras, respectively. As seen in Table 4, the estimated coefficient for household financial savings to income is positive (0.276). This means that a one Metical (Mt) increase in income, results in a Mt 0.276 increase in household financial savings. Therefore, the household's MPS is 27.6 percent. The value of the MPS is less than one; and, less than the APS that is 0.35, or 35 percent (Amimo, 1999). This finding is consistent with theory according to which APS is greater than MPS, and that MPS is positive but less than one.

Mikesell and Zinser (1973) found that the MPS for Latin American Countries in the mid-1960s varied from 3.5 to 30 percent. Although they used time series data, it is worthwhile to compare their findings with this study's finding. This comparison is possible since the Mozambican economy exhibits similar characteristics to those experienced by the economies of Latin America in the mid-1960s. However, a MPS of 27.6 percent seems high if compared to the 3.6 percent finding for Zaire (Kabongo, 1991) and the 9.5 percent finding for rural areas of Honduras (Dellien, 1997). It is important, however, to state that in Mozambican rural households, there are not many differences in expected returns between holding money at home and/or depositing it in a bank. Therefore, the higher MPS may reflect the level of financial repression in the economy. Acknowledging the high agricultural potential of the Nampula province (food and cash crops, such as cashews, cotton, and tobacco), the MPS of 27.6 percent is acceptable although relatively high. This finding, however, may not readily permit direct comparisons with other regions. McKinnon (1973) has argued that under financial repression, the same country may represent differentiated MPSs. In the end, these findings support the hypothesis that low and middle-income households do have a propensity to save.

5. Conclusions and Policy Implications

It is erroneously believed that rural populations, particularly in Africa, have no margin for saving over consumption needs. Even in a very poor country like Mozambique, an increase in personal income is not used simply for consumption. Savings are therefore the foundation for the investment capital needed to accelerate development. Mobilization of savings is a method by which financial institutions help rural populations to help themselves while, at the same time, securing their own funds for on-lending. There is no doubt that most small enterprises in developing countries remain heavily dependent on self-finance, and relatively little household savings is tapped by "organized" business activities. Thus, domestic savings mobilization is a key issue. The main objective of this study was to document and evaluate the potential for household financial savings in the rural areas of Mozambique. It specifically identified the determinants of household savings behavior.

The empirical results from the savings model showed that important determinants of financial savings by households are income, physical wealth, and some selected

demographic and socioeconomic parameters such as household size, education, and age of the household head. Current income strongly influenced financial holdings. This is a consistent result. In fact, a household's ability to hold financial savings is a function of income. The study also revealed that physical wealth of older household heads positively affects the decision to hold financial savings. This finding is not surprising. The amount of household's wealth depends on assets that can easily be converted into cash.

The regional difference in income shows a strong relation with the household decision to hold financial savings. While in the district of Nampula, income has positively influenced households' decision to hold financial savings, in the district of Muecate income has a negative influence. These are differences in the nature of activities. In Nampula households are engaged in diversified activities. In Muecate and Ribaué, most households only practice agriculture and a few own small businesses. Commodity price levels, transportation, per capita income, and the resource endowment of households may explain differences in savings behavior within districts.

The size of the household has a strong negative influence on financial holdings. The fact that large households tend to consume more than they save may explain this result. The age and age squared variables showed strong influence on a household's decision to hold financial savings. While younger heads of households do not have enough resources to save, elderly heads of household can afford to save more of their financial earnings. The study showed that the number of years of education of household heads strongly influences the households' decision to hold financial savings. Heads of households with some education were expected to hold more financial savings. However, in rural areas of Mozambique, educated heads of households retain the administrative and social jobs with monthly wages that do not pay well. Thus, the negative relationship of years of schooling to financial savings is understandable. Finally, although not significant, the gender of the household head deserves some consideration. The study found that being a female head of household influences negatively the decision to hold financial savings. In fact, *ceteris paribus*, households headed by females have very low earnings; consequently, they have low levels of financial savings.

With regard to the household's potential to hold financial savings, the study found that rural households in Mozambique are willing to hold 0.35 meticals for each earned metical; the APS is therefore, 35 percent. These results reveal that, in rural areas of

Mozambique, households do have the potential to engage in financial savings. Taking into consideration the low stage of development of the Mozambican economy during the last 10 years and the low level of formal financial deepening, a MPS of 27.6 per-cent is relatively high.

The empirical results of this study have shown evidence of a high potential for household financial savings in rural areas of Mozambique. The study concludes that existing economic and financial policies have led to the neglect of the mobilization of savings in general and in rural areas in particular. More specifically, rural households do not have adequate opportunity to save with formal financial intermediaries. Financial policy reform is needed to increase domestic savings for development and to reduce the country's dependence on foreign donor funds.

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Abstract

Many policy makers and businesses erroneously believe that rural populations, particularly in Africa, have no margin for savings over consumption needs. This study examines the potential for financial savings in rural Mozambican households by looking at the determinants of savings behavior. An econometric model for a household's saving behavior was estimated using data from 113 rural households from Nampula province in Mozambique. Results indicate that income, physical wealth, household size, and years of schooling affect a household's savings behavior. The results of this study show evidence of a high potential for household financial savings in rural areas of Mozambique. The study also finds that Mozambican rural households use their own grassroots associations for many financial services due to the lack of access to formal financial intermediaries. The study concludes that existing economic and financial policies have led to the neglect of the mobilization of savings in general and in rural areas in particular. More specifically, rural households do not have adequate opportunity to save with formal financial intermediaries. Financial policy reform is needed to increase domestic savings for development and to reduce the country's dependence on foreign donor funds.

Key words: Africa, Mozambique, financial policy, savings, rural households
