

The Potential for Financial Savings in Rural Mozambican Households

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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 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.

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

I - 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 financial policies are unsound (Vogel and Burkett, 1996). It is erroneously believed that rural populations, particularly in Africa, have no margin for savings over consumption needs (Robinson, 1994).

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 commercial banks and state banks to supply financial services to the rural and urban poor is an indication of the overall weakness of a rudimentary banking industry in this developing market economy. Most of the country's commercial banks have been established recently, since in 1996. These banks generally do not

offer financial services to medium and small-scale farmers, and micro and small-scale entrepreneurs. Banks operate primarily as deposit institutions for a few, large depositors and borrowers in urban areas 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, government 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 (Larson et al., 1994 and Chidzero et al., 1998). The failure of banks to manage credit and saving lines for small 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 issue of 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.

II - The Household Savings Model

Household's saving in this study has adopted the framework developed by Wai (1972). The model is expressed as $S = f(A, W, O)$. (1)

The ability (A) to hold financial savings is expressed as:

$$A = f(I, FW, PW, HS, GR, LIAB, DR) \quad (2)$$

Where I represents observed income; FW represents household financial wealth; 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.

The willingness (W) to hold Financial Savings is expressed as:

$$W = f(R_i, AGE, YS,) \quad (3)$$

Where R_i represents deposit rates paid by the financial institutions; AGE represents age of the household head; and YS represents years of schooling of the household head.

The opportunity (O) to hold financial savings is expressed as:

$$O = f(DIS, SF) \quad (4)$$

Where DIS represents distance to the source of any financial service - a proxy to transaction costs; and SF represents the number of financial intermediaries available to the household.

After aggregating equations (2), (3), and (4) into equation (1), the model becomes:

$$S = f(I, FW, PW, HS, GR, LIAB, DR, R_i, AGE, YS, DIS, SF) \quad (5)$$

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. 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 total of 113 people; mostly household heads in the districts of Nampula (38), Muecate (32) and Ribaué (36).

Definition and Measurement of the Variables for the Empirical Models

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 July 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.

Explanatory Variables

In order to characterize the independent variables, each sub-component (i.e. ability, willingness, and opportunity to hold financial savings) was separately specified since each sub-component may involve more than one factor.

Ability to hold financial savings. The ability to hold financial savings by the household 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 defined as the household's monthly current income during the year considered above. A household's monthly current income (I) is calculated as a 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.

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 have been 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 twenty 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. Given the reasons provided, the financial savings part of wealth variable has been left out of the physical wealth variable.

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 (members less than 14 and over 65 years old) divided by the number of active members of the household (members between 15 and 65 years old). As the dependency ratios increase, the financial savings by a household are expected to decrease because consumption will be higher.

The age of the household head is positively related to one's ability to hold financial savings during the working years, 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 the increase of age, the head of the household becomes more aware of the risks involved. Therefore, the head tends to save more. Thus, households with younger heads are expected to hold less financial holdings while those with older heads will have higher financial savings.

Willingness to hold financial savings. For households to deposit their money with a regulated financial institution, nominal interest rates constitute an incentive. However, with an

informal financial intermediary, this does not always happen the same way. In Mozambique, households granting credit or depositing their money with money-keepers or traders do not always know the meaning of interest rates. Although they 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. The ability to read helps households to account for risk taking. Education, measured by the number of years completed in school for the household head, is expected to positively affect 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). Female household heads may tend to be more cautious in spending, and 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.

III - Results

The sample comprised household heads that were 61 percent male and 39 percent female and 60 percent, made up of active heads of household, those falling within the group 25 and 44 years of age (Table 1). 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. 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. 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 18 percent had completed secondary school or higher education, 12 grades or more (Table 1). 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 followed by off-farm activities, 22 percent; and salaried workers, 16 percent. These findings are consistent with previous studies (Benfica, 1998).

Total income was computed as 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. 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 Ribaue and Muecate. 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.

Household Ability to Hold Financial Savings

Model results indicate that household current income, physical wealth, and household size explain the households' ability to hold financial savings (Table 2). The coefficient for the relationship between household financial savings and reported income is positive as expected and is significant at a 5 percent level (Table 2). These results support the classical 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 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 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 can easily be converted into cash.

Table 1. Socioeconomic Characteristics of Head of Household by Location, and Stratum, Nampula, Mozambique.

	Nampula		Ribaué		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

Table 2. Parameter estimates for Household 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 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, and

this result 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.

Household Willingness to Hold Financial Savings

The household willingness to hold financial savings was assumed to be dependent on cultural and socioeconomic factors such as the household head's age and educational level, since the interest rate was deleted from the model. The estimated coefficients of both age and age squared are significant at a 1 percent level (Table 2). 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 common in environments with high poverty and low levels of financial intermediation.

The estimated coefficient for household financial holdings as a function of educational level is negative and significant at 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 (“hand-outs” and free assistance programs). Because they may expect some donations in case of emergency, these households may hold less financial savings.

The Household Propensities to Save

The marginal propensity to save, determined by the estimated coefficient for household financial savings, is positive and significant at a 5 percent level. The results fit with model expectations and agree with the classical model for savings behavior. 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 average propensity to save (APS) that is 0.35, i.e., 35 percent (Amimo, 1999). The positive savings-income relationship found in this study agrees with many others conducted in developing countries in the mid-1980s and early-1990s. Khalily (1987) and Kabongo (1991) found a positive savings-income relationship in Bangladesh and Zaire, respectively.

IV - Conclusions and Policy Implications

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. 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 holding depends on assets that can easily be converted into cash.

The size of the household has a strong negative influence on financial holdings. This result is explained by the fact that large households tend to consume more than they save. 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 some 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 maintain very low earnings; consequently, low levels of financial savings are found.

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 savings mobilization in general and in rural areas in particular. More specifically, rural households are not given an opportunity to save with formal financial intermediaries. Financial policy reform is needed to increase domestic savings for development and reduce dependence on foreign donor funds.

V - References

- Amimo, O. (1999). "The Potential For Financial Savings In Rural Mozambican Households: Demand And Supply Side Determinants." Unpublished M.S. thesis. The Ohio State University, Columbus, Ohio.
- Benfica, R. (1998). "Analysis of the Contribution of Micro and Small Enterprises to Rural Household Income in Central and Northern Mozambique." Unpublished M.S. thesis. Department of Agricultural Economics, Michigan State University, East Lansing, Michigan.
- Berthelemy, J.C. and L. Soderling. (2001). "The Role of Capital Accumulation, Adjustment and Structural Change for Economic Take-Off: Empirical Evidence from African Growth Episodes." *World Development*. Vol. 29, No 2, pp. 323-344.
- Carboni, O.A. (2001). "Financial and Monetary Aspects in the Process of Economic Recovery: the Case of Mozambique." *African Review of Money Finance and Banking*. A supplementary issue of *Savings and Development*. pp. 5-36.
- Chidzero, A.M, C. F. Lassimo, H. Hanguana and C. Cuevas (1998). "Mozambique Microfinance Study", Commissioned by INDER, Banco de Mozambique and Ministry of Plan and Finance, Maputo, Mozambique.
- Kabongo, K. (1991). "Demand for Financial Services by Members of Credit Unions in Zaire." Unpublished M.S. Thesis. Department of Agricultural Economics and Rural Sociology. The Ohio State University, Columbus, Ohio.
- Khalily, A.B. (1987). "Determinants of Rural Deposit Behavior in Developing Countries: The Bangladesh Case." Unpublished Master's Thesis, Department of Agricultural Economics and Rural Sociology, The Ohio State University, Columbus, Ohio.
- Larson, D.W. F. Zaqueu and D. H. Graham. (1994). "Why Users Prefer Informal Financial Market Services: The Case of Mozambique." Selected Paper Presented at the XXII Conference of the International Association of Agricultural Economists (IAAE), Harare, Zimbabwe.
- Robinson, M.S. (1994). "Savings Mobilization and Microenterprise Finance: The Indonesian Experience." In *The New World of Microenterprise Finance*. Maria Otero and Elisabeth Rhyne (eds.) West Hartford, Connecticut: Kumarian Press.
- Vogel, R.C., and P. Burkett. (1986). "Deposit Mobilization in Developing Countries: The Importance of Reciprocity in Lending." *The Journal of Developing Areas*. Vol. 20, pp. 425-437.
- Wai, U.T. (1972). *Financial Intermediaries by Individuals and National Savings in Developing Countries*. New York: Praeger Press.