A Microeconometric Analysis of Households Saving Determinants in Morocco

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Abstract :

Economic fluctuations, climate risk and a number of individual specific shocks leave households vulnerable to severe hardship in developing countries. Moreover, the credit and insurance markets are limited and the social coverage is weak. In this context, households saving is crucial to provide an insurance against the economic and social shocks. Additionally, a better knowledge of households saving behaviour could develop the potential to finance investments.
This article provides an analysis of microeconomic factors which explain the household savings behaviour in Morocco by using a new survey. Household saving functions are estimated in order to test households' responses to income, monetary or non-monetary wealth and socio-demographic variables in urban and rural areas. Our results confirm that current income strongly affects the saving level whatever the home place. Surprisingly, the household's size is significant only in the urban case: an additional person reduces the household saving. For the life cycle hypothesis, the results are not significant. Finally, we find that Moroccan women save more than men when we take into account the interaction between gender and income. Nevertheless, for highest income levels, we observe the opposite results. In the case of rural households, there is no statistically significant effect on saving behaviour from the ownership indicators of household's lands or other real estate. The results suggest that the self financing of rural household activities may be due to the lack of access to formal financial intermediaries.

Key-words : Saving, Morocco, individual data, microeconometrics.

JEL classification : E21, D12, C3

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1. Introduction

Based on a microeconometric analysis of a unique budget household' survey, this paper provides an assessment of the determinants of household saving in Morocco.
In developing countries, economic fluctuations and climate risk lead to important income variations and leave the households vulnerable to severe hardship. In addition, the social coverage is restricted and the credit and insurance markets are not well developed. In Morocco, less than 20% of the population have the advantage of retirement benefits. The health's coverage is also very weak. Thus, saving is a way to smoothing income and to face shocks. Moreover, the developing countries often meet saving allocation problems and have difficulties to develop productive investments. In this context, a better understanding of households saving behaviour is important.

The literature identifies a large number of motives for household savings, most of them derived from two consumption theories: the permament income hypothesis and the life cycle hypothesis. Schmidt-Hebbel and Serven (1997) discuss the saving determinants in each specific theory (which are opposed as far as the sign of some determinants is considered) and how they are related to empirical findings. Among these motives, the most often displayed are the precautionary behavior, life-cycle considerations, investment opportunities, the preference for smooth consumption, the need to accumulate resources for large purchases and the bequest reason.
The permanent income hypothesis predicts that an unanticipated increase in the future income relative to the current income reduces current savings in contrast to the keynesian point of view. Most of the empirical studies (for the seminal papers, *cf.* Hall, 1978 and Flavin, 1981) find that consumption exhibits "excess sensivity" to a change in income.

From the macroeconomic perspective, many empirical studies investigate, both in developed and developing countries, the determinants of private saving rates in order to explain the diversity in saving rates in the world. Loayza, Schmidt-Hebbel and Serven (2000) summarizes recent empirical results. Many economic and demographic variables have been estimated : income (temporary / permament), incertainty (political instability), rates of return (interest rate, inflation...), domestic and foreign borrowing contraints, fiscal policy, pension system, demographics (old or young age, urbanization). Various model specifications related to data samples and econometric strategies are suggested. However this literature provides ambiguous results. Numerous saving determinants are not significant and/or the estimated sign is not consistent with the theory (it is the case for the sign of the income level). Moreover, a large body of empirical macroeconomic work ignores consumer heterogeneity by assuming a representative household agent. These macroeconomic studies can not deal with "real-world" features that reflect the diversity of saving behaviour. On the other hand, microeconometric analysis allows to estimate the importance of economic variables and the role of households features in the saving behaviour. This paper is in keeping with this empirical research field.

In developing countries, savings are difficult to apprehend as it can be raised on an informal basis. As a result, it can not be completely assessed by the national accounts, in contrast to the OECD countries in which saving is largely made up of

property investments, monetary and financial investments[1]. In developing countries, households hoard money. This is due to the fact that these savings are perfectly liquid so it can be used to face any urgent need or investment opportunity. This becomes all the more important since households' confidence in the banking system is low. Moreover, non-financial saving is important in developing countries. It can take various forms as precious or semi-precious materials (jewels, carpets, etc...). In Morocco and across the MENA region, precious or semi-precious materials are accumulated on a regular basis and exchanged against liquidities in order to meet lifecycle (education, marriage, immigrations, etc.) or urgent spendings. The non-financial household saving also consists on housing properties and other forms of ownership (land, livestock, machines, etc.). Robinson (2004) adds to these main forms of savings: building materials, cereals and harvest. More generally, this kind of saving accounts for a large part of households saving. In accordance with Goldstein and Barro (1999), "*one of its essential characteristics* [non financial savings]] *is to be able to be easily used in case of social need or economic opportunity. For cereals stocks or livestock purchases, can be added high motivation of economic profitability".* Therefore, livestock accumulation is a source of profit. Livestock can easily be sold, some of them produce other consumable and tradable goods (eggs, milk, wood, etc.) or can be used as agricultural inputs. Nevertheless, this form of savings present some drawbacks: cattle breading implies resources (water, food, pasture), work-time and can be lost in the case of illness or natural disasters.

Few studies assess the determinants of saving at the individual level generally due to the lack of data. Using recent econometric techniques, Carpenter and Jensen (2002) and Kulikov, Paabut and Staehr (2007) identify how household characteristics affect saving behaviour, in Pakistan and Estonia respectively. Carpenter and *al*. (2002) focus on the role of institutions which collect saving and stress the role of formal (banks) and informal institutions (savings commitees). They find that "*increased income leads to a greater desire to participate in some form of savings institutions but that as income increases more individuals shift to the formal sector*". They also find evidence that the urban-rural differences in bank use is negligible which suggests that formal finance is not primarily restricted to urban households in Pakistan. As opposed to Carpenter and Jensen (2002) who focus on the saving supply side, Kulikov and *alii*. (2007) analyze the saving determinants on the demand side. Making a distinction between regular and temporary household income allows the authors to put forward the role of income variability and the various forms of household assets (financial and non-financial) in a transition economy (Estonia). Their analysis is based on data from household budget surveys. As in many empirical studies, they find that the saving rates depend more on the transitory income than regular income. Among the others variables, the labour market status or the non financial assets ownership (real estate for instance) and credit access have not significant effect on the household saving behaviour; the durable goods possession (in particular cars) has a negative impact on the saving rate.

[1] Traditionally, households saving consists of two different parts: financial and non-financial saving. Financial saving represents the part of their income that households dedicate to money and financial products purchases. Financial products consist of liquidities, securities, and contractual savings products. On the opposite, non-financial saving represents the part of their income that households keep in order to be able to take investment opportunities.

Household saving behavior at a micro level in Morocco has not yet been analyzed due to the lack of microeconomic data on household's income. In this paper, we rely on the "*Community Based Monitoring System"* (CBMS), a new survey on moroccan households. This database considers more than 600 households located in two areas: Essaouira, an urban city, and Bouaboud, a poor rural village. A representative sample of each locality has been constructed, each containing about 300 households. The database includes information on expenditure and income at the household level and also on individual characteristics such as the size and composition of the household (members' status, age and educational attainment).

In our paper, the role of micro-level determinants of household participation in saving is also displayed. In particular, this study assesses the impact of different economic and demographic variables on household savings, which are related to the characteristics of Moroccan households. The Moroccan case is relevant for several reasons. First, to our knowledge, this paper is the first attempt to estimate household savings in Morocco. Second, household savings contribute to national savings, so an understanding of household saving behaviour helps to explain macroeconomic performance. Third, this paper contributes to the literature on household savings as it is based on two samples, depending on the households home place. In a developing or middle-income economy, the common perception is that the saving behaviour can be very different between rural or urban areas. However the lack of appropriate data, and in particular of datasets providing informations on household income, savings, and wealth usually prevents from conducting empirical studies that would consider these distinctions.

Our econometric specification allows to test household responses to income, non-monetary wealth and socio-demographic variables in urban and rural areas. Many variables are included in the estimations. Income, household size and the number of workers in the household prove to be the more significant. For instance, the results show that income strongly affects savings and in ways that are consistent with standard theories, both in the case of urban and rural households.

The remainder of the paper is organized as follows. Section 2 presents the database and provides descriptive statistics giving detailed information about household savings. Section 3 describes the variables used in the micro-econometric estimations and reports the results found both in rural and urban areas. Section 4 concludes.

2. The database and the saving measurement

In general, little data on household income, saving, and non-monetary wealth can be found for developing countries, such that the literature on household saving is limited. In Morocco, a new survey called CBMS *(Community Based Monitoring System)* provides this kind of information, which was not available until now.

Jointly financed by the Moroccan Ministry of Finances and by the UNIFEM (United Nations For Women Development), the CBMS survey's main purpose is "*to assist decidors and local actors in following the poverty reduction strategy issued from Millenium Objectives and other development projects".* More precisely, this datasets aims at "*filling the lack of data at the local level […], providing precise, regular and relevant data […] and supplying socioeconomic information about individuals,*

households and communities but also information about impact of services and other government activities on population, households and communities".
This data collection focuses on a gender problematic and has the final aim to improve the public expenditure impact in terms of effectiveness and equity. In particular, the dataset allows to better identify the poverty and inequalities areas in Morocco.

With this purpose in mind, the CBMS survey collects detailed information about income and expenditure among Moroccan households in two places of residence, an urban area (Essaouira) and a rural area (Bouaboud). A representative sample of about 300 households in each locality were first surveyed in march-april 2007. A new phase of collecting data is underway which will provide panel data and the ability to study the dynamics of saving behaviour.

The database includes comprehensive background information about each interviewed household concerning its economic and social situation. This cross-sectional dataset especially informs of net (or after-tax) annual household income and annual consumption expenditure from which a measure of household saving can be calculated. The CBMS survey contains a large number of background variables such as age, gender, household size, education attainment, employment status, place of residence, etc...

Economic activity and unemployment in Essaouira and Bouaboud localities

The Moroccan labour market is characterized by a preponderant public sector, an important migration of workers towards foreign parts, and a high rate of unemployment for urban qualified people (Agenor and El Aynaouni, 2005). Young people (younger than 35 years old) seem to be more affected by unemployment than the others (El Aoufi and Bensaïd, 2005).

In the CBMS survey, the rate of unemployment reaches 22.2% in Essaouira. This rate concerns the peaple aged between 15 and 65 years old who declare not to work or not to have worked during the past 24 hours but who are looking for a job. This rate of unemployment is twice higher than the national one for the same year and the same quarter. Taking the gender into account, unemployment rate reaches 14.8% for men and 38% for women. It can be compared to the average rate of unemployment in Moroccan urban areas, which points to 14.2% for men but only 21.2% for women. Thus, unemployment in Essaouira is representative of the national unemployment for men but not for women. Many reasons explain unemployment in Essaouira. It is difficult for youngs finishing the schooling process (general or professional) often without diploma to enter the job market. Another reasons, *a priori* less evident, that could explain about 40% of unemployment in Essaouira are the limited opportunities of employment, hard labour, marriage, *etc*... (Projet CBMS, 2007b).

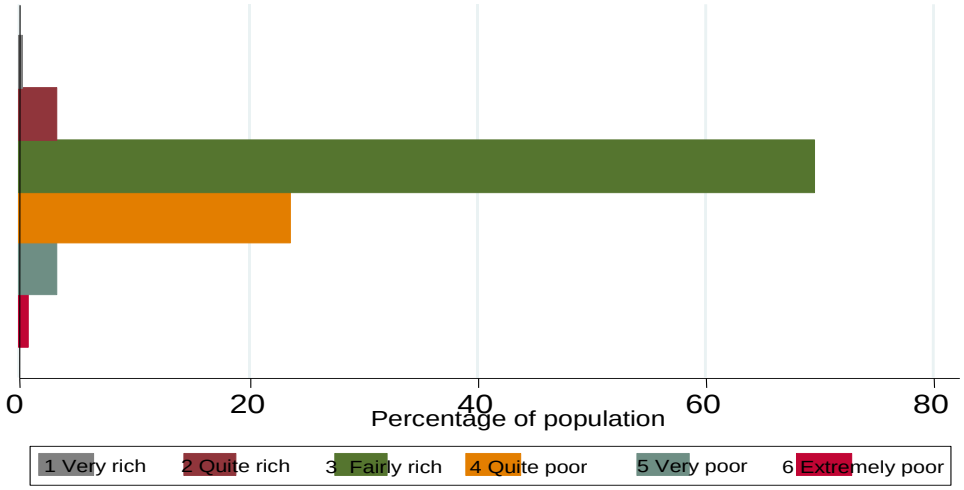
As far as the Bouaboud locality is concerned, only 22% of the population declares to be active in the economic sense and in this sub-population, all are employed. Consequently, the rate of unemployment is near zero (1.3%), which probably implies a mismeasurement of inactivity and unemployment in the rural area. In particular, women are suspected of underestimating their participation to the goods and services production.

Among the employed active population, most people are wage-earner (58.6% of people in Essaouira and 34.3% in Bouaboud) or self-employed (61.7% in Bouaboud and 25.6% in Essaouira). Other status (unemployed, employer, home help, etc.) are negligible for men as women (Projet CBMS, 2007a,b).

Income, poverty and households saving

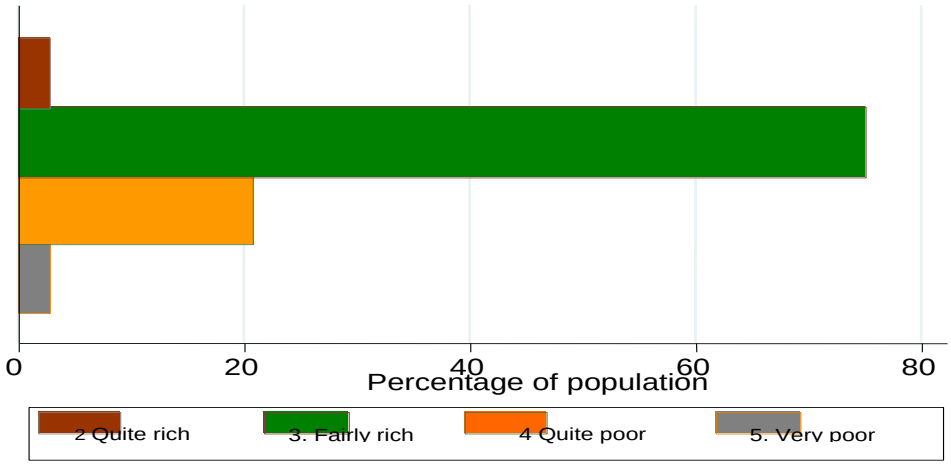
In the CBMS database, people are asked to self-judge their standard of living: on this subjective basis, 68.7% of households declare to have a medium standard of living in the urban area of Essaouira *versus* 76.2% in the rural area of Bouaboud (Figures 1 and 2).

Figure 1: Households standards of living distribution from self-judgement, in Essaouira



Source: CBMS database, authors' calculations.

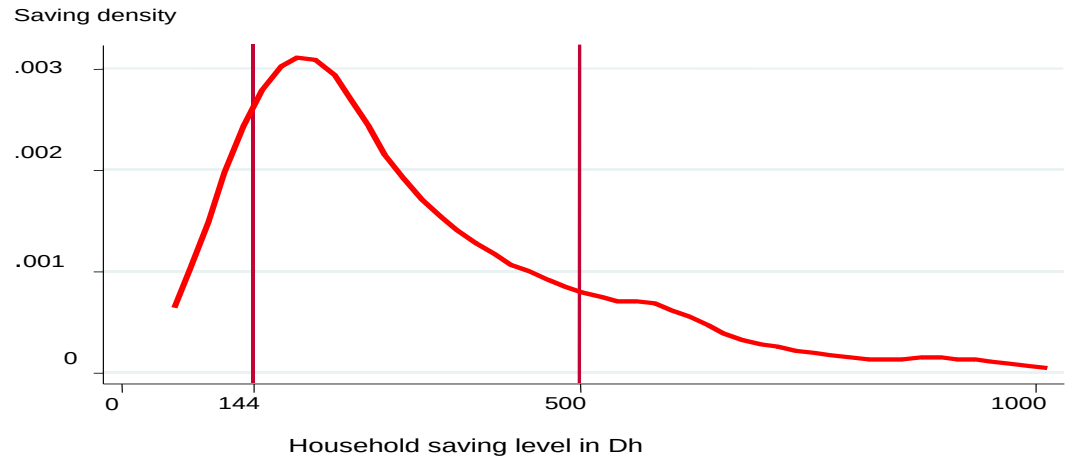
Figure 2: Households standards of living distribution from self-judgement, in Bouaboud



Source: CBMS database, authors' calculations.

According to objective data, household annual income is about 36 800 dirhams[2] in average and consumption expenditure about 35 000 dirhams in Essaouira. The average income reaches 16400 dirhams in Bouaboud and the consumption expenditure is evaluated to 15800 dirhams.
Each household's saving is from income and consumption data in the CBMS survey. In the microeconometric literature on households' saving, saving is usually defined as the non-consumed part of households' income; see for instance in Folay and Pyle (2005) and Denizer and *alii*. (2002).
In Essaouira, the amount of saving is estimated to 2 109 dirhams in annual average (or 558 dirhams per capita after correcting for the size of the household). Among surveyed households, the lowest saving level is 10 dirhams and the highest reaches 84 000 dirhams. The density of saving (figure 3) indicates that most of urban households save about 150 dirhams.

Figure 3 : Household saving density, in Essaouira

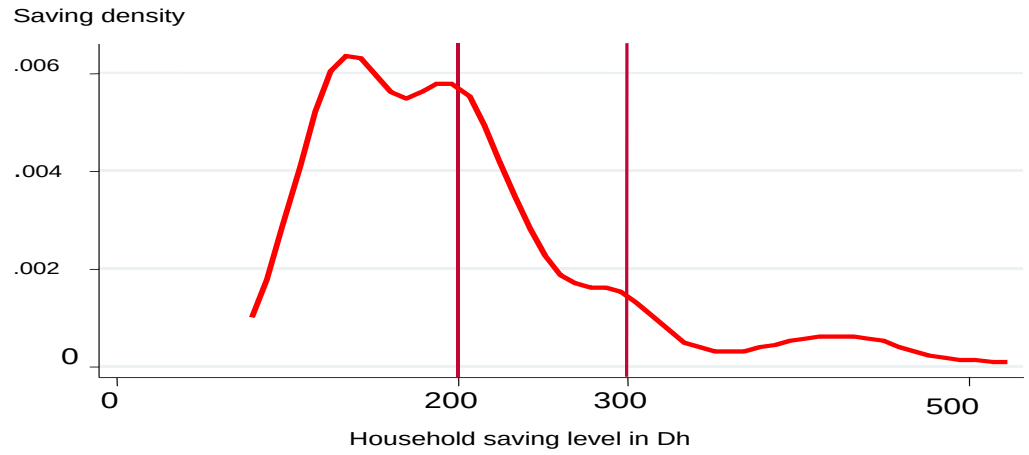


Source: CBMS database, authors' calculations.

In Bouaboud, saving is estimated to 517 dirhams in annual average per household (or 97 dirhams per capita). At this stage, it is worth to remind that the Bouaboud locality was chosen in the CBMS survey precisely because of its high poverty level. Figure 4 highlights the wide dispersion of household saving, which range from a minimum of 15 dirhams a year to a maximum of 45 200 dirhams a year. The majority of households saves less than 200 dirhams a year.

[2] When the income is corrected for the household size, the annual income in average per capita and per household is slightly over 9 000 dirhams.

Figure 4 : Household saving density, in Bouaboud



Source: CBMS database, authors' calculations.

Although saving levels are positive in both localities, household saving rates seems to be relatively low because households only save about 3% of their income in Bouaboud and 5-6% in Essaouira. However, a clear distinction between both localities appears: saving is still the privilege of urban households who save about 4 times more than rural households.

The CBMS database also allows to approximate the non financial wealth of households by using the information about real estate, land and livestock ownership.

Non-financial households saving : housing, land and livestock ownership

At the end of the 1990's, authorities made arrangements to improve the population welfare and, more precisely, housing conditions. As authorities decided to incite and encourage housing investments, the access to property has become easier for Morrocan households, in terms of administrative procedures. The saving decision was influenced by this new environment. For the Essaouira locality, we observe an annual rate of new housings building of about 29% between 1998 and 2007 versus 7.7% in the rural area of Bouaboud (Projet CBMS, 2007a,b).
The survey suggests that rural households for the most part own their housing. They are 94.2% in this case in Bouaboud. Among these households, 76.9% inherited it and 7% received it free of charge, which illustrates the importance of inheritance in real estate, specifically in rural areas. In this context, it is not pertinent to estimate saving by housing occupation status in Bouaboud.
However, using income and consumption expenditures in average for housing owners and non-owners in Essaouira, we can evaluate a saving level by housing occupation status (Table 1). Total income is computed as the aggregation of the monetary income derived from agricultural and non-agricultural activities, including the monetary value of agricultural items produced and consumed by the household.

Table 1 : Income, consumption expenditure and saving, in average, by housing occupation status in Essaouira

In average, in dirhams	Owners	Non-owners

Income	43 674	29 313
Consumption expenditure	41 009	27 813
Saving	2 664	1 500

Source : CBMS survey, 2007, authors'calculations

In the Essaouira locality, saving is higher for owners (2664 dirhams) than non-owners (1500 dirhams), in average. This can be explained by the fact that housing owners have a larger income so they can save more, in spite of highest consumption expenditure and access to property yet achieved.

Moreover, the CBMS survey gives information about land and livestocks ownership in both localities. In the rural area of Bouaboud, 73.2% of households own agricultural lands and/or 66.2% own livestocks (table 2).

Table 2 : Households access to agricultural activities and breeding

Exploitation and ownership	Households in Essaouira (in percent)	Households in Bouaboud (in percent)
Owning agricultural lands	18,6	73,2
Working in farm	9,6	69,4
Owning livestock	4,9	66,2
Breeding livestock	1,2	51,3

Source : CBMS survey, 2007, authors'calculations

3. Empirical implementation and results

Our purpose now is to extend the existing literature by providing a comprehensive characterization of the empirical link between households saving and a broad range of potentially important saving determinants. In order to assess the household saving behaviour in urban and rural areas, the analysis focuses on the impact of variables such as household income, household size, head of household's age and gender but also land and livestock ownership.

3.1 Methodology

We use a measure of household saving built on the informations on income and expenditure flows provided by the CBMS database. We compare the average annual income of households and their consumption expenditures, and evaluate the part of their income that households can save, both for urban and rural areas (see below).

In order to identify which factors explain household saving in urban and rural areas, we estimate different models.
We adopt a reduced-form approach, taking into account a variety of saving determinants identified in the literature (Edwards, 1996 ; Loayza, Schmidt-Hebbel and Servén, 2000). The estimations are undertaken using Ordinary Least Squared supplemented with Instrumental Variables estimators as robustness' checks.

It is not necessary to introduce the Heckman correction test in order to resolve a selection bias problem between savers and non savers households. Indeed, all the households in our sample save a part of their income.

We focus on a core set of regressors selected on the basis of analytical relevance (as well as data availability); however, we also examine the empirical role of a number of less-standard saving determinants like livestock and lands in rural area.

We have seen in the first section the main household savings motives identified in the literature.
Among these motives, the precautionary and the retirement motives could be analysed.To test the precautionary motive, we take into account the disposable income of the household head, the unemployed in the household and the household size. To test the life cycle hypothesis, we consider the number of employed, the age and the age square.
In order to take into account a rural household behaviour, ownership's livestock and land for rural household is considered in our household's determinants. Accordind to Goldstein and Barro (1999), livestock accumulation is a source of profits. To test this hypothesis, we need to have a data in flows. Due to the limited data[3], it will be difficult to have an exact measure of this determinant.

Finally, the list of determinants is as follows:

- the disposable income of the household head : annual household income in dirham ;
- the gender of the household head : dummy = 1 if the household head is a male, 0 otherwise ;
- an interaction term called "gender*income".
- age and age² of the household head ;
- the household size ;
- the number of unemployed in the household ;
- the number of employed individuals in the household ;
- ownership's livestock for rural household: dummy = 1 if the household owns livestocks and 0 otherwise;
- ownership of land for rural household: dummy = 1 if the household owns land and 0 otherwise;

We assume that household saving behaviour in urban areas depends on household income, household size and head household's gender and age. Moreover, the role of economic activity on the household saving behaviour will be specified by the number of non-working persons in the household (or its complementary, the number of

[3] The database contains data in stock.

working people). In rural areas, we also test the impact of livestocks and lands ownership on the household saving behaviour.

3.2 Econometric results

Table 3 indicates the results for urban households whereas tables 4 and 5 reports empirical findings about household saving behaviour in rural area.

In developing countries, the income play an important role in determining household saving as the desire and ability to save depends on having more than the resources dedicated basic needs (Carpenter and Jensen, 2002). Our first estimation takes into account the income and household size as independent variables.
Then we consider the number of unemployed members in the household, in order to test a size effect.

As expected, income is an important determinant for household saving both in the case of urban and rural households. We find that the saving rate depends positively on household income in rural and urban areas. When income increases by 1 dirham, household saving increases by 0,07 dirham (Table 3).

As far as the household size is concerned, 14% of households have one or two members, 70.4%, 3 to 6, and 15.6% comprise more than 7 members, in Essaouira. The proportion of large households' size is higher in the rural area than in the urban one. 36.5% of households have more than 7 members in Bouaboud. In our case study, this feature is important because at the microeconomic level, we assume that household size is a determinant of household saving behaviour. This determinant's impact is probably different in urban and rural localities. The number of children, which is lower in a urban area, has an ambiguous effect on saving. On one hand, having more children can induce parents to save more as a way to finance their future education, for instance. On the other hand, it can constrain parents to decrease their saving because of higher household consumption.

We find that the household size negatively affects saving, in the urban case. An additional member in the household significatively reduces household saving. This result confirms a "size effect. When we take into account the number of unemployed members, the results are significant but it is not the case when "employed" members are considered (table 3). Households with an additional unemployed member reduce their saving by 300 dirhams (Table 3).

Gender is identified as an important variable in the saving household behaviour.
The Moroccan population exhibits a large proportion of women. In our sample, women represent 52.1% of the population in Essaouira and 54.3% in Bouaboud. In both localities, they are more specifically numerous in the young people group (less than 35 years old), which what can be related to the migration and drift from the land phenomena that mostly affects men. This by gender analysis is relevant because women usually save more than men (with their children's education in mind) and manage their saving more actively: "*the savings strategies of men and women are very different; women (…) manage their saving at any time between consumption needs, social needs and economic activity* (Goldstein and Barro, 1999).

Ceteris paribus, our results indicate that Moroccan women do not save more than men (model IV). But, when the interaction between "Gender of the head of the household" and "Household income" variables is taking into account (model V), women save more than men, except when the income increases. In this case, saving is higher if the household' head is a man. The assumption that women in developing countries would save more than men is therefore questioned in the case of a urban area.

Table 3: Household saving in urban area
Dependant variable : Saving level

Models	(I)	(II)	(IIbis)	(III)	(IIIbis)	(IV)	(V)
Income	0.070***	0.051**	0.179**	0.066**	0.065**	0.066***	0.000*
	(0.024)	(0.025)	(0.086)	(0.026)	(0.026)	(0.025)	(0.018)
Household size	-328.868**			-279.747*	-289.534*	-343.972**	-334.685**
	(137.144)			(150.652)	(161.467)	(143.613)	(142.767)
Number of unemployed		-329.208*					
		(186.557)					
Number of employed			-2,056.340				
			(1,305.682)				
Gender (1:Male)						847.864	-1,259.709**
						(607.087)	(545.789)
Gender*Income							0.061***
							(0.022)
Intercept	1,046.240	1,155.632	-1,710.151	2,222.465*	1,175.636	603.033	1,573.571**
	(795.106)	(1,006.836)	(1,559.880)	(1,179.962)	(2,424.482)	(731.916)	(608.625)
AGE				-24.744	20.244		
				(16.326)	(100.729)		
AGE^2					-0.425		
					(0.863)		
Sample	352	352	352	352	352	352	352
R^2	0.32	0.27	0.02	0.31	0.31	0.31	0.35

Source : Enquête CBMS, Authors.
* significant at 10 %, ** significant 5 % and *** significant at 1 %.

Lastly, Moroccan population is relatively young. In both localities, people aged of less than 35 years represent more than 60% of population. Following the lifecycle hypothesis, we assume this phenomenon will have consequences on the household saving behaviour.
To test this hypothesis, we have also considered the age and age squared. Saving exhibits a hump-shaped relationship with respect to age but the results are not significant.

Table 4 :Household saving in rural area
Dependant variable : Saving level

Models	(I)	(II)	(IIbis)	(III)	(IIIbis)	(IV)	(V)
Income	0.087*	0.064*	0.012	0.082	0.081*	0.082	0.013
	(0.052)	(0.034)	(0.043)	(0.051)	(0.049)	(0.052)	(0.010)
Household size	-100.427			-88.532	-87.262	-96.277	-29.769
	(104.243)			(102.901)	(101.786)	(102.302)	(69.751)
Number of unemployed		-84.863					
		(78.012)					
Number of employed			202.667				
			(179.145)				
Gender (1:male)						188.981	-105.940
						(154.005)	(223.976)
Gender*Income							0.029
							(0.018)
Intercept	-309.309	-132.746	64.031	105.720	-25.040	-427.382	135.837
	(457.249)	(433.549)	(540.189)	(464.225)	(1,141.110)	(417.178)	(222.953)
AGE				-7.718	-2.517		
				(6.299)	(37.898)		
AGE²					-0.047		
					(0.345)		
Sample	294	294	294	294	294	294	294
R^2		0.03	0.03	0.01	0.01	0.00	0.04

Source : Enquête CBMS, calculs des auteurs
* Significant at 10 %, ** significant 5 % and *** significant at 1 %.

In the case of rural households, the models appear to be less significant. Only income significantly affects households saving (Table 4). Others factors must be tested to characterize the specificity of the saving behaviour in rural area. In this aim, we take into account the following variables: land ownership, livestock ownership and the surface of land. In addition, an interaction term “lands*livestock” is considered, and in order to capture an increase of the surface of land, we test the “land square” (Table 4bis).

Table 4 Bis: Household saving in rural area
Dependant variable : Saving level

Models	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
Income	0.042	0.047	0.046	0.046	0.036	0.022
	(0.030)	(0.032)	(0.033)	(0.033)	(0.036)	(0.044)
Lands	-6.870		-26.488	-85.664	2.165	230.279
	(180.200)		(178.901)	(222.976)	(208.786)	(303.949)
livestock		142.926	148.131	40.557	38.493	26.245
		(214.202)	(207.963)	(258.795)	(257.077)	(270.103)
Lands* livestock				247.650	238.249	231.535
				(406.851)	(396.891)	(395.768)
Lands*size					21.206	96.631
					(31.213)	(99.790)
Size²						-0.763

						(0.750)
Intercept	-173.857 (461.238)	-272.146 (516.713)	-257.945 (528.307)	-233.793 (541.105)	-188.673 (563.790)	-221.616 (586.575)
Sample	294	294	294	294	294	294
R^2	0.04	0.04	0.04	0.04	0.05	0.07

Source : Enquête CBMS, calculs des auteurs
* Significant at 10 %, ** significant at 5 % and *** significant at 1 %.

In the case of rural households, the empirical results suggest no statistically significant effect of the ownership of household's lands or other real estate on saving behaviour (Table 4bis). This finding conflicts with results on Japan, for example, where saving behaviour varies markedly across renters and homeowners (Suruga and Tachibanaki, 1991). The results for Morocco may be affected by the rapid changes in the housing market during the sample years, or the fact that home ownership and property ownership are widespread among households in Morocco as a result of the property restitution that took place at the beginning of the 1990s. Hence, rural households self financed their activities by using their own capital (Oliveira and *alii*, 2003).
However it also important to underline that this behaviour is due to a limited access to formal financial intermediaries. This result could indicate that banking institution fails to attract rural households saving.

4. Conclusion

Household savings are a crucial determinant of the supply of funds for investment. For low-income countries, financial development is likely to have important implications for economic growth. By using an original survey, this paper presents a micro-econometric analysis of the saving determinants in the Moroccan case. The study explicitely distinguishes between urban and rural aeras.

The results obtained are mostly in accordance with previous findings in the empirical literature on saving in developing economies, although some unexpected results also arose. In line with Gibson and Scobie (2001), we find that income significatively explains the cross-sectional variation of the saving behaviour of households in Morocco. Indeed, income happens to be among the prevalent determinant of saving behaviour, but alone it is unlikely to explain the time trend in the macroeconomic picture of household saving.

Concerning the household size, this variable is not significant in the rural case whereas an additional member reduces the saving level for urban households. This surprising result could be explained by the fact that in the poor rural area, an additional member does not really change the household living and working conditions. To test the life cycle hypothesis, we have considered the age but the results are not significant. Our findings also indicate that Moroccan women save more than men when we take into account the interaction between gender and income. But for highest incomes levels, we observe the opposite result.

Consequently, it may be useful to investigate possible non-linear effects of variables affecting the saving level, for instance by employing semi-parametric regression methods.

References :

Agenor P.R. et El Aynaoui K., (2005) Politiques du marché du travail et chômage au Maroc : une analyse quantitative, *Revue d'Économie du Développement*, vol.0 n°1, pp. 5-51.

Attanasio O. and J. Banks, (2001) The assessment: household saving – issues in theory and policy, *Oxford Review of Economic Policy*, vol.17 n°1.

Browning M. and Lusardi A. (1996) Household saving: micro theories and micro facts, *Journal of Economic Literature*, Vol.34, n°4, pp. 1797-1855.

Butelmann A. and F. Gallego, (2001), Household saving in Chile (1988 and 1997): testing, the Life Cycle Hypothesis, *Cuadernos de Economia*, Vol.38, n°113.

El Aoufi N. et Bensaïd M., (2005) *Chômage et employabilité des jeunes au Maroc*, Cahiers de la stratégie de l'emploi.

Carpenter S.B. and Jensen R.T., (2002) Household Participation in Formal and Infsormal Savings Mechanisms: Evidence from Pakistan, *Review of Development Economics,* 6 (3), pp. 314-328.

Denizer C., H. Wolf and Y. Ying, (2002) Household Savings in Transition Economies, *Journal of Comparative Economics*, Vol..30, n°3.

Foley M. and W. Pyle, (2005), *Household savings in Russia during the transition*. Middlebury College Economics Discussion Paper, n°22.

Gibson J. and G. Scobie, (2001), Household saving behaviour in New Zealand: a csohort analysis. New Zealand Treasury, Working paper n°18.

Goldstein G., Barro I., (1999) *Etude sur le rôle et l'impact des services et produits d'épargne du secteur informel et des institutions de microfinance en Afrique de l'Ouest*, PNUD-FENU, Unité Spéciale pour la Microfinance (SUM), MicroSave-Africa, mimeo.

HCP (2006) *Comptes de la nation de base 1998*, Royaume du Maroc.

HCP (2007) *Recensement Général de la Population et de l'Habitat*, Royaume du Maroc.

Kulikov D., A. Paabut and K. Staehr (2007) *A Microeconometric Analysis of Household Saving in Estonia*: *Income, Wealth and Financial Exposure*, Working Paper n° 8, Estonian National Bank.

Losayza N., K. Schmidt-Hebbel and L. Servén, (2000) What Drives Private Saving acsross the World?, *The Review of Economics and Statistics*, 82 (2), pp. 165-181.

Ministère de l'Economie et des Finances (Maroc) CBMS, *Community Based Monitoring System*, Database, 2007.

Oliveira A., D. W.Larson, M. Bittencourt and D. H. Graham (2003), The potential for financial savings in rural Mozambique households, Proceedings of the 25th International Conference of Agricultural Economists (IAAE)

Projet CBMS – Maroc (2006-2007a) Commune rurale de Bouaboud, Rapport de ssrésultats, Premier passage mars-avril 2007, Ministère des Finances et de la Privatisation et Fonds des Nations Unies pour le Développement des Femmes (septembre 2007).

Projet CBMS (2006-2007b) Commune urbaine d'Essaouira, Rapport de résultats, Premier passage mars-avril 2007, Ministère des Finances et de la Privatisation et Fonds des Nations Unies pour le Développement des Femmes (septembre 2007).