A MICROECONOMETRIC ANALYSIS OF HOUSEHOLD SAVINGS DETERMINANTS IN MOROCCO*

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Abstract:

This article provides an analysis of the microeconomic determinants of household savings behaviour in Morocco according to geographical household residence. Descriptive statistics seem to indicate a similar savings pattern in both rural and urban areas but the econometric results do not support this conclusion. Current income strongly affects the savings level in the urban area whereas the literacy of the household's head is determinant in the rural one. However, the results do not confirm the life cycle hypothesis. The household's size has a significant negative impact only in the urban case, while women heads of household save more than men, except for highest income levels. The results clearly show that urban and rural households behave differently with regards to savings.

Keywords: Savings, individual data, Morocco, microeconometrics.

JEL classification: E21, D12, C3.

1. INTRODUCTION

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 in-

surance markets are not well developed. In Morocco, less than 20% of the population have the advantage of retirement benefits. The country's health coverage is also very weak. Moreover, developing countries often face savings allocation problems and have difficulties in developing productive investments. In this context, a better understanding of households savings behaviour is important. A general belief is that poor population, and rural households in particular have no margin for savings over consumption needs. This paper examines this savings potential in a poor region of Morocco, by looking at the determinants of household savings behaviour, with a distinction between rural and urban areas.

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. The first predicts that an unanticipated increase in the future income relative to the current income reduces current savings. According to the life cycle hypothesis, individuals spread their lifetime consumption over their lives by accumulating savings during earning years and maintaining consumption levels during retirement. Schmidt-Hebbel and Serven (2000) discuss the savings determinants in each specific theory, which are opposed as far as the sign of some determinants is considered. Among these motives, the most often displayed are the precautionary behaviour, life-cycle considerations, investment opportunities, the preference for smooth consumption, the need to accumulate resources for large purchases and the bequest reason.

From the macroeconomic perspective, many empirical studies investigate, both in developed and developing countries, the determinants of private savings rates in order to explain the diversity in savings rates in the world. The studies are relatively abundant both for regions (Edwards, 1996; Hussein and Thirwall, 1999; Yasin, 2008) and specificic countries (Ozcan, Gunay and Ertac, 2003; Ang, 2009). Loayza, Schmidt-Hebbel and Serven (2000) summarise recent empirical results. Many economic and demographic variables have been estimated: income (temporary / permament), incertainty (political instability), rates of return (interest rate, inflation, etc.), domestic and foreign borrowing contraints, fiscal policy, pension system, demographics (such as age groups, birth rates, dependency ratios, etc.). Various model specifications related to data samples and econometric strategies are also suggested. But this empirical macroeconomic work ignores consumer heterogeneity by assuming a representative household agent. These studies can not deal with "real-world" features that reflect the diversity of savings behaviour. On the other hand, microeconometric analysis allows to estimate the importance of economic variables and the role of households features in

the savings behaviour. This paper is in keeping with this empirical research field.

From this microeconometric point of view, a large part of the literature specifically examines the farmers' savings behaviour in developing countries. These papers analyse how a rural population protects itself against income fluctuations and to what extent the farmers use savings to smooth consumption in response to unexpected shocks, often due to weather variability (Deaton, 1992; Paxson, 2001; Kazianga and Udry, 2006). By using socio-economic databases and the different waves of these surveys, the authors are looking for determinants of savings.

Paxson (2001) focuses on the savings behaviour of Thai farm households and estimates marginal propensities to save out the transitory income. From three cross-sections of income and expenditure data and from time-series information on regional rainfall, the author shows that the capacity to save out of transitory income is quite high. Deaton (1992) and Rosenzweig and Wolpin (1993) are interested in the importance of borrowing constraints. Deaton discusses the impact of income fluctuations on the living of standards of farmers in developing countries and indicates that savings do not allow wealth's accumulation because of the limited role of credit markets. Rosenzweig and Wolpin (1993) aim to understand the investment behaviour of low-income farmers in India by taking into account credit markets constraints. According to them, in a context of unpredictable weather, assets (accumulation of bullocks) have a prominent role in smoothing consumption. Kazianga and Udry (2006) have a different perspective. They analyse the role of livestock, grain storage and inter-household transfers in the consumption smoothing by using panel data between 1981 and 1985. They indicate that the self-insurance mechanism is prominent and find little consumption smoothing.

A few other works are devoted to the study of households characteristics to assess the savings behaviour determinants. Carpenter and Jensen (2002) and Kulikov, Paabut and Staehr (2007) identify how household features affect savings behaviour, in Pakistan and Estonia respectively. Carpenter and Jensen (2002) focus on the role of institutions which collect savings and stress the role of formal (banks) and informal institutions (savings commi-

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[1] Traditionally, households savings consists of two different parts: financial and non-financial savings. Financial savings 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 savings represents the part of their income that households keep in order to be able to take investment opportunities.

tees). 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 savings supply side, Kulikov *et al*. (2007) analyse the savings 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 savings rates depend more on transitory income than regular income. Among the other variables, the labour market status or the non financial assets ownership (real estate for instance) and credit access do not have a significant effect on the household savings behaviour; durable goods possession (in particular cars) has a negative impact on the savings rate.

Household savings behaviour at a micro level in Morocco has not yet been analysed 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. 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 savings 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. This article contributes to the literature on household savings in several ways. First, to our knowledge, it is the first attempt to estimate household savings in Morocco. Second, household savings contribute, for the most part to national savings, so an understanding of household savings behaviour helps to explain macroeconomic performance. Third, this paper is based on two samples, depending on the households home place (rural/urban). In a developing economy, the common perception is that the savings behaviour is 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 stud-

ies that would consider these distinctions. Fourth, Essaouira and Bouaboud are located in a region which is very interesting for the study of household savings. This region is characterized by a very low bank density (measured by the number of banks per 1000 people) that only reaches 3,7 per thousand. In the area of Casablanca for example, the level of this density is 18,2 per thousand (HCP, 2005).

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 these estimations. Income, household size, the gender of the household's head and its education prove to be the most 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 organised 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 microeconometric estimations and reports the results found both in rural and urban areas. Section 4 presents our conclusions.

2. THE DATABASE

In general, little data on household income, savings, and non-monetary wealth can be found for developing countries, thus the literature on household savings 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"* (Projet CBMS, 2007b).

Using the census data and the Moroccan poverty map, the CBMS survey builds a composite poverty indicator, according to which six provinces exhibit a poverty rate of more than 50%. Among them, Chichaoua and Essaouira, which are located in the same region, are the two places selected. In

these two areas, the illiteracy rate overruns 63% and the water and electricity junction lines provision is less developed than in other provinces. The sample is eventually restricted in order to focus on a urban area, the city of Essaouira in Essaouira province, and a rural one, the village of Bouaboud in Chichaouoa province. Thus, the CBMS survey does not provide a representative sample. On the contrary, the households surveyed are on average poorer and more vulnerable than the national average. The aim of the database is to obtain a better understanding of the living conditions of this specific population with the final aim of improving the public expenditure impact in terms of effectiveness and equity. With this purpose in mind, the CBMS survey collects detailed information about income and expenditure among Moroccan households in Essaouira and Bouaboud. A representative sample of each locality has been constructed, each containing about 300 households that were first surveyed in March-April 2007. A new phase of collecting data is underway, which will provide panel data and will enable to study the dynamics of savings behaviour.

2.1 Income and savings

The database includes comprehensive background information about each interviewed household concerning its economic and social situation. In particular, this information informs us of net (or after-tax) annual household income and annual consumption expenditure from which a measure of household savings can be calculated.

Standard of living and poverty

In the CBMS database, people are asked to self-assess their standard of living: on this subjective ground, 68.7% of households declare having medium standard of living in the urban area of Essaouira *versus* 76.2% in the rural area of Bouaboud.

With regard to poverty, the national statitics are presented in Table 1 which indicates the official monetary measure of poverty.

Table 1: Evolution of Moroccan poverty rates
(by taking into account adjustements by poverty thresholds)

	1998-99 %	2000-01 %	2006-07 %
Urban	9.5	7.6	4.8
Rural	24.2	25.1	14.5
Average	16.3	15.3	9

Source: Authors from HCP data.

Between 1998 and 2007, the decrease in monetary poverty has been more important in rural area than in urban ones. In rural zones, the rate has decreased from 25,1% to 14,5%, corresponding to a fall by 10.6 percentage points. These data show that monetary poverty is a rural phenomenon in Morocco. The simple calculation of a poverty rate does not provide a comprehensive view of the poverty issue. Nevertheless, it is the only official statistic released, and other measures confirm this trend.

In fact, we are able to compute the same poverty indicator with our CBMS data. Our results indicate a "household" poverty rate of 32.1% in Essaouira, which is very high compared to the urban and national average. Other poverty measures using the Foster, Greer, and Thorbecke (1984) indicator confirm this observation. As far as Bouaboud is concerned, we estimate a rate of poverty of 77.7%, once again significantly above both the rural and national average.

These poverty rates calculations confirm that the CBMS survey is not representative of the average population. Essaouira and Bouaboud have been chosen for their specific characteristics.

Savings definition

Alternative savings measures exist in the litterature. The definition generally adopted depends on the availability of data. As they often miss data on income and consumption expenditures, most surveys (see for instance Paxson, 1992) approximate savings through durable goods and real and financial assets. So they use an "indirect" measure of savings. As the CBMS survey provides the informations needed, we calculate a "direct" measure of savings as the difference between income and expenditures on goods and services. The non-consumed part of households' income is the traditional measure of savings and is also consistent with the national accounts concept. So, we follow the path of Folay and Pyle (2005) and Denizer *et al.* (2002).

According to objective data, household annual income is about 36 800 dirhams[2] in average (i.e. roughly 4 715 US dollars) and consumption expenditure about 35 000 dirhams in Essaouira. The average income reaches 16 400 dirhams (i.e. roughly 2 101 US dollars) in Bouaboud and the consumption expenditure is evaluated to 15 800 dirhams.

In Essaouira, the amount of savings is estimated to 2 109 dirhams (i.e. roughly 270 US dollars) on annual average (or 558 dirhams per capita after correcting for the size of the household). The mean annual income is 36 800

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

Figure 1: Household saving density, in Essaouira
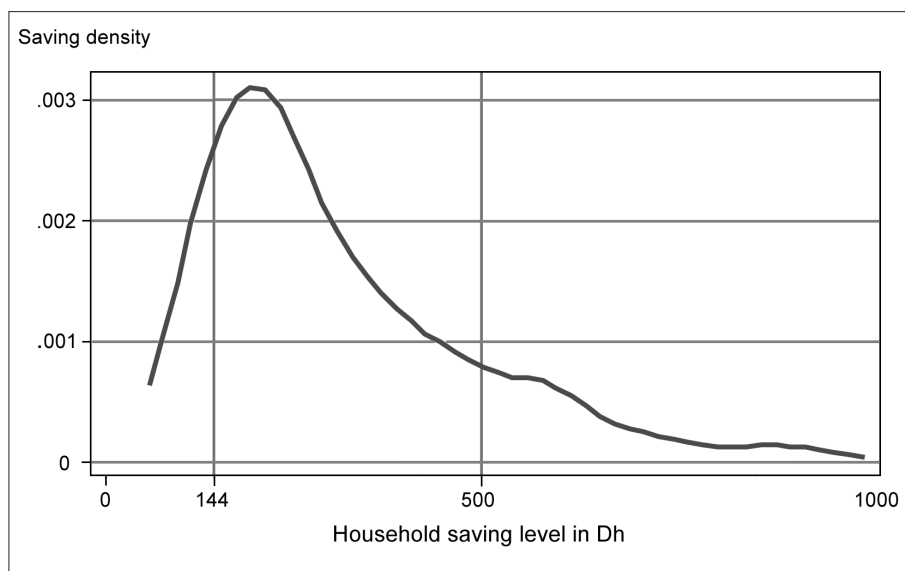
Source: CBMS database, authors' calculations.

dirhams what means households save 5.7% of their global income in Essaouira. Among surveyed households, the lowest savings level is 10 dirhams and the highest reaches 84 000 dirhams. The density of savings (Figure 1) indicates that most of urban households save about 150 dirhams.

In Bouaboud, savings is estimated to 517 dirhams (i.e. roughly 66 US dollars) in annual average per household (or 97 dirhams per capita) and income is estimated to 16 400 dirhams what means that only 3.1% of the income is allocated to savings in our rural area. 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 2 highlights the wide dispersion of household savings, which range from a minimum of 15 dirhams a year to a maximum of 45 200 dirhams a year. The majority of households save less than 200 dirhams a year.

Although savings levels are positive in both localities, household savings 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: savings is still the privilege of urban households, who save about 4 times more than rural households.

Figure 2: Household saving density, in Bouaboud
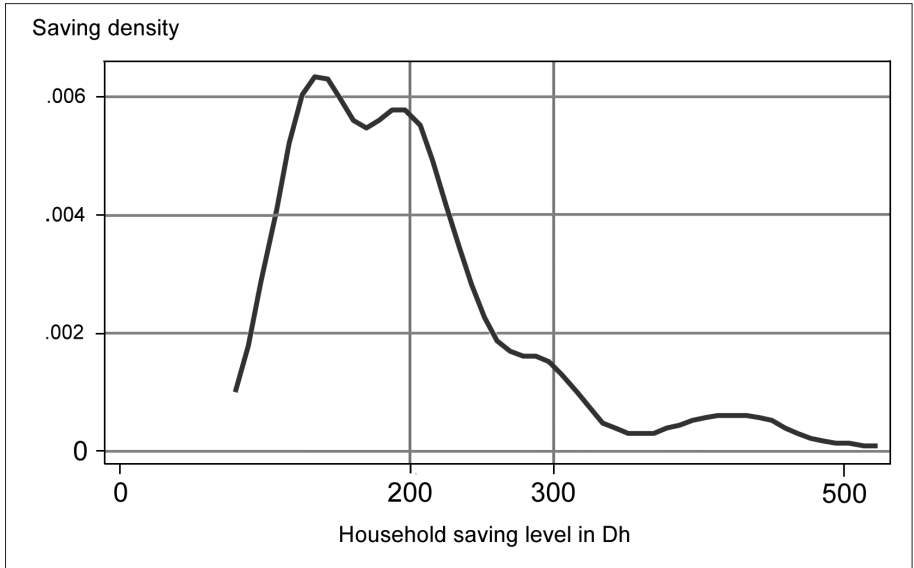
Source: CBMS database, authors' calculations.

2.2 Characteristics of the households

The sample we use consists on 656 households. Among them 296 live in Bouaboud (i.e. 45.1% of the sample) and 360 live in Essaouira (54.9%). The CBMS survey contains a large number of background variables such as age, gender, size of household, educational attainment and employment status. Some of them are presented in Table 2.

Table 2: Some characteristics of the samples

	Essaouira	Bouaboud
Households headed by a man	78.3%	90.2%
Age of the household head (in average	50.4 years	52.1 years
Household's size (in average)	4.5 persons	6 persons
Number of individuals with a job in the household (in average)	1.3 person	1.3 person
Number of unemployed individuals in the household (in average)	2.8 persons	4.7 persons

Source: CBMS database, authors' calculations.

We note that there are few differences between the two samples.

2.3 Economic activity and unemployment
in Essaouira and Bouaboud localities

The Moroccan labour market is characterised 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 Aynaoui, 2005). Young people (younger than 35 years old) are more affected by unemployment than others (El Aoufi and Bensaïd, 2005).

In the CBMS survey, the rate of unemployment reaches 22.2% in Essaouira. This rate concerns the people aged between 15 and 65 years old who declare themselves 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 the national one for the same year and the same quarter. Taking 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 of 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 young people finishing school (whether general or professional), often without a 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 declare themselves to be active in the economic sense, and in this sub-population, all are employed. Consequently, the rate of unemployment is very low (1.3%), which probably implies a mis-measurement of inactivity and unemployment in the rural area. In particular, women are suspected of underestimating their participation the production of goods and services.

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

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

2.4 Housing, land and livestock ownership

At the end of the 1990's, authorities made arrangements to improve the welfare of the population and, more precisely, housing conditions. As au-

thorities decided to incite and encourage housing investments, the access to property has become easier for Morrocan households, in terms of administrative procedures. The savings decision was influenced by this new environment. For the Essaouira locality, we observe an annual rate of new housing-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. The figure is 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, especially in rural areas.

Using average income and consumption expenditure figures for home owners and non-owners in Essaouira, we can evaluate a savings level by housing occupation status (Table 3). 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 3: Income, consumption expenditure and savings,
in average, by housing occupation status**

In average, in dirhams	Owners		Non-owners	
	Bouaboud	Essaouira	Bouaboud	Essaouira
Income	16 419	43 674	16 111	29 313
Consumption expenditure	16 006	41 009	13 858	27 813
Savings	413	2 664	2 253	1 500

Source: CBMS database, authors' calculations.

In Essaouira, savings are higher for home-owners (2664 dirhams) than non-owners (1500 dirhams), on average. This can be explained by the fact that home-owners have a larger income and they are able to save more in spite of higher consumption expenditure. We observe the opposite in the rural locality of Bouaboud. Table 3 indicates that both owners and non owners get the same average income, but the later spend less on consumption. In consequence, they save more, perhaps in order to purchase their future housing.

The CBMS survey also gives information about land and livestock ownership in both localities. In the rural area of Bouaboud, 73.2% of households own agricultural lands and/or 66.2% own livestocks (Table 4). In the urban area, we surprisingly observe that almost one person in five owns agricultural lands.

Table 4: 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 database, authors' calculations.

Agricultural lands, livestock and housing perform non-financial savings but the CBMS survey does not provide information on its monetary value.

3. EMPIRICAL IMPLEMENTATION AND RESULTS

Our purpose now is to extend the existing literature by providing a comprehensive characterization of the empirical link between household savings and a broad range of potentially important savings determinants. In order to assess the household savings behaviour in urban and rural areas, the analysis focuses on the impact of variables such as household income, household size, literacy of the head of the household, as well as their age and gender.

3.1 Methodology

We use a measure of household savings 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 savings in urban and rural areas, several models are suggested. For all the estimations, we adopt a reduced-form approach, taking into account a variety of savings determinants identified in the literature (Edwards, 1996; Loayza, Schmidt-Hebbel and Servén, 2000). As the income is assumed to be endogenous with the level of savings, all 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 saver- and non-saver-households. Indeed, all the households in our sample save a part of their income.

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 head of the household, his level of human capital, the number of unemployed members of the household and the size of the household. To test the life cycle hypothesis, we consider the age and the age squared of the head of the household. We add the gender of the head of the household, which is identified as an important variable in a household's savings behaviour.

Finally, the list of determinants of savings is as follows:
– Disposable income of the household head: annual household income in dirhams;
– Literacy of the household head: dummy = 1 if the head of the household can read or write and 0 otherwise;
– Household size;
– Number of unemployed persons in the household;
– Age and age² of the head of the household;
– Gender of the household head: dummy = 1 if the head of the household is male, 0 otherwise;
– An interaction term called "gender*income".

To deal with the potential endogeneity of income in the savings equation, we propose these following instruments:
– Livestock ownership: dummy = 1 if the household owns livestocks and 0 otherwise;
– Land ownership: dummy = 1 if the household owns land and 0 otherwise.

Following instrumental variables (IV) methodology, we consider both explanatory variables of savings and potential instruments which are expected to influence income and not savings. Ownership's livestock and land are the result of capital accumulation which could affect the household head's activity and the associated income. Nevertheless, such patrimonial savings could not directly affect the savings flows measured in this article as the difference between monetary income and consumption expenditures.

3.2 The results

Table 5 indicates the results for urban households whereas table 6 reports empirical findings about household savings behaviour in rural area. In these tables, each model includes the income after correcting the endogeneity bias. The appendix presents the estimation of the income. The results show that the expected instruments (ownership's livestock and land) are statistically not significant. However, in both areas, a variable appears to be a significant

instrument of income: the number of employed individuals in the household, significant at 5%. Moreover, income is also explained by literacy of the head of the household in Essaouira area (significant at 10%) and by household size in Bouaboud area (significant at 5%).

In developing countries, income plays an important role in determining household savings as the desire and ability to save depends on having more than the resources dedicated to meeting basic needs (Carpenter and Jensen, 2002). In Tables 5 and 6, in the model I, the income, the household's size and the literacy of the head of the household are the 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's savings in the case of urban households (Table 5). When income increases by 1 dirham, household savings increases by 0.07 dirham (model I, Table 5). In the rural area (Table 6), the education of the head of the household seems to be more determinant than income.

As far as household size is concerned, 14% of households have one or two members, 70.4%, three to six, and 15.6% comprise more than seven 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 savings 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 savings. 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 savings because of higher household consumption.

We find that the household size only affects savings negatively in the urban context. An additional member in the household significatively reduces household savings. This result confirms a "size effect". Alternatively, when we take into account the number of unemployed members, the results are significant and negative. Households with an additional unemployed member reduce their savings by 300 dirhams (model II, Table 5).

Concerning age, 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's savings behaviour.

To test this hypothesis, we have also considered the age and age squared. Savings exhibits a hump-shaped relationship with respect to age but the results are not significant in any localities.

Lastly, 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 can be related to the migration and drift from the land phenomena that mostly affects men. This analysis by gender is relevant because women usually save more than men (with their children's education in mind) and manage their savings more actively: *"the savings strategies of men and women are very different; women (…) manage their savings at any time between consumption needs, social needs and economic activity"* (Goldstein and Barro, 1999).

Table 5: Household savings in urban area (Essaouira)
Dependent variable: Savings level

Models	(I)	(II)	(III)	(IV)	(V)
Income	0.067***	0.049**	0.065***	0.066***	0.031*
	(0.025)	(0.020)	(0.025)	(0.024)	(0.017)
Household size	-324.13**		-297.68*	-339.84**	-327.05**
	(139.14)		(165.85)	(145.39)	(137.79)
Literacy	673.67	959.08	516.76	502.91	559.88
	(555.11)	(692.78)	(595.39)	(583.22)	(477.61)
Number of unemployed		-367.53*			
		(196.87)			
Age			18.35		
			(97.91)		
Age^2			-0.36		
			(0.81)		
Gender (1:Male)				656.90	-1523.07***
				(624.30)	(579.07)
Gender*Income					0.063***
					(0.022)
Intercept	682.43	746.93	788.00	408.05	1403.38***
	(579.62)	(752.11)	(2550.50)	(572.78)	(540.60)
Sample	352	352	352	352	352
R^2	0.32	0.27	0.31	0.31	0.35

Source: CBMS database, authors' calculations.
* significant at 10%, ** significant 5% and *** significant at 1%.

Ceteris paribus, our results indicate that Moroccan women who are heads of households do not save more than men (model IV, tables 5 and 6). But, when the interaction between "Gender of the head of the household" and "Household income" variables is taken into account (model V), women save more than men in Essaouira, except when the income increases. In this case, saving is higher if the head of the household is a man. This result suggests that men play a more important economic role as heads of households when the power purchase increases. Conversely, in poor households, women take more decisions inside the household. The assumption that women in developing countries would save more than men is therefore questioned in the case of this urban area. In the rural area, men and women differ only for high levels of income. The richer men are, the more significantly they increase their savings level in Bouaboud.

Table 6: Household savings in rural area (Bouaboud)
Dependent variable: Savings level

Models	(I)	(II)	(III)	(IV)	(V)
Income	0.074	0.056*	0.068	0.073	0.012
	(0.048)	(0.032)	(0.045)	(0.049)	(0.009)
Household size	-73.30		-60.17	-73.16	-18.84
	(96.89)		(94.12)	(96.62)	(67.67)
Literacy	524.48**	536.76**	521.57**	523.21**	557.08**
	(259.02)	(255.85)	(256.75)	(264.74)	(264.16)
Number of unemployed		-64.07			
		(72.42)			
Age			7.72		
			(36.03)		
Age²			-0.13		
			(0.33)		
Gender (1: Male)				11.43	-315.74
				(149.17)	(281.39)
Gender*Income					0.029*
					(0.017)
Intercept	-435.55	-291.78	-441.94	-442.57	78.73
	(460.83)	(443.25)	(1114.86)	(409.11)	(213.81)
Sample	294	294	294	294	294
R²	0.03	0.05	0.04	0.03	0.06

Source: CBMS database, authors' calculations.

* Significant at 10%, ** significant 5% and *** significant at 1%.

In the case of rural households, the R² is always lower (Table 6) which indicates that the determinants of savings behaviour differ from thoses identified in urban areas. Other factors should be tested to characterise the specificity of the savings behaviour in rural area. With this aim in mind, we have taken into account the following variables: land ownership, livestock ownership and the area of land. The empirical results suggest no statistically significant effect as a result of these variables. These findings conflict with results on Japan, for example, where savings 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 *et al.*, 2003).

4. CONCLUSION

Developing countries are constrained by limited credit acess and insurance markets, and by a weak social welfare coverage. In this context, household savings are crucial to providing an insurance against economic and social shocks. Moreover, households' savings is one of the most important determinants of the supply of funds for investment. For low-income countries, financial development is likely to have important implications for economic growth.

The objective of this paper is to identify the determinants of households' savings. From an original survey conducted in two localities, one urban and the other rural, the results obtained are mostly in accordance with previous findings in the empirical literature on savings 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 savings behaviour of urban households in Morocco. Indeed, income happens to be among the prevalent determinant of savings behaviour, but taken alone it is unlikely to explain the time trend in the macroeconomic picture of household savings.

In the rural area, the main determinant of savings is the literacy of the head of the household, which confirms that individuals save for their future, especially if their situation is precarious. Concerning the household size, this variable is not significant in the rural case whereas an additional member re-

duces the savings 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 age but the results are not significant. Our findings also indicate that Moroccan women, particularly in the urban area, save more than men when we take into account the interaction between gender and income. With higher levels of income, however, we observe the opposite results.

In spite of the efforts of the Moroccan government since the beginning of the 2000s to develop the financial sector, many things still have to be done to persuade households to save a larger part of their income in a financial form. When the new phase of the CBMS data is made available, it will be possible to measure savings more precisely and to analyze dynamics of savings. Owing to this panel data, it might be useful to investigate possible non-linear effects of variables affecting the savings level, for instance by employing semi-parametric regression methods.

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Résumé

Cet article propose une analyse des déterminants microéconomiques de l'épargne des ménages au Maroc à partir d'une enquête menée à la fois en zone urbaine et en zone rurale. Les statistiques descriptives étudiées dans une première partie laissent supposer que les déterminants de l'épargne au Maroc sont multiples et relativement communs aux deux zones, l'analyse économétrique que nous proposons permet de préciser nos résultats. Le revenu courant a un impact positif sur le niveau d'épargne en zone urbaine contrairement à la zone rurale où l'alphabétisation apparaît déterminante. L'hypothèse de cycle de vie n'est pas confirmée. En zone urbaine uniquement, la taille du ménage influence négativement le montant d'épargne tandis que les femmes chefs de ménage épargnent plus que les hommes à l'exception des ménages à très haut revenu. Le comportement d'épargne des ménages s'avère donc sensiblement différent selon leur lieu de résidence.

Mots clés: Epargne, Maroc, Données individuelles, Microéconométrie.

JEL classification: E21, D12, C3.

Appendix: Estimation of the income (OLS estimates)

Dependant variable: Income level		
	Essaouira	**Bouaboud**
Household size	-1915.81	980.06**
	(1746.46)	(486.39)
Literacy	12636.87*	561.98
	(6811.47)	(1588.85)
Number of employed individuals in the household	16961.65**	2956.88**
	(6898.00)	(1187.35)
Age	-9.72	-46.60
	(112.27)	(47.91)
Gender	4598.90	-204.70
	(7026.49)	(1678.14)
Land ownership	-8848.9	-1924.32
	(7056.07)	(1475.24)
Livestock ownership	7648.95	-2276.65
	(10206.49)	(1735.02)
Intercept	11404.94	9958.83
	(10644.51)	(3605.93)
Sample	352	294
Centered R²	0.13	0.14
Uncentered R²	0.46	0.69

* Significant at 10%, ** significant at 5% and *** significant at 1%.