

THESIS / THÈSE

SPECIALISED MASTER IN INTERNATIONAL AND DEVELOPMENT ECONOMICS

Savings Demand in Developing Countries : Pull and Push Factors Evidence from Senegal

TSEKANE, Martinien

Award date:
2016

Awarding institution:
University of Namur

[Link to publication](#)

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Advanced Master in International and Development Economics
Jointly Organized By



Savings Demand in Developing Countries: Pull and Push Factors

EVIDENCE FROM SENEGAL

By :

Martinien TSEKANE

Supervisor : Dr. Marie BOLTZ

Tutor : Dr. Stephanie WEYNANTS

Project presented as part of the requirements for the award of the
Advanced Master in International and Development Economics
Academic year 2015-2016

Abstract

In the present paper, we used data from a nationally-representative household survey on Poverty and Family Structure (PSF) conducted in Senegal in 2006. Our analysis provide suggestive evidence of the life cycle motive and precautionary motive as main drivers of the saving behaviors of individuals in Senegal. We also find that poverty, low level of education, unemployment and some intra-household conflictual interactions constitute barriers for savings demand in the Senegalese economy, especially for women.

Keywords: Savings motives; Savings constraints; Developing countries;

I am thankful to:

- My supervisor, Dr. Marie BOLTZ, for her availability and her valuable advices that enhanced the content of this paper
- My tutor, Dr. Stephanie Weynants, also for her availability and the support that she brought to me.
- My professors and lecturers in the class of Advanced Master in International and Development Economics, for all the knowledge they transmit to us, that help us to realize this work
- My classmates in the class of Advanced Master in International and Development Economics, for their support.

Contents

Introduction 1

1 Literature review 2

1.1 Savings motives 2

1.1.1 Life cycle motive 3

1.1.2 Precautionary motive 4

1.1.3 Investment motive 5

1.2 Savings constraints 5

1.2.1 Constraints on savings supply 5

1.2.2 Constraints on savings demand 6

2 Data and Methodology 8

2.1 Data 8

2.2 Empirical strategy 9

3 Descriptive Statistics 10

3.1 Description of the sample 10

3.2 Characteristics of Savers 10

3.3 Forms of Savings 13

3.4 Savings and life cycle 15

3.5 How do individuals behave after temporary income shocks ? 16

4 Empirical results 18

4.1 Factors influencing the existence of savings 18

4.2 Factors influencing the stock of savings 20

Conclusion 23

Appendix 26

Introduction

In the economic theory, savings play a key role because it provides the necessary resources to finance investment in order to reach development, stability and growth; and to cope with risk, both for developed and developing countries. The saving behavior in developing countries is different from the saving behavior in developed countries. Indeed, households in developed and developing countries have different structures. In developing countries, households are larger, less educated; incomes are for the majority derived from agricultural and informal sectors and thus are more volatile and uncertain; in addition access to the financial sector is limited.

Globally, at a world level, 36% of adults report having saved or set aside money in the past 12 months in 2012. In high-income economies, this ratio is 58%, while in low-income economies, it is only 30%. Worldwide, 22% of adults report they saved at a bank, credit union, or microfinance institution (MFI) in 2011. The share ranges from 45% in high-income economies to 11% in low-income economies. Why do people in developing economies are less likely to save than people in developed countries? How do the poor individuals or households manage to save?

In the last 30 years a large literature has developed analyzing the savings behavior in developing countries. Many factors have been identified as driving the saving behavior of the poor. Life cycle motive (Modigliani and Brumberg, 1954) and precautionary motive (Friedman, 1957) are the more relevant to explain the saving behavior of households. Individuals and households save in order to maintain a smooth consumption profile over their life, especially if the shocks are temporary¹. Many authors have also identified some barriers that can prevent individuals and households in developing countries from saving as much as they can do. Among these barriers, poverty (Banerjee and Duflo, 2007), low level of education (Hastings et al., 2012), social constraints (Platteau, 2000 and Ashraf, 2009) and self-control issues (Ashraf et al., 2006) are among of the most prevalent. In addition, people may have low or even no access to formal savings. Thus, they rely on ROSCA's and other informal associations to save.

This study focuses on one country: **Senegal**. Senegal is a sub-Saharan African country, classified as low income country by the World Bank. The IMF, in the last country report², reported that in 2006 the poverty rate was 48.3%, for 58.8% in rural area and 28.1% in Dakar, the capital city. They also reported that households were vulnerable to shocks and have insufficient mechanisms to cope with them.

In this paper, we will use data from a nationally-representative household survey on "Poverty and Family Structure" (PSF), conducted in Senegal in 2006. Using descriptive and empirical statistics, we will determine the factors motivating the decision for individuals to save and the elements that limit their ability to save. The paper will attempt to provide evidence of life cycle motives and precautionary motives for savings, but also to evidence the lack of income, the lack of education and problematic intra-household's interactions as substantial barriers for individual's savings. We will also bring out the more likely forms of savings used.

The first section of this paper will consist in a literature review on savings with empirical findings in developing countries. In the second section we will present the methodology that we used. The third and fourth sections will be devoted to descriptive and empirical results.

¹Not specific to developing countries

²<https://www.imf.org/external/pubs/ft/scr/2015/cr1515.pdf>

1 Literature review

In economics, two major schools of thought differ in their approach and design of savings: the keynesian and the neoclassical. The difference lies in the link between consumption, savings and investment, both at the macroeconomic and microeconomic level.

Keynes (1936) sets out a theory based on "the fundamental psychological law" according to which individuals tend to increase consumption when income increases, but not as much as their income. For him, households first consume their income and the current consumption is a guarantee of future consumption. Households have a preference for the present and do not project themselves beyond a short-term horizon. Savings is therefore only part of current income that is not consumed. The unconsumed portion of the income can be stored in the bank (if the interest rate is high) or stored as a liquid at home for future consumption or as a precaution. Indeed, when savings increases, interest rate decreases and this provide an incentive for investment. But if the expected rate of return is low, investment will not rise as much as savings.

In the neoclassical thinking, "save" is to renounce to the consumption of a portion of the revenues today in the hope of getting a better return on future consumption. Households are more likely to save when the interest rate is high to ensure greater income in the future; and a high level of household savings will reduce interest rates and encourage investment. Thus, the choice between consumption and savings is determined by the level of interest rates, the expected path of income over time and the degree of preference for the present.

Friedman (1957), challenges the stability of Keynes consumption function. He argue that the consumer makes indeed consumption choices over time but the level of consumption is not necessarily lower than the level of income at a given period, since households can not only save, but also "dissave" during a period. According to Friedman, consumption is not only a function of current income, but also of previous and future incomes, and the sum of all this incomes forms what he called the "permanent income". The consequence of the Friedman's theory is that the household are trying to maintain a certain level of consumption over time whence the effect of inter-temporal smoothing by households of their consumption function.

1.1 Savings motives

This section will highlight the different savings motives listed in the literature. Empirical evidences will be shown from studies on developing countries that will enable us to better understand the framework of this study.

Keynes (1936) was the first to discuss the motives behind saving behavior. Looking for the subjective factors behind the marginal propensity to consume, he listed eight main motives which lead individuals to refrain from spending out of their incomes: that means to save. The eight motives are: **(1) Precaution:** Because of the uncertainty about the future, individuals accumulates resources in case of unforeseen negative contingencies; **(2) Foresight:** Individuals take dispositions to deal with anticipated future differences between income and expenditure; **(3) Calculation:** This is related to time preferences. The individual will save if he wish to earn high interest; **(4) Improvement:** The individual may want to enjoy a gradually improving standard of living over time; **(5) Independence:** One individual may not want to be financially dependent on his family and need to have the power to do things by himself; **(6) Enterprise:** For those who want to carry out speculative or business projects. They will need to be free to invest their money when possible and favorable; **(7) Pride or Ostentation:** One individual may want to own a fortune or to bequeath a fortune to heirs; **(8) Avarice or miserliness.**

In the wake of Keynes (1936), Modigliani and Brumberg (1954) distinguish four motives for saving: The first motive is the desire to accumulate the wealth for the benefit of heirs (bequest motive); The second motive derives from the fact that the expected income will generally not coincide with the future consumption, so that people may save or dissave in any period of the life span independently of the first motive; The third

motive is the precautionary motive related to the desire to amass assets to meet unforeseen emergencies that can be due to temporary fall in income below the expected level or temporary consumption requirements over the anticipated level; The fourth motive lies on the uncertainty that require people to hold a partial equity of consumers' durable goods, in order to benefit from these goods. This last motive is similar to the one found by Browning and Lusardi (1996), the down-payment motive, taking in account the accumulation of money as down payments for expensive and durable goods such as a house or a car.

The findings of Keynes and Modigliani allow to present in more details the savings patterns into three groups: Life cycle motives (retirement and bequest motive); Precautionary motive and the investment motives; based on more recent empirical studies especially in developing countries.

1.1.1 Life cycle motive

Modigliani and Brumberg (1954) were the first to develop a theory on the life cycle hypothesis. They claimed, instead of Keynes, that the level of savings was not a function of income but that short term fluctuation of income as well as changes in the earning capacity determines the accumulation of saving with age. They argue that the aim of saving is to provide a pillow against systematic fluctuations in income during the life cycle of the household as well as against temporary changes in income and needs.

The life-cycle hypothesis suggest that saving is positive for young households and negative for the retired, so that wealth distribution should be concave and hump-shaped. Individuals save some of their earnings to provide for purchases in the final stages of life, when they will no longer be earning an income. Jappelli and Modigliani (1998) did an analysis based on italian repeated cross-sectional data, taking into account pension, that supports the Life-Cycle Hypothesis of humped wealth, with saving turning negative after retirement. They found that while total savings and mandatory pension savings where positive at young ages and negative at elderly ages, discretionary or private saving remains positive throughout the life cycle, or at least until the age of 80. They explain this willingness of people to continue saving after retirement by their will to provide a bequest for their heir's.

Banerjee et al. (2010) investigating the extent to which the life cycle theory can explain China's household savings rates, documents that Chinese parents depend on their children for support when elderly and that sons provide more support than daughters. Their results display that exogenous reduction in fertility due to family planning policy was causing a significant increase in household savings, and all of the increase was driven by parents that have a daughter as a first child. These results of Banerjee et al. (2010) provide strong support that the life-cycle model and changes in demographic structure play a key role in explaining household savings rates in China.

The aggregate implications of the life cycle hypothesis on short run, long run and cyclical behavior of saving-income ratio and wealth-income ratios have been exhibited by Ando and Modigliani (1963). They argued that if income grows at a constant rate then aggregate private savings and wealth will tend to grow at the same rate. But while the ratio saving-income is positively correlated to the income growth rate, the wealth-income ratio is negatively correlated to income growth rate. Modigliani (1986) is arguing that the level of savings depends on the age of consumers, and therefore on the demographic structure of society rather than the level of household income. But overall Modigliani findings concerns only developed countries and not developing countries.

According to Deaton (1989), the demographic structure of developing countries is different from the one of developed countries. Households in developing countries tend to be larger than households in developed countries. In addition, people have less access to social security, retirement pension, credit and insurance. In this context, Deaton explain that poor households develop risk-sharing arrangements strategies that consist in sharing risk with others (within or between households) through transfers in money, in labor or in kind. The young workers in the household are taking care of non-workers (old and children) and the children, when the will grow up will take care of their parents and their children. Workers are transferring money to old people.

Thus in developing countries, transfers within the poor household can insure individuals against health risk at old age. In this type of household, the need for retirement saving and bequest saving is very weak. Armendáriz and Morduch (2010) suggest that if they are simple within-household transfers (e.g., from adult child to his co-resident elderly parents), life-cycle saving motives must be weak in this population. Thus as suggested by Deaton (1992a), the "hump" life cycle saving is not likely to be a very important generator of wealth in less developed countries. Using data from Thailand and Côte d'Ivoire, he shows that consumption path is very close to current income path. A result which was different to the one expected if the life cycle hypothesis was true and credit market good enough. An additional evidence is provided by Yin (2010) who found that in China, parents with house ownership are more likely to transfer ownership to their children when they are assured that they will be supported by their children when they are older. Similarly, some young workers will make transfers to their parents to show they can take care of them and ensure their inheritance back.

Thus, the life cycle hypothesis can be undermined by the fact that the elderly may not dissave as quickly as proposed by the model. Indeed, it is possible that these people are living longer than expected and will provide additional resources to get there. On the other hand, they can consider the high probability of occurrence of health problems requiring medical expenses. These possible events lead the elderly to take cautions and to save in order to provide unexpected future spending.

1.1.2 Precautionary motive

Individuals also save in order to deal with unforeseen events, to protect themselves against contingencies (unemployment, drought or bad harvest, illness ...). They struggle to maintain a smooth consumption profile over time, in response to temporary income shocks. When income is affected by transitory shocks, household's consumption should not change, since they can use savings or borrowing to adjust.

Developing countries are characterized by a higher incidence of diseases and environmental hazards and a rudimentary agricultural technology which offers little protection against natural events. The risk is more prevalent in rural areas of developing countries. In developing countries, uncertainty in low income households poses a real threat that is likely to exert a powerful influence in the way income is saved. In those countries, agriculture seems to be one of the main source of income, but weather, pests, disease and fires make agricultural yields uncertain, especially in rural areas. Fluctuations in income can be due to variability of agricultural prices, or to the fact that the majority of workers is self-employed in the informal sector characterized by its large uncertainty. Deaton (1989) argued that the poorer consumers are, the more risk averse they are generally supposed to be. They accumulate assets as a buffer stock to protect consumption when incomes are low. In Cote d'Ivoire, Deaton (1992b) found that saving predicts fall in income in rural areas because farmers who are saving are the most likely to experience negative shocks in income in the future. Thus, short-term falls/increases in income were the primary causes of farmer's savings/dissaving.

Precautionary motives for saving appears to be especially strong for the poor. Ndirangu et al. (2009), analyzing seasonal fluctuations in consumption and saving behavior of farm households in response to health and weather shocks, have shown that in Kenya, the propensity to save differs by wealth, with the poor exhibiting stronger precautionary motives towards rainfall variability. They also found that precautionary savings tend to increase among HIV/AIDS affected households, suggesting that health uncertainty is also a factor leading to precautionary saving. One more evidence set up by Kong et al. (2008) in Korea displays precautionary behavior by building up medical savings among the elderly, motivated by health uncertainty. A different result has been found by Lundberg et al. (2003) in Tanzania, using a four-round panel dataset to examine whether households anticipating the death of one member engage in precautionary savings to smooth consumption over the crisis. They obtain that in a context of AIDS epidemic, anticipating a death in the household reduces the likelihood that households will save and increases the likelihood of dissaving among the poor.

1.1.3 Investment motive

Deaton (1989) says that in developing countries, households save to invest in Human capital (education) or to make investments in assets or businesses. For Rutherford (2001), poor people can save and that they want to save in order to meet life cycle needs, cope with emergencies, acquire assets and develop businesses, speculation.

Armendáriz and Morduch (2010), using household's data in Indonesia, have shown that 13% of low income households were saving for working capital, 14 percent were saving for school fees payment and 13 percent for general household consumption. Indeed low income households planned to use high frequency savings for business uses, building up assets, and for future consumption. They also highlight the fact of saving by self-financing a business and purchasing equipment and livestock (like jewelry) that can be sold in times of need. So when low income households are borrower-constrained, they can put extra cash directly into their own businesses and typically earn far higher returns than that on money put in the bank. In the same way, Banerjee and Duflo (2007) think that the lack of income and the lack of collateral, does not enable poor people to save or to access to the credit market. Household that wants to invest in a business, accumulate some collateral and thus increase how much they can borrow.

Dupas and Robinson (2013) conducted a field experiment in Kenya and found that by giving to self-employed market vendors an access to interest-free bank saving account, they were able to increase investments in their businesses by 38-56% and their expenditures by 37 about six months after the accounts were offered.

While we have distinguish different motives for saving with various empirical evidences, it is important for us to notice like Modigliani and Brumberg (1954) that one asset in the individual's "portfolio" may, and usually will, satisfy more than one motive simultaneously. Equities in durable goods can satisfy many motives. The ownership of a house can be a source of current services; it can be used to satisfy part of the consumption planned for after retirement; it can be bequeathed or be used as source of funds in emergencies. For Browning and Lusardi (1996), retirement saving under life-cycle motives can be used to buffer pre-retirement income or consumption shocks (precautionary motive).

1.2 Savings constraints

Saving is essential for poor. We found in the previous section that poor people in developing countries want and need to save to protect against bad unforeseen events. But it is hard for the poor to save because of some particular barriers. Some studies in the literature have identified some barriers that prevent individuals and households in developing countries from saving as much as the can do. Some of the barriers are related to the supply side that means the economic environment in which individuals and households are living. Other factors are related to the demand side, that's means some characteristic of individuals or households that limit their ability to save more.

1.2.1 Constraints on savings supply

Some characteristics of the supply of savings services in developing countries may constitute a barrier to save. Demirgüç-Kunt and Klapper (2012) used the Global Findex database of World Bank and found the barriers reported by non-account holders as reason for not having an account at a formal financial institution. Worldwide 25% of adult respond that it was too expensive and 20 percent of adult respond that the bank is too far away.

In sub-Saharan countries, poor people usually rely on deposit collectors, money lenders, and ROSCAs to save their money. A ROSCA is a rotating savings and credit association, a group of individuals who agree to meet for a defined period in order to save and borrow together. The person who gets the pot is chosen randomly and thus can get it at a moment on which the money is not really needed. Moreover, there is a high probability that people who have already benefited stop contributing. It is amazing therefore to see that despite the risks,

ROSCAs are widespread and popular in developing countries. Gugerty (2007) argues that the existence of ROSCAs reflect the desire of poor households to save and the lack of alternative options, as a response to the failure of the market for savings. The World Bank (2014) Global Financial Development Report, mention that in Sub-Saharan Africa, 19 percent of adults reported they had used savings clubs and similar methods in 2011.

Less developed economies are characterized by a lack of access to formal financial services especially for the poor. The World Bank reported that 30% of adult in low income economies have saved in 2011. Only 11% of the savers report saving in formal financial institutions. According to Demirgüç-Kunt and Klapper (2012), while worldwide, 50% of adults report having an individual or joint account at a formal financial institution, it is only 41% in developing economies. In high economies 89% adults have an account in a formal institution when it is only 24% in Sub-Saharan Africa and 33% in South Asia. When looking at the distribution by income, only 10% of adults living on less than \$2 a day have a formal account in Sub-Saharan Africa. They also found a strong correlation between inequality in the use of formal accounts and general income inequality, such that in Sub-Saharan Africa, 45% of richest adult have an account in a formal institution while only 12% of the poorest adult does.

The use of financial services is constrained by market failures that cause the costs of these services to become high in developing countries. In rural areas of developing countries, banks and MFI are weakly represented. Dupas and Robinson (2013) found that in Kenya, monetary costs can be a major barrier for accessing and using formal financial services, especially for the poor people. Thus by eliminating opening costs we can improve the take-up of bank savings accounts and on investment and income levels. Schaner (2013) also found that the non-monetary costs associated with formal banking can discourage poor households from using formal savings services. He noted that in Kenya it was possible to increase saving transactions by expanding geographic access to bank services, via cards that access an ATM ³ network.

1.2.2 Constraints on savings demand

Demirgüç-Kunt and Klapper (2012) found that among the self-reported barriers of non-account holders as reason for not having an account at a formal financial institution, the most frequently cited is the lack of enough money (Worldwide 30% of adult and 80% of adult in Sub-Saharan Africa). Worldwide, 25% of adult reported that it is too expensive to have an account in formal institutions; 23% of adult reported that a member of their family already have an account; 18% of adult reported the lack of necessary documentation; 13% of adult reported the lack of trust in financial institutions as a barrier; and only 5% of adults reported religious reasons as a barrier.

Many studies in the economic literature have shown that the levels of savings varies depending on age, culture, education level, household income and household size. Recent studies focusses more on the poor because one can think that as they don't have enough income, it may be difficult for them to save.

The lack of information or a low level knowledge and education can be a cause of undersaving. Hastings et al. (2012) found strong correlations between low level of education, low knowledge and undersaving. People who are more educated are more likely to save because they know the importance of saving and how to manage to save. Lusardi (2008) support that low literacy and lack of information affect the ability to save and to secure a comfortable retirement. The ignorance about basic financial concepts can be linked to lack of retirement planning and lack of wealth but adequate financial education programs can help improve saving and financial decision-making. As another evidence of this last statement, Garon (2004) has proven that states like Malaysia, Singapore and South Korea, are playing a key role in inculcating savings values and thrift amongst their citizens. Nonetheless, the effect of financial literacy intervention may be very weak or insignificant. As evidence, Cole et al. (2011) in Indonesia, offered freely two-hour financial education program on the workings and benefits of bank accounts and found no effect on the probability of opening a bank savings account for the general population.

³Automatic Teller Machine

The poor also exhibit some problems in resisting to the temptation of spending money that they have at hand. Keynes (1936) was arguing that consumers have preferences for the present and don't think about tomorrow. People may want to live for today and tomorrow will be another today. They will choose, and even pay, to restrict their future choices in some way, to help discourage their future selves from overconsuming. In a field experiments with three banks in the Philippines, Karlan et al. (2010) tested a model of saving when individuals have limited attention. Their model predict that individuals undersave when they don't pay attention to some future expenditures and reminders to save will increase savings. Reminders will be especially effective on time-inconsistent individuals and when they mention a particular future expenditure.

To avoid this self-control issue in developing countries, people usually look for commitment saving product. Gugerty (2007) focusing on participation to ROSCAs in western Kenya, noted that this participation can be attributed to the household need for a commitment savings product in the face of savings self-control problems. In a more experimental field, Ashraf et al. (2006) tested the effect of hard commitment device on savings, in collaboration with a Philippine's Bank. Saving products with commitment features and no financial incentive were offered to the bank clients. About 28% of the clients opened an account and those clients increased their savings by 300 percent one year after, relatively to the comparison group. Brune et al. (2011) in another field experiment in Malawi, noticed that farmers with a commitment savings account alongside an ordinary account have better performance in land under cultivation, in agricultural input use during planting, in crop output at harvest, and higher household expenditures in the months just after the harvest, than farmers with just an ordinary savings account.

Other savings barriers are related to social links and obligations of households that can be constricting savings of poor households. We can think about intra-household barriers if members of the household have different preferences and a lack of ability to commit to savings or inter-household barriers if individuals provide support to friends and relatives when it is asked and when they have cash on hand.

It has been found that within a household, the bargaining power between male and female household heads affects the saving behavior. In Philippines, women with saving account have a greater power in decision making in the household Ashraf (2009). Women living in a couple and earning an independent income are more likely to save their money in ROSCA's because of conflictual interactions within the household (Anderson and Baland, 2002). Robinson (2012) trough field experiment in Kenya showed that following a positive income shock, husbands increase their expenditures on private goods while women save all of the additional income; but the bargaining power of women is limited in poor households. In addition, Schaner (2013) found that the effect of reductions in transaction cost on savings accounts vary according to the gender of the account-holder. Overall, reducing transaction has a positive impact. However, the effect was more pronounced on individual accounts held by men and in accounts jointly held by men and women, while there was insignificant effect on accounts individually held by women.

Concerning inter-household concerns, we found in the previous section that a well-functioning risk-sharing system reduces the need for retirement, bequest and even precautionary saving. Rich individuals are called upon to transfer some of their own wealth (directly and indirectly through transfers and favors) to benefit poorer community members and recurrent transfers to the family and network may have the effect of introducing a distortion in saving decision (Platteau, 2000). Baland et al. (2011) based on Cameroon data, developed the idea that people over-borrow and use it as a way of signaling to their social networks that they are too poor to have available savings, in order to escape. In a field experiment in Kenya, Jakiela and Ozier (2015) found that social pressures to share income with kin and neighbors has an impact on investment level. Indeed people engage sometimes in low-paying investments so that their network cannot know their initial capital.

2 Data and Methodology

2.1 Data

This study focuses on a developing country: Senegal. Senegal is a Lower Middle Income⁴ country located in Sub-Saharan Africa. The population in Senegal was about 11.58 millions in 2006.

The data used are from a nationally-representative household survey on Poverty and Family Structure (PSF) conducted in Senegal in 2006. The initial sample includes 892 households for 7,268 individuals. Then we consider a sub-sample of adults (individuals aged from 18 to 80) since they are more susceptible to hold savings. The new sample includes 890 households for 3,727 individuals.

The main variables that we used for this study were collected for each individual in an household. Some of these variables are indicators of individuals characteristics such as: Gender (*Male, Female*); Age (*in years*); Geographic area (*Rural, Urban*); Religion (*Muslim, Non Muslim*); Household size; Marital Status (*Monogamous, Polygamous, single or else*); Education (*No level, Primary, Secondary*); Occupation (*Never worked, Agricultural worker, Informal worker, Formal worker*); Kinship link with the household head (*Household head, spouse, child, mother/father, ...*)

Some variables used indicate the different shocks experienced by the individuals during the last five years preceding the year of the survey (2006). The main shocks are: Positive shocks (*has experienced a good harvest or good sales in his business; has received an inheritance, Got a new job*) and Negative shocks (*has experienced a bad harvest or bad sales; has experienced a death or illness; lost his job ; lost the ownership of his house*)

Others important variables are related to income and the use of income. They distinguish :

- *Income*: Total income of an individual during the year 2005, in thousand of CFA
- *Consumption*: Total consumption per adult equivalent during the year 2005, in thousand of CFA
- *Savings*: Total stock of savings held by an individual during the year 2005, in thousand of CFA. An individual who hold savings is a "saver" while an individual who has any savings is a "non saver"
- *Formal Savings*: Total stock of savings held in formal financial institutions by an individual during the year 2005, in thousand of CFA
- *Informal Savings*: Total stock of savings held in informal institutions (ROSCA's or other associations) by an individual during the year 2005, in thousand of CFA
- *Home Savings*: Total stock of savings held at home by an individual during the year 2005, in thousand of CFA
- *Transfers received*: Total amount of transfers in cash received by an individual during the year 2005, in thousand of CFA
- *Transfers sent*: Total amount of transfers in cash sent by an individual during the year 2005, in thousand of CFA

New variables have been computed for this study. The first variable computed, represent "Net transfers" which is the difference between transfer received and transfer sent. If net transfer is negative then the individual is a "net sender" otherwise he/her is a *net receiver*. We found in the database some inconsistencies regarding the variable "income". Indeed, we found many individuals with zero as income but who hold savings and are net senders. This led us to compute a new variable representing income. We compute the new income variable as follows:

$$Income = consumption + savings + net\ transfers.$$

It allow us to compute then the savings rate define has the ratio of savings over income

⁴According to the classification of the World Bank in 2014

$$\text{Savings rate} = \frac{\text{Savings}}{\text{Income}}$$

We were also interested in the influence of poverty on savings. Thus, in order to determine the income status of each individual, we took the national poverty line⁵. Indeed, an individual who consumes less than 30 829 CFA per month (369 948 CFA per year) in urban area or less than 18 434 CFA per month (221 208 CFA per year) in rural area, is considered as a poor. We used these thresholds to differentiate the poor from the non poor.

2.2 Empirical strategy

This study aims to identify the factors influencing the demand for savings in developing countries especially in Senegal. What are the characteristics of individuals that make them more likely to increase their demand for savings? The variables of interest are the stock of savings, the savings rate and the probability to save. We wish to know how these variables vary according to individual characteristics.

To achieve this goals, we will generate descriptive statistics showing the distribution of the variables of interest, based on individuals characteristics. This will give us an idea of the influence of these latter indicators. In addition, we will run regressions by estimating the following model:

$$(1) Y_i = \alpha_0 + \alpha_1 X_i + \alpha_2 C_i + \mu_i$$

Y_i represents the outcome variable that can be the probability to save (0 if non saver and 1 if saver) or the total stock of savings, in thousands of CFA, for an individual.

X_i is a vector of dependant variables that includes relevant individual's indicators such as gender, age, household size, marital status, level of education, kinship link with the household head, income status (poor or not poor), shocks on income (positive or negative).

C_i is a vector of control variables that includes indicators such as geographic area, religion, occupation, transfer status (sender or receiver).

μ_i is the error term.

Based on our literature review, we can deduce the expected sign of the relationship between the independent variables and the outcomes variables.

- Regarding the gender, as women are the more vulnerable, we expect them to save less than men. Nonetheless, as found by Robinson (2012), we expect women to be more likely to save compared to men.
- Based on the life cycle hypothesis, we expect younger adults to be more likely to save and to save more than the elderly.
- As Hasting et al.(2012), we expect education to have have a positive effect on savings
- Regarding the marital status, we expect people in couple to be more likely to hold savings compared with singles who are relatively less concerned about their future consumption spendings
- We expect that in a household, the household heads are those who save the most because they are usually the main finance providers in the household.
- According to the precautionary motive, we expect individuals to save after a positive shock and to dissave after a negative shock.

⁵See "Evaluation quantitative du DSRP-II: Dynamique de la pauvreté monétaire (2014), Agence nationale de la Statistique et de la démographie (ANSD), Senegal"

3 Descriptive Statistics

3.1 Description of the sample

The summary statistics of the sample are presented in Table 4 in Appendix. It appears that our sample is made of slightly more female (54.6%) than male (45.4%). The sample is globally young with an average age of 36.4 years. 58.1% of individuals live in urban areas and 93.8% are muslim. Households are very large: the mean size of a household is about 11 individuals. 43.3% of the sample are single or widow. Individuals are mostly not educated (59.6%), only 20.0% have reached the secondary or more. About one third of the sample has never worked (28.8%) and 32.6% are working in the non agricultural informal sector.

Slightly less than the half of the sample (47.2%) is considered as poor. An individual has on average an income of 683.7 thousands CFA per year and consume around 592.3 thousands CFA per year. The sample is largely more net transfer sender (81.1%). A half of the sample has experienced a negative shock on income in the past five years preceding the year of the survey, while only 32.8% experienced a positive shock.

3.2 Characteristics of Savers

The Table 4 shows that only 22.9% of individuals of both sex and aged between 18 and 80, are savers. This is below the average share of individuals holding savings in low-income countries (30%) in 2011, found by Demirgüç-Kunt Klapper (2012). The Figure 1 (a) shows that savers are around two times richer than non-savers. The average income of savers (1,071.4 thousands FCFA per year) is significantly different from the one earned by non-savers (568.5 thousands FCFA per year).

The savers hold in average 210.7 thousands FCFA as savings on a year. Indeed, the Table 4 indicates that the global savings rate is about 4.1%, which is very low, but when we focus only on savers, the saving rate is equal to 17.9% (Table 5 in appendix). Savers are mostly net receivers (average net transfers, 101.7 thousands FCFA, is positive). They are more involved in transfers to their network than non-savers. In addition, Table 5 reveals that savers are relatively less poor (36.7% are poor) compared to non savers (50.3%).

The Table 6 in appendix is presenting in details, statistics on the characteristics savers. Additional statistics on the sample are also available in Table 5 in appendix especially the savings rates.

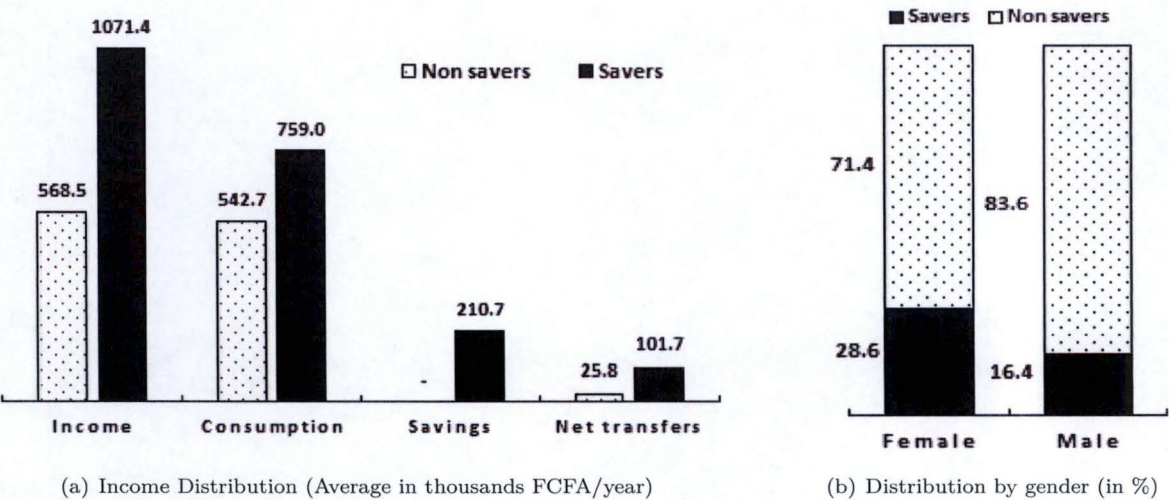


Figure 1: Income distribution and Distribution by gender

The Figure 1 (b) shows that in Senegal women are more likely to save than men. Indeed, 28.6% of women hold savings versus 16.4% of men. But when looking at Table 5, there is no significant difference between the

savings rate of men(4.5%) and of women (3.8%). We also see that women (60.4%) are less educated than men (46.6%).

The probability to hold savings also vary by group of age. The Figure 2 (a) shows that adults aged between 25 and 60 years old are the most likely to hold savings (29.2%) while those aged less than 25 are the less likely (10.1%). The probability of saving among adults below 25 years old is significantly different from the probability of saving among adults above 25. The probability to hold savings decreases at old age. Indeed 19.7% of adults aged more than 60 years old are savers.

There are no significant differences in savings behavior between Muslim and non-Muslims. However, non-Muslims (savings rate of 4.6%) save relatively more than Muslims (savings rate of 4.1%) (Table 5).

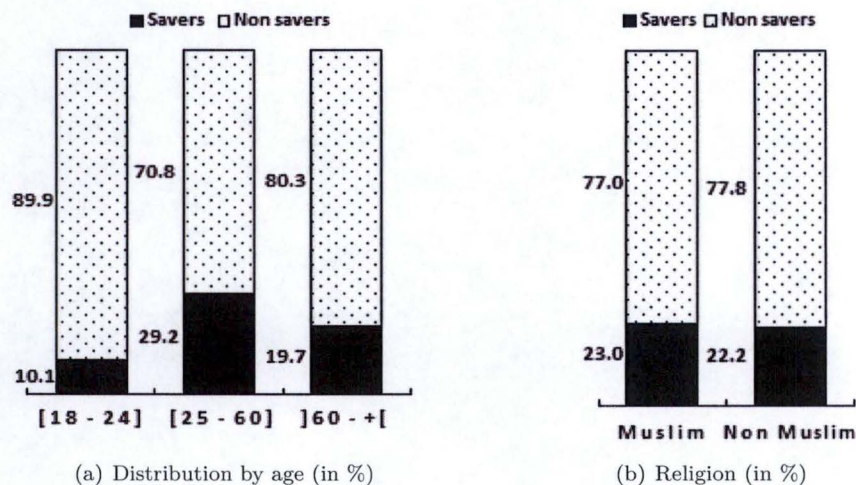


Figure 2: Distribution by age and religion

People living in urban areas are more likely to save and even save more than people living in rural areas. The Figure 3 (a) reveals that 26.3% of people living in urban area, mainly in Dakar, hold savings against only 18.3% of people living in rural areas. In urban areas, the savings rate is 5.2% against 2.7% in rural areas (Table 5). The same Table 5 also shows that people living in rural area are less educated (78.8%) and poor (60.4%) than those living in urban areas. The differences in savings behavior between people living in urban areas and those living in rural areas are statistically significant.

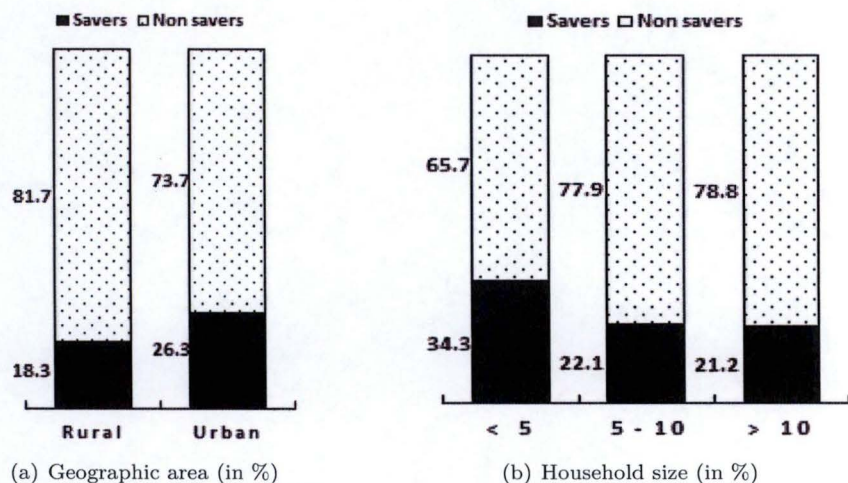


Figure 3: Distribution by location, religion and household size.

The likelihood to save decreases with the household size. Indeed, 34.3% of people living in households of less than 5 members hold savings while only 21.2% of individuals living in households of more than 10 individuals

do. However, small households seem to save much more than larger households. The average savings rate in households of less than 5 members is 5.7%, whereas it is 3.8% in households over 10 members (Table 5).

The Figure 4 (a) indicates that 29.3% of monogamous and 31.6% of polygamous hold savings. Married people are saving much more than singles (the savings rate of singles is 2.3%) and among the married, polygamous are those who save the most: savings rate equal to 6.4% (Table 5). Note that among polygamous, 69.6% are women and 75.3% are not educated.

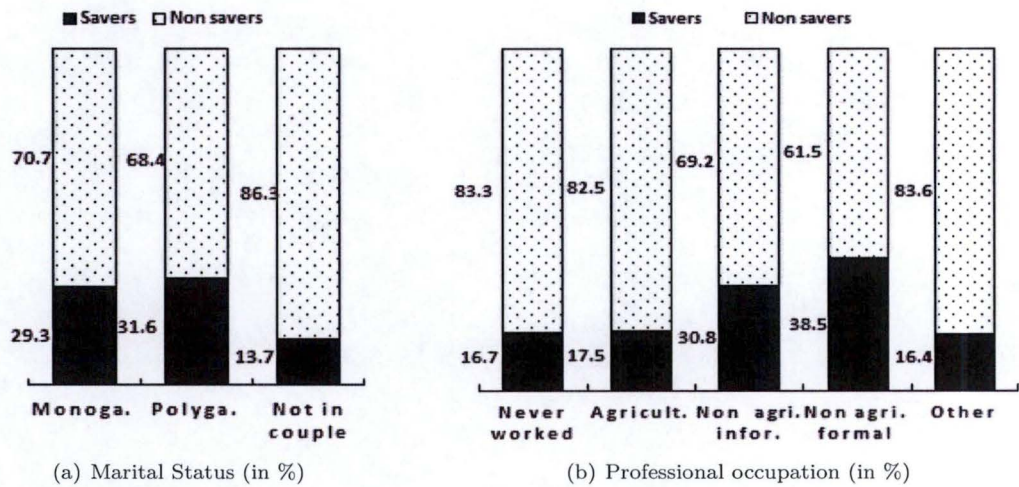


Figure 4: Distribution by marital status and professional occupation.

It can also be seen in Figure 4 (b) that the non-agricultural workers have a higher probability of hold savings (38.5% of non-agricultural formal workers). They are also those who save more, compared to other types of workers. In Table 5, it can be seen that the savings rate of non-agricultural formal workers is 9.9%, while individuals who have never worked have a savings rate of 1.9%. About 74.2% of individuals that never worked are women.

The Figure 5 (a) shows that the probability of saving increases with the level of studies. Those who are educated also save much more. An individual that reached at least the secondary school save on average 126 170 FCFA per year, which is more than three times what a non-educated individual holds as savings on average (Table 5). In fact, educated people are richer and around 60.9% of individuals without education are women. There are statistically significant differences between educated adults and those with no education.

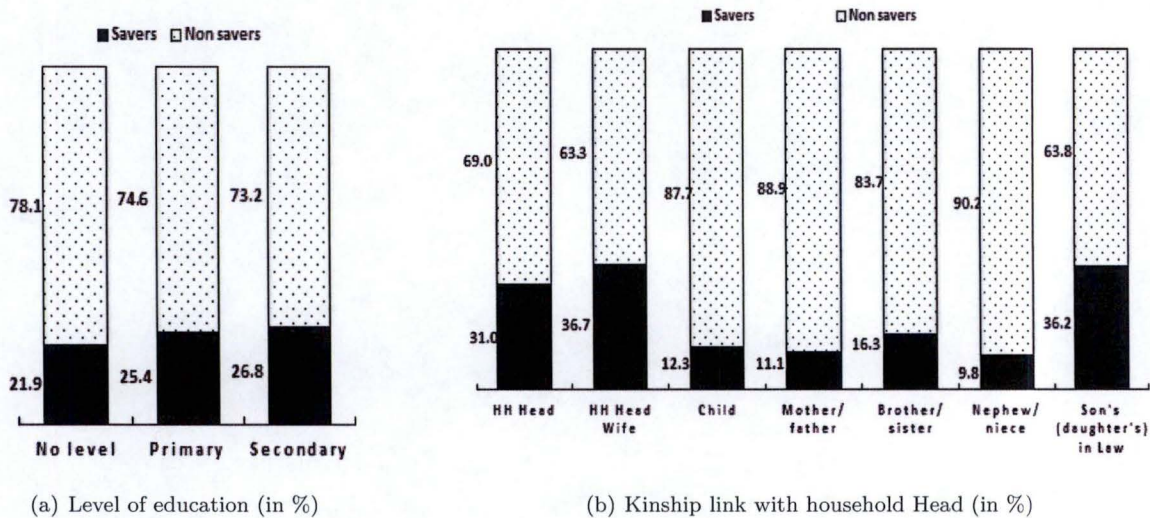


Figure 5: Distribution by level of education and kinship link.

Only 21.7% of household heads are women (Table 5). The Figure 5(b) illustrates that the probability of holding savings is significantly higher for wives (36.7%) compared to their husband. But overall, household heads save more (savings rate = 7.6%) than household head's wives (savings rate = 4.9%).

3.3 Forms of Savings

One saver over five (21.1%) is saving in formal institutions (bank or micro-finance). Around 67.6% of savers are saving in informal institutions (ROSCA's and associations) while 25.3% are saving at home. An individual can hold different forms of saving at the same time.

The Figure 6 (a) shows that "Formal savers" are more than two times rich than "informal savers" (on average 1,938.6 thousands CFA per year versus 844.5 thousands CFA per year). Thus, formal savers are saving (599.9 thousands CFA per year) largely more than informal savers (151.3 thousands CFA per year) and those who save at home (218.1 thousands CFA per year).

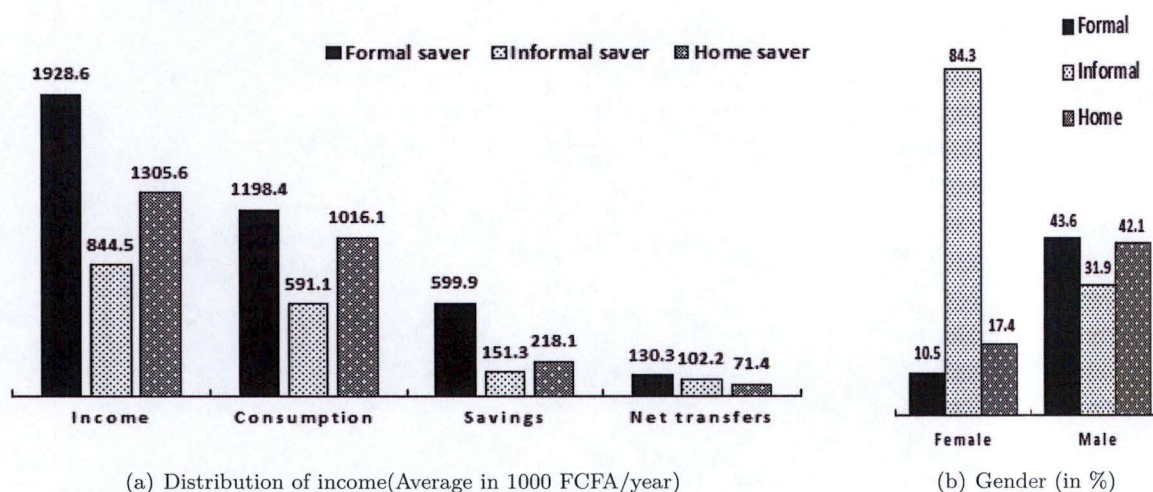


Figure 6: Forms of savings, income and gender

The Figure 6 (b) reveals that women are much more likely to save in informal institutions (84.3% of women do), mostly in ROSCA's. On the contrary, men are more likely to save in a bank or a micro-finance (43.6% of men do). Men are also relatively more likely to save at home compared to women (42.1% versus 17.4%). All the differences observed between the forms of savings according to the gender are statistically significant (see Table 6 in appendix)

In the Figure 7 (a), we can see that the probability to save in formal institutions increases with age while it is the reverse for the probability to save in informal institutions. 33.8% of elderly savers (more than 60 years) hold savings in formal institutions against only 6.7% of young adults savers (18 - 24 years old).

The savers living in urban area (26.2%) are relatively more likely to save in formal institutions than savers living in rural areas (10.9%). Inversely, savers living in urban area (63.4%) are relatively less likely to save in informal institutions than savers living in rural areas (75.8%)

The Figure 7 (c) indicates that non muslim savers are much more likely to save in formal institutions (37.3% of non muslim do compared to 20.0% of muslims).

The Figure 8 (a) shows that the probability to save in banks and micro-finance institutions decreases with the size of the household to which the individual belong. Thus, individuals that belong to large households have a lower probability to save in formal institutions (19.7% of individuals living in household larger than 10 do it against 28.6% of individuals living in household accounting less than 5 members).

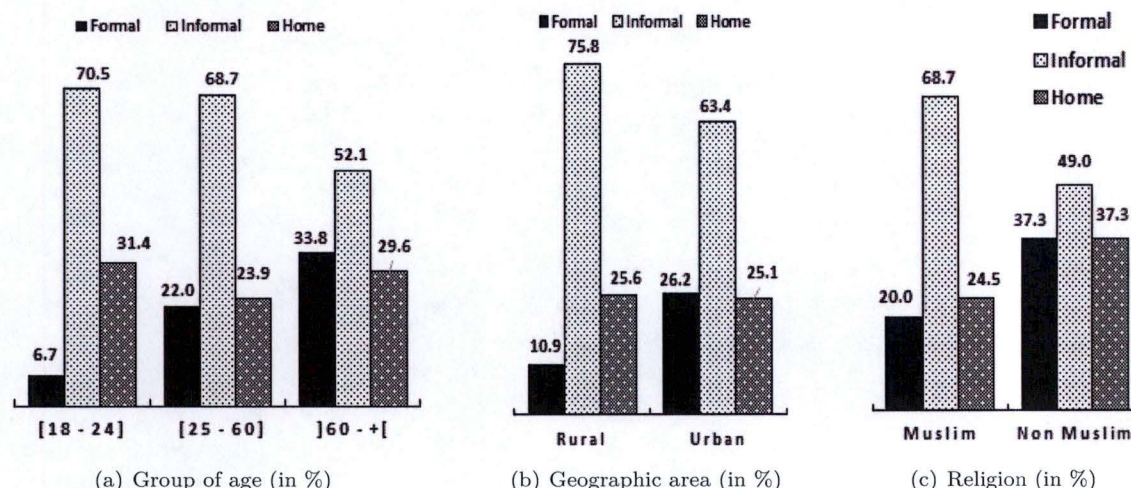


Figure 7: Forms of savings, age, religion and geographic area

In the other hand, the Figure 8 (a) reveals that individuals belonging to a larger household are much more likely to save in informal institutions compared to individuals in less large households.

Individuals in a polygamous union are more likely to save in informal institutions than singles or monogamous (Figure 8 (b)). The Figure 8 (c) shows that more an individual is educated, more he/she is likely to save in a formal financial institution. In the same sense, less an individual is educated, more he/she is likely to save in informal institutions. The differences according to the level of education are statistically significant only for formal savings and not for informal savings (see Table 6).

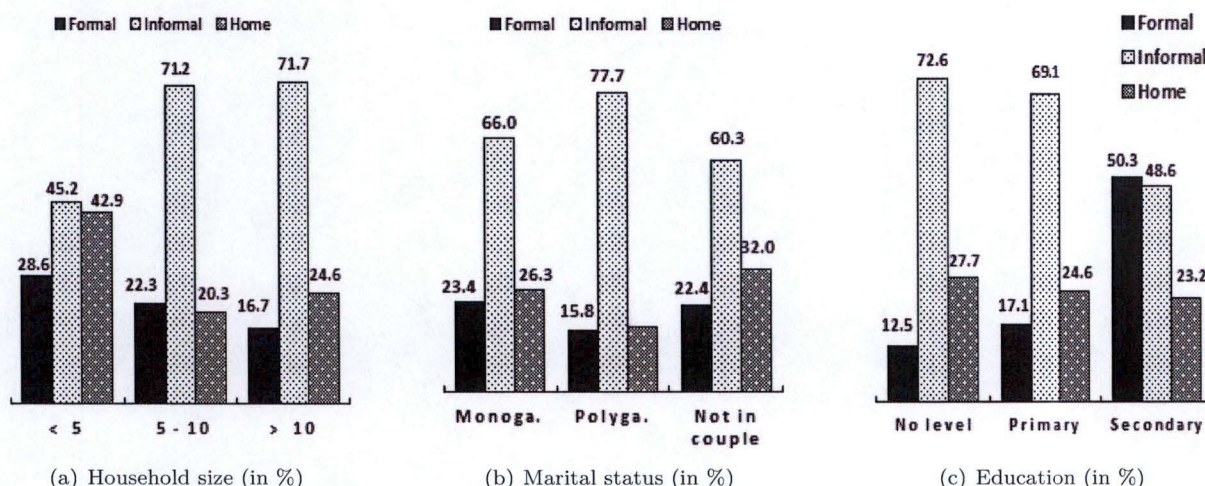
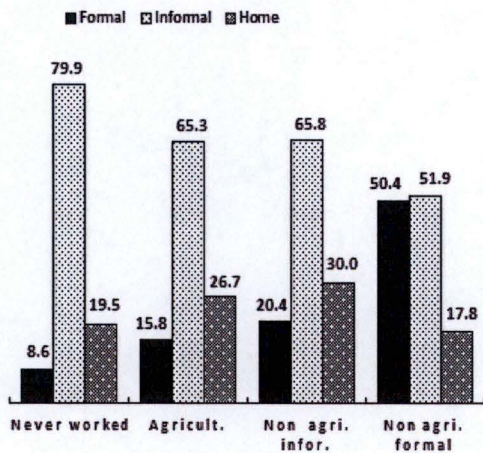


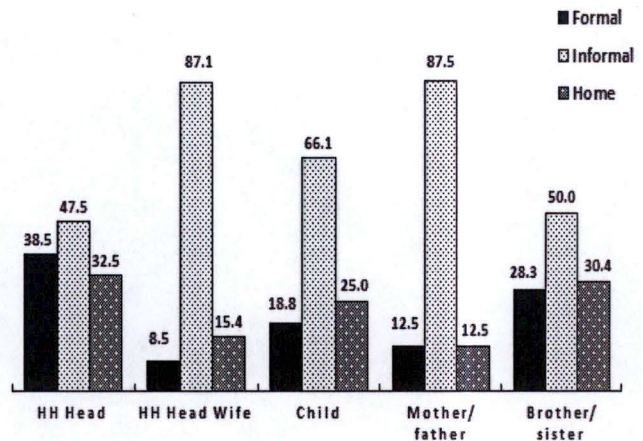
Figure 8: Forms of savings, Household size, Marital status and Education

Regarding the occupation, the Figure 9 (a) shows that individuals working in the formal sector are the more likely to save in formal institutions (50.4% of them do) while individuals who never worked are the less likely to save in formal institutions (only 8.6% do). These last individuals are therefore the more likely to save in informal institutions (76.9% of individuals that never worked did it).

The Figure 9 (b) shows that in a household, the household head is the more likely to save in formal institutions (38.5% of household head do). A woman in the household, whether she is the spouse, the mother or the daughter in law of the household head, is the more likely to save in informal institutions compared to the others (87.1% of household head wives save in informal institutions).



(a) Occupation (in %)

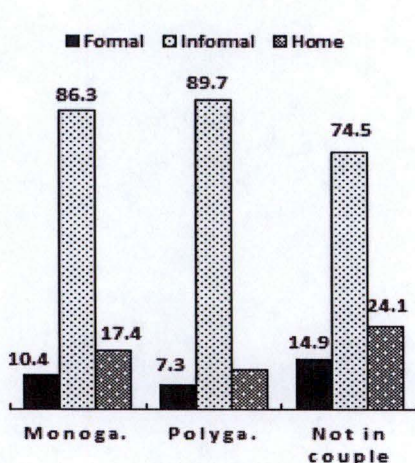


(b) Kinship link with the household head (in %)

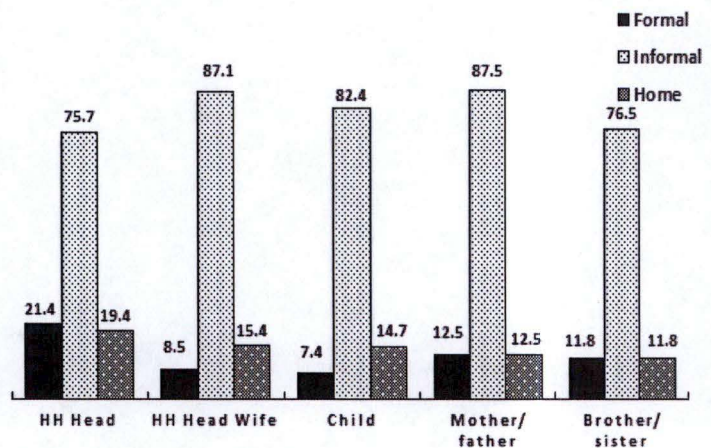
Figure 9: Forms of savings, Occupation and Kinship link

The Figure 10 (b) presents the forms of savings chosen by women according to their position in the household. It appears that shows that more than 75% of women, what ever their position in the household , save in informal institutions. Women who stand as household's head are much more likely to save in formal institutions than others.

The Figure 10 (a) shows that women in a polygamous union are the less likely the save in formal institution (only 7.3% of them do) compared to singles or women in a monogamous union. These women in a polygamous union are the more likely the save in informal institution (89.7% of them do).



(a) Marital status (in %)

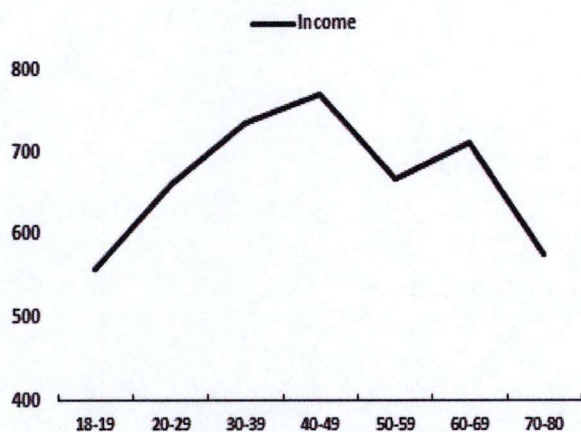


(b) Kinship link with the household head (in %)

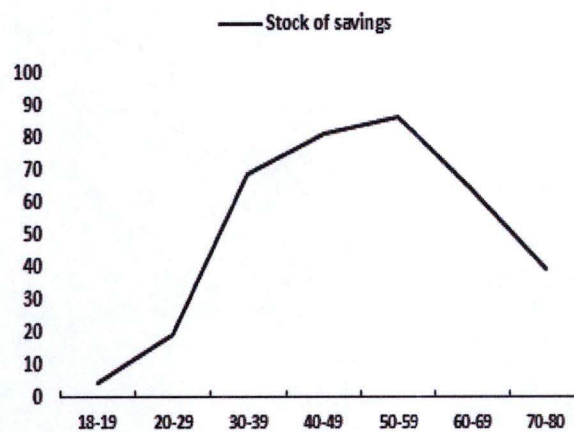
Figure 10: Forms of savings, Marital status and Kinship link (Women only)

3.4 Savings and life cycle

We have shown in the sub-section 3.2 that the probability to hold savings increases at young age and decreases at old age. This pattern of savings distribution according to age appears to be consistent with that underpinned by the life cycle hypothesis. The life-cycle hypothesis suggests that saving is positive for young households and negative for the old and retired so that wealth distribution should be concave and hump-shaped. The Figures 11 (a, b, and c) show how the income, the stock of savings and the savings rate evolve with age.



(a) Savings by age (Average in thousands FCFA/year)



(b) Income by age (Average in thousands FCFA/year)



(c) Savings rate by age (in %)

Figure 11: Test of Life Cycle Hypothesis.

It appears that income and stock of savings display a hump-shaped feature with peaks observed between 40 and 49 years old for the income and between 50 and 59 years old for the stock of savings. Thus, the Senegalese seem to accumulate savings during the active period, then they dissave, starting the age of 60 years. The savings rate meanwhile, is growing in the younger adult periods to reach 7.7% at 50 years old, the age at which it starts decreasing continuously until the end of the life cycle. Relying on the evolution of these three variables, the life cycle hypothesis, appears to be valid in the case of Senegal.

3.5 How do individuals behave after temporary income shocks ?

Regarding the different shocks on income experienced by the individuals, during the survey it was asked to each individual to provide the different shocks he/she has experienced during the last five years. The main shocks reported were *positive shocks* due to a good harvest, good sales in the business, an inheritance received, a new job; or *negative shocks* due to a bad harvest, bad sales, the death of family member or the illness, the loss of his/her job, the loss of the ownership of the house in which he/she was living. Then it was asked individuals to say if they have saved after a positive shock or have dissaved after a negative shock. The main statistics regarding the shocks are presented in the Table 1.

Around one individual over three (32.8%) has experienced at least one positive shock in the last five years preceding the year of the survey. The more recurrent positive shocks that individuals have experienced are related to good harvest (16.3%) and good sales in their business (13.8%). Very few individuals have benefited from an inheritance (1.6%) or have got a new job (8.1%).

Table 1: Saving Behavior of individuals following a positive or negative income shock

	% of individuals that experienced the shock	Number of individuals that experienced the shock	% of individuals who saved after experiencing the shock	% of individuals who dissaved after experiencing the shock
POSITIVE SHOCK	32.8%	1,221	22.4%	
Experienced good harvest	16.3%	609	12.8%	
Experienced good sales	13.8%	513	32.0%	
Benefit from an inheritance	1.6%	61	36.1%	
Got a new job	8.1%	301	31.6%	
NEGATIVE SHOCKS	51.7%	1,926		17.8%
Experienced bad harvest	28.0%	1,042		15.6%
Experienced Bad sales	10.5%	392		17.4%
Experienced a death or illness	17.0%	633		24.3%
Lost the ownership of his house	1.5%	56		41.1%
Lost his/her job	9.0%	335		35.3%
A POSITIVE AND A NEGATIVE SHOCK	19.9%	742	21.0%	16.8%

Source: Poverty and Family Structure Survey, Senegal, 2006

Half of the sample(51.7%) has experienced at least one negative shock in the last five years preceding the year of the survey. Among the negative shocks reported, 28.0% of individuals have evoked a bad harvest, 17.0% of individuals have evoked a death or illness of a family member, 10.5% have evoked bad sales in their business.

Overall, 22.4% of the individuals that experienced a positive shock in the past five years preceding the survey, reported that they have saved just after the shock. The share is quite similar to the share of individuals who were currently holding savings during the survey (22.9%). Only 12.8% of individuals who were affected by a good harvest, have saved just after the shock while for those who have registered good sales, 32.0% saved just after the shock. More than 30.0% of people that benefit from an inheritance or got a new job, have saved following the shock.

Around 17.8% of individuals affected by negative shocks, have dissaved just after the shock. The share of people dissaving after a negative shock varies according to the type of negative shock. Indeed, 15.6% of individuals who were affected by a bad harvest, have dissaved just after the shock while for those who have registered good sales, 17.4% dissaved and for those affected by the death or the illness of a family member, 24.3% have dissaved. Individuals are more likely to dissave after the loss of their job (35.3%) or the loss of the ownership of the house in which they were living (41.1%).

When we focus on individuals who experienced at least one positive and one negative shock in the past five years preceding the survey, it appears that 21.0% saved after the positive shock and 16.8% dissaved after a negative shock.

This results display two main findings:

- Savings are positively correlated to income. A positive shock on income leads to an increase in savings while a negative shock on income leads to a decrease in savings.
- The precautionary behavior of individuals who save when income is affected by transitory positive shocks, then dissave when affected by transitory negative shocks in order to maintain a certain level consumption.

Nevertheless, this feature is observed for less than 25% of the individuals affected by shocks, suggesting that 75% of individuals have other means, different from savings, on which they can rely to manage negative shocks on income such as transfers or borrowing.

4 Empirical results

4.1 Factors influencing the existence of savings

Here below we analyze the effects of some socio-economic characteristics of individuals on their probability to save and the different forms of savings chosen. We estimated the equation (1) where the dependent variable is an indicator of the existence of savings (1 if and individual hold savings and 0 if not). As the dependent variable is a binary variable, we used a probit model to run the estimation. The results of the estimation are presented in the Table 2. The Table 2 presents the marginal effects of each variable on the existence of savings (probability to save) and the existence of each form of savings. From column (1) to (4) regressions are done on all the sample (both male and female included). From column (5) to ((8) regressions are done on women only. We have focussed on women because they are the more vulnerable.

The Table 2 shows that women are more likely to save than men. Indeed, they are 12.8% more likely to do it. Women are also much more likely to save in informal institutions and less likely to save in formal institutions and at home. In column (1), we see that age has a positive and statistically significant effect on the probability to hold savings while age square has a negative and statistically significant effect. This result is in line with the life cycle hypothesis suggesting that individuals are more likely to save at young age and less likely to save at elderly age. Taking just women into account in column (5), the life cycle hypothesis is still valid. But overall the effect of age are very low in term of magnitude (1.8% for age and -0.02% for age square) and are not significant for each form of savings (neither in formal, in informal or at home).

Being in couple leads to high probability to hold saving in general. When looking at the forms of savings, we see that being in an union (monogamous or polygamous) decrease the probability to hold formal savings, but polygamous have much higher probability to save in informal institutions. Women in monogamous union are much more likely (10.4% higher than singles) to save than women in polygamous union (6.0% higher than singles). Both women in monogamous and polygamous union are much more sensitive to informal savings than singles. In addition, in column 8, we see that women in couple are less likely to save at home. The effect of a polygamous union is much more large in magnitude (-0.109) than the effect of a monogamous union (-0.058). This feature reflects the desire of women in couples to keep money out of the reach of their partners and gives an idea of the influence of conflictual interactions within the household on women's savings behavior.

The likelihood of holding savings increases with the level of education. The table 2 shows that individuals of both sex who reached at least secondary school, have 6.3% more chance to hold savings in general and 23.6% more chance to save in formal institution than individual without education. Besides, they are less likely to save at home and to save in informal institutions. Regarding the occupation, working in the formal sector or working in the informal sector increases respectively by 17.5% and 12.0% the likelihood of holding savings. For women in particular, the probability to save is increased by 19.3% for formal women worker and 13.1% for informal women workers. Formal workers are much more likely to hold formal savings (23.6% higher than non workers). Individuals, both men and women, working in the agricultural sector are the less likely to hold savings, what ever the form of savings held.

Concerning the kinship link in the household, in column (1) of Table 2, it can be seen that most of the marginal effects are negative. Thus, be at the head of the household increases the probability to save. Even when comparing women among themselves the result is the same. In column (5), we see that a women who stands as household head has a higher likelihood to hold savings compared to women who have another position in the household. We also see in column (7) that women standing as household head are less likely to save in informal institutions. This last result, combined to the previous related to the marital status, where women in monogamous and polygamous union were also more likely to use informal savings, are in line with Anderson and Baland, (2002) who found that women living in a couple were likely to save their money in ROSCA's because of conflictual interactions within the household.

Table 2: Average marginal effects on the existence of savings (Probit estimates)

	BOTH MEN AND WOMEN				WOMEN ONLY			
	(1) Hold savings	(2) Hold savings in formal institutions	(3) Hold savings in informal institutions	(4) Hold savings at home	(5) Hold savings	(6) Hold savings in formal institutions	(7) Hold savings in informal institutions	(8) Hold savings at home
Gender								
Female	0.1284*** (0.018)	-0.1817*** (0.042)	0.4052*** (0.048)	-0.2691*** (0.047)				
Male (Ref.)								
Age (in years)	0.0185*** (0.003)	0.0008 (0.006)	0.0058 (0.006)	-0.0016 (0.006)	0.0231*** (0.004)	-0.0022 (0.006)	0.0182** (0.008)	-0.0081 (0.008)
Age square	-0.0002*** (0.000)	0.0000 (0.000)	-0.0001 (0.000)	0.0000 (0.000)	-0.0003*** (0.000)	0.0000 (0.000)	-0.0002*** (0.000)	0.0001 (0.000)
Marital status								
In a monogamous union	0.0465** (0.019)	-0.0067 (0.036)	-0.0217 (0.038)	-0.0123 (0.044)	0.1046*** (0.031)	-0.0235 (0.047)	0.0147 (0.055)	-0.0582 (0.063)
In a polygamous union	0.0480** (0.024)	-0.0513 (0.042)	0.0476 (0.046)	-0.0936* (0.050)	0.0602* (0.033)	-0.0627 (0.044)	0.0606 (0.055)	-0.1097* (0.064)
Single or else (Ref.)								
Education								
No education (Ref.)								
Primary	0.0365* (0.019)	0.0376 (0.035)	-0.0091 (0.039)	-0.0600 (0.039)	0.0599** (0.029)	0.0436 (0.037)	0.0289 (0.043)	-0.0260 (0.044)
Secondary and more	0.0632*** (0.023)	0.2357*** (0.046)	-0.0942** (0.044)	-0.0892** (0.042)	0.0588* (0.035)	0.2053*** (0.061)	-0.1087* (0.064)	-0.0231 (0.052)
Occupation								
Never worked (Ref.)								
Agricultural sector	0.0426* (0.023)	0.0926* (0.058)	-0.0740 (0.061)	-0.0339 (0.061)	0.0618* (0.034)	-0.0140 (0.044)	-0.0211 (0.071)	-0.0312 (0.060)
Non-agri informal sector	0.1202*** (0.018)	0.0585 (0.036)	0.0098 (0.041)	0.0238 (0.045)	0.1310*** (0.026)	0.0283 (0.031)	0.0559 (0.043)	-0.0005 (0.043)
Non-agri formal sector	0.1747*** (0.029)	0.1431*** (0.048)	0.0475 (0.049)	-0.1205** (0.050)	0.1933*** (0.051)	0.1551*** (0.066)	0.0172 (0.069)	-0.0521 (0.061)
Other occupation	0.0434* (0.023)	0.0851 (0.059)	0.0008 (0.062)	0.0026 (0.064)	0.0388 (0.033)	0.0014 (0.049)	0.0461 (0.068)	0.0210 (0.069)
Kinship link with the household Head								
Household Head (Ref.)								
Household head Wife	0.0037 (0.028)	-0.0687 (0.048)	0.0804 (0.051)	-0.0082 (0.049)	-0.1280*** (0.047)	-0.0690 (0.054)	0.0820 (0.058)	0.0379 (0.051)
Household head Child	-0.0969*** (0.028)	-0.1381*** (0.045)	0.0321 (0.060)	0.0254 (0.061)	-0.2194*** (0.053)	-0.1484*** (0.053)	0.0670 (0.076)	0.0044 (0.069)
Mother/father	-0.1207*** (0.039)	0.0143 (0.120)	0.1130 (0.113)	-0.0966 (0.097)	-0.2194*** (0.059)	0.0127 (0.114)	0.1289 (0.082)	-0.0762 (0.066)
Brother/sister	-0.0586* (0.033)	-0.0687 (0.060)	-0.0124 (0.072)	-0.0075 (0.068)	-0.2327*** (0.064)	-0.0944 (0.077)	-0.0637 (0.124)	-0.0251 (0.088)
Nephew/niece	-0.1091** (0.049)	-0.0746 (0.129)	-0.2254 (0.153)	0.3972** (0.158)	-0.2291** (0.083)	0.0067 (0.160)	-0.0684 (0.196)	0.3112* (0.207)
Son/daughter in law	0.0631 (0.050)	-0.1294 (0.072)	0.3012*** (0.065)	0.0182 (0.084)	-0.1049 (0.068)	-0.1342* (0.066)	0.0000 (0.066)	0.0779 (0.094)
Others kinship link	-0.0984*** (0.028)	-0.1107** (0.050)	-0.0402 (0.064)	0.0999 (0.066)	-0.2733*** (0.050)	-0.1588** (0.052)	0.0240 (0.082)	0.1501* (0.085)
Poverty								
Not Poor (Ref.)								
Poor	-0.0562*** (0.015)	-0.0497 (0.031)	0.0085 (0.034)	-0.0282 (0.035)	-0.0365* (0.021)	0.0080 (0.031)	-0.0227 (0.039)	-0.0487 (0.036)
Geographic area								
Rural	-0.0606*** (0.017)	-0.0589 (0.035)	0.0432 (0.038)	0.0423 (0.040)	-0.0588** (0.025)	0.0206 (0.038)	-0.0120 (0.045)	0.0283 (0.045)
Urban (Ref.)								
Religion								
Muslim	0.0389 (0.026)	-0.0775 (0.054)	0.1196** (0.060)	-0.1452** (0.071)	0.0428 (0.038)	-0.1176** (0.066)	0.1968*** (0.085)	-0.1213 (0.083)
Non Muslim (Ref.)								
Household size	0.0022 (0.004)	0.0043 (0.007)	0.0131* (0.007)	-0.0069 (0.008)	0.0123** (0.005)	-0.0008 (0.007)	0.0098 (0.010)	-0.0002 (0.010)
household size square	-0.0000 (0.000)	-0.0001 (0.000)	-0.0004* (0.000)	0.0002 (0.000)	-0.0003* (0.000)	0.0001 (0.000)	-0.0004 (0.000)	0.0000 (0.000)
Transfers								
Net sender (Ref.)								
Net receiver	0.1305*** (0.019)	0.0099 (0.029)	-0.0106 (0.031)	0.0352 (0.034)	0.1461*** (0.026)	0.0435 (0.028)	0.0004 (0.036)	0.0220 (0.037)
Constant								
Observations	3337	790	790	790	1811	524	486	524
R-squared	0.157	0.263	0.279	0.120	0.161	0.198	0.104	0.058
Adjusted R-squared	572.3	219.6	281.7	108.4	351.0	73.11	46.78	28.52
P	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.197

Source: Poverty and Family Structure Survey, Senegal, 2006;

*P < 0.05 ; **P < 0.01 ; ***P < 0.001

Standard errors are in parenthesis.

Sample: Individuals aged 18-80 of both gender (column (1) to (4)) ; Women aged 18-80 (column (5) to (8))

In column (1) the dependent variable takes 1 if the individual hold savings and 0 if not.

In column (2) the dependent variable takes 1 if the individual hold savings in formal institutions and 0 if not.

The dependent variables in column (3) to (8) have been constructed in the same way.

The Household size has a positive effect on the existence of savings but the square of the household size has a negative effect. Thus, more large is the size of the household to which an individual (male or female) belongs, less is his likelihood to hold saving.

Individuals living in rural areas are 6.1% less likely to save than individuals living in urban areas. Living in rural area also has a negative effect on the fact of saving in a formal institution, which is normal due to the lack of formal financial services in rural areas in Senegal. However, there is no statistically significant effect of the geographic area on the probability to save in formal and informal institutions. The religion seems to have an effect on the form of savings used. Indeed, muslims are 11.9% more likely to save in informal institutions compared to men. For muslim women, the probability to save in informal institutions is increased by 19.7%, compared to non muslim women, while the probability for muslim women to save in formal institutions is reduced by 11.8% compared to non muslim women.

As expected, the poor are the less likely to hold savings (5.6% less than non poor). Those who are receiving more transfers than they sent have 13.1% more chance to hold savings than "net transfer senders".

4.2 Factors influencing the stock of savings

In this section, we will analyze the effects of some socio-economic characteristics of individuals on their ability and capacity to save, with the different forms of savings chosen. We estimated the equation (1) where the dependent variable is natural logarithm of the savings held by an individual. We estimated using an OLS method. The Table 3 gives the estimated coefficients. From column (1) to (4) regressions are done on all the sample (both male and female include). From column (5) to (8) regressions are done on women only. For columns (1) and (5), the dependent variable represents the natural logarithm of the total savings. In columns (2) and (6) the dependent variable is the natural logarithm of savings kept in formal institutions. In columns (3) and (7) the dependent variable is the natural logarithm of savings kept in informal institutions. Here, the analysis will be done in terms of correlation and not in terms of impact.

As a first result, being female is negatively correlated to total savings and all the forms of savings. Thus, women tend to save less than men in general, which is what we were expecting. In column (1), the age is positively correlated to savings while the age square is negatively correlated. This is what we would have expected if the life cycle hypothesis was valid and it is the case. Individuals tend to save more at their young age, when they are active and save much less when they are old. But regarding formal savings in column (2) it is the opposite (the coefficient of the age is negative: -0.045 and the coefficient of the age square is positive: 0.000). It means that individuals tend to save more in banks and micro-finance when they become older.

Higher education is associated to higher savings. Indeed, the level of secondary education is positively correlated with all the forms of savings (both men and women, and women only) and the coefficients are high in magnitude compared to the coefficients of the primary school level. People living in couple (monogamous or polygamous) tend to have lower savings than singles, especially women (all the coefficients for monogamous and polygamous women are negative).

Regarding the occupation, agricultural workers are the one exhibiting the lower savings. Indeed, they are the most vulnerable in Senegal. Formal workers are positively correlated with savings in general but negatively correlated with formal savings in particular, which is quite amazing.

The more you are poor, the lower are the savings that you can hold. Being at the head of the household is positively associated to more savings while being the wife of the household head is associated with less savings. Knowing that women in couple (monogamous or polygamous) tend to have low savings, we can think about some conflictual interactions in the household, that limit women in their ability to save. This seems not to be an income effect, as women seem to be as rich as men do (average income of 700.9 thousands CFA per year for women against 663.1 thousands CFA per year for men).

Table 3: Effect on savings (Ordinary Least Squared estimates)

	BOTH MEN AND WOMEN				WOMEN ONLY			
	(1) Ln savings	(2) Ln savings in formal institutions	(3) Ln savings in informal institutions	(4) Ln savings at home	(5) Ln savings	(6) Ln savings in formal institutions	(7) Ln savings in informal institutions	(8) Ln savings at home
Gender								
Female	-0.489*** (0.148)	-0.438 (0.414)	-0.316* (0.179)	-0.890*** (0.307)				
Male (Ref.)								
Age (in years)	0.023 (0.024)	-0.045 (0.066)	0.028 (0.027)	0.043 (0.047)	0.017 (0.029)	-0.054 (0.111)	0.023 (0.033)	0.015 (0.090)
Age square	-0.000 (0.000)	0.000 (0.001)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	0.001 (0.001)	-0.000 (0.000)	0.000 (0.001)
Marital status								
In a monogamous union	-0.356** (0.152)	-0.081 (0.378)	-0.428** (0.172)	-0.501* (0.291)	-0.599*** (0.198)	-0.840 (0.693)	-0.515** (0.212)	-0.950 (0.631)
In a polygamous union	-0.207 (0.181)	0.371 (0.488)	-0.356* (0.190)	0.187 (0.426)	-0.555*** (0.209)	-1.492* (0.860)	-0.419* (0.218)	-0.459 (0.733)
Single or else (Ref.)								
Education								
No education (Ref.)								
Primary	0.253* (0.143)	-0.128 (0.444)	0.287* (0.147)	0.272 (0.301)	0.360** (0.161)	0.023 (0.864)	0.317** (0.159)	0.078 (0.488)
Secondary and more	0.760*** (0.160)	0.655* (0.384)	0.347* (0.179)	0.300 (0.342)	0.644*** (0.194)	0.970 (0.768)	0.354* (0.203)	0.073 (0.588)
Occupation								
Never worked (Ref.)								
Agricultural sector	-0.186 (0.216)	-1.648** (0.760)	0.204 (0.221)	-0.986* (0.514)	-0.140 (0.230)	-0.473 (1.534)	0.158 (0.236)	-0.868 (0.826)
Non-agri informal sector	0.191 (0.150)	-0.260 (0.558)	0.079 (0.145)	0.075 (0.363)	0.153 (0.150)	-0.612 (0.656)	0.083 (0.152)	0.199 (0.492)
Non-agri formal sector	0.327* (0.194)	-0.214 (0.571)	0.336 (0.205)	-0.543 (0.484)	0.431* (0.236)	-0.861 (0.799)	0.255 (0.241)	-0.664 (0.865)
Other occupation	-0.030 (0.219)	0.045 (0.761)	-0.120 (0.215)	-0.285 (0.500)	-0.061 (0.232)	1.289 (1.435)	-0.170 (0.228)	0.264 (0.884)
Kinship link with the household Head								
Household Head (Ref.)								
Household head Wife	-0.216 (0.174)	-1.001* (0.558)	-0.093 (0.183)	0.002 (0.402)	-0.009 (0.197)	-0.505 (0.790)	-0.120 (0.207)	0.793 (0.591)
Household head Child	-0.499** (0.215)	-0.156 (0.496)	-0.474* (0.243)	0.497 (0.417)	-0.648** (0.276)	0.155 (1.140)	-0.651** (0.288)	1.241 (1.005)
Mother/father	0.414 (0.411)	1.774 (1.378)	0.224 (0.385)	-0.546 (1.163)	0.408 (0.390)	0.615 (1.556)	0.179 (0.395)	-0.890 (1.251)
Brother/sister	-0.348 (0.260)	0.403 (0.577)	-0.076 (0.312)	-0.358 (0.494)	-0.402 (0.383)	0.760 (1.273)	-0.299 (0.419)	0.081 (1.269)
Nephew/niece	-1.090** (0.515)	2.426 (1.885)	0.204 (0.648)	-1.514** (0.734)	0.341 (0.590)	1.229 (2.240)	0.122 (0.656)	-0.049 (1.275)
Son/daughter in law	-0.475 (0.294)	-0.682 (0.951)	-0.344 (0.290)	0.431 (0.711)	-0.241 (0.327)	1.088 (1.333)	-0.410 (0.326)	1.563 (0.989)
Others kinship link	-0.704*** (0.222)	-0.812 (0.558)	-0.598** (0.259)	-0.144 (0.391)	-0.633** (0.281)	-2.000 (1.203)	-0.675** (0.294)	0.407 (0.841)
Poverty								
Not Poor (Ref.)								
Poor	-0.577*** (0.125)	-0.694* (0.392)	-0.532*** (0.129)	-0.647** (0.272)	-0.449*** (0.135)	-1.246 (0.756)	-0.473*** (0.138)	-0.650 (0.435)
Income shocks in the past five years								
Positive shocks	0.020 (0.111)	-0.150 (0.274)	-0.053 (0.122)	0.206 (0.224)	0.108 (0.130)	0.133 (0.446)	-0.051 (0.137)	0.478 (0.359)
Negative shocks	-0.228** (0.109)	-0.438 (0.284)	-0.032 (0.115)	-0.686*** (0.237)	-0.089 (0.125)	-0.558 (0.526)	0.082 (0.127)	-1.212** (0.471)
Geographic area								
Rural	-0.782*** (0.142)	0.329 (0.466)	-0.963*** (0.144)	-0.386 (0.303)	-0.943*** (0.158)	0.118 (0.759)	-1.008*** (0.158)	-0.657 (0.525)
Urban (Ref.)								
Religion								
Muslim	-0.252 (0.223)	-0.185 (0.435)	-0.195 (0.273)	-0.652 (0.415)	-0.446* (0.251)	-0.791 (0.536)	-0.279 (0.304)	-1.359** (0.634)
Non Muslim (Ref.)								
Household size	-0.024 (0.029)	-0.057 (0.069)	-0.029 (0.033)	-0.014 (0.061)	-0.025 (0.035)	-0.100 (0.161)	-0.028 (0.036)	-0.028 (0.124)
Household size square	0.001 (0.001)	0.002 (0.002)	0.001 (0.001)	0.002 (0.002)	0.001 (0.001)	0.003 (0.005)	0.001 (0.001)	0.003 (0.004)
Transfers								
Net sender (Ref.)								
Net receiver	0.149 (0.117)	-0.292 (0.319)	0.087 (0.123)	0.263 (0.272)	0.161 (0.129)	-0.580 (0.523)	0.105 (0.132)	0.112 (0.444)
Constant	4.589*** (0.595)	7.176*** (1.590)	4.203*** (0.689)	3.818*** (1.153)	4.388*** (0.698)	7.737*** (2.586)	4.125*** (0.771)	3.840* (2.199)
Observations	790	175	523	206	524	59	439	93
R-squared	0.319	0.251	0.322	0.368	0.321	0.585	0.313	0.442
Adjusted R-squared	0.296	0.120	0.287	0.276	0.286	0.271	0.271	0.233
P	0.000	0.009	0.000	0.000	0.000	0.037	0.000	0.008

Source: Poverty and Family Structure Survey, Senegal, 2006;

*P < 0.05 ; **P < 0.01 ; ***P < 0.001

Standard errors are in parenthesis.

Sample: Savers aged 18-80 of both gender (column (1) to (4)) ; Female savers aged 18-80 (column (5) to (8))

In column (1) the dependent variable is the natural logarithm of the total savings held by an individual

In column (2) the dependent variable is the natural logarithm of savings held in formal institutions by an individual

The dependent variables in column (3) to (8) have been constructed in the same way.

The variable "household size" is negatively correlated with all forms of savings while the square is positively correlated. But none of the coefficient is statistically significant.

Living in rural area leads to lower savings that are mostly held in ROSCA's and associations (where the coefficient is high in magnitude: -0.973), especially for women (the coefficient is -1.013) . Muslims tend to have lower savings than non muslims (all the coefficients for muslim are negative).

In these regressions, we have include variables related to the various shocks experienced by the savers in the past five years. Thus, we can get a kind of medium term effect of the shocks on savings. Globally, experiencing a positive shock is positively correlated with total savings but the coefficient (0.020) is very small in magnitude and not significant. Besides, experiencing a negative seems to have a negative and significant effect in total savings and savings at home at a medium term. Thereby, after a negative income shock, individuals can take more than three years, dissaving each year in order to adjust their consumption level.

Conclusion

This study aim to identify, in the case of Sub-Saharan Africa, the factors motivating the decision for individuals to save, limit their ability to save and the forms of savings they were using. We have done a broad literature review to highlight previous findings related to our topic.

We used data from a nationally-representative household survey on Poverty and Family Structure (PSF) conducted in Senegal in 2006. We extracted from this database useful variables measured on a sample of 890 households for 3,727 individuals. The variables used included socio-economic characteristics of individuals (gender, age, marital status, occupation,...) and variables on income, savings and transfers. The variables of interest were the existence of savings and the stock of savings.

We have generated descriptive statistics showing the distribution of variables of interest based on individuals characteristics. Then we have run regressions in order to see to what extent the socio-economic characteristic of individual were influencing their decision to save and the stock of their saving, using consecutively a probit and OLS methods.

We found that the life cycle motive and the precautionary motive are the one driving decision making of individuals toward savings in Senegal. Women are less likely to save than men and much more likely to save in informal institutions (ROSCA and associations), such as individuals living in rural areas. Women are also limited in their ability to save by intra-household conflictual interactions. Indeed, women in polygamous union and women who do not stand as household head are the less likely to hold savings and hold lower savings.

We also found that poverty and low level of education are barriers for Senegalese individual savings. Individuals working in the agricultural sector, due to their specific vulnerability, are the less involve in savings compared to other workers.

In general, the more frequent form of savings used is informal savings in ROSCAs and various associations. They are more used by the women, the less educated, the poor, and the non worker. On the other hand, high educated adults, formal workers and high income earners (practically the same individuals) are the more likely to save in banks and microfinance institutions.

We have not been able, with our data, to test all the motives and barriers cited in the literature, but our findings were in line with many other findings. In order to test all the motives and possible barriers, a more specific survey or experiment on saving should be designed and conducted in that sense on Senegal as it has already been done in a country like Kenya.

References

- Anderson, S. and Baland, J.-M. (2002), 'The economics of roscas and intrahousehold resource allocation', *Quarterly Journal of Economics* pp. 963–995.
- Ando, A. and Modigliani, F. (1963), 'The "life cycle" hypothesis of saving: Aggregate implications and tests', *The American economic review* **53**(1), 55–84.
- Armendáriz, B. and Morduch, J. (2010), *The economics of microfinance*, MIT press.
- Ashraf, N. (2009), 'Spousal control and intra-household decision making: An experimental study in the Philippines', *The American Economic Review* pp. 1245–1277.
- Ashraf, N., Karlan, D. and Yin, W. (2006), 'Tying Odysseus to the mast: Evidence from a commitment savings product in the Philippines', *The Quarterly Journal of Economics* pp. 635–672.
- Baland, J.-M., Guirking, C. and Mali, C. (2011), 'Pretending to be poor: Borrowing to escape forced solidarity in Cameroon', *Economic Development and Cultural Change* **60**(1), 1–16.
- Banerjee, A., Meng, X. and Qian, N. (2010), 'The life cycle model and household savings: Micro evidence from urban china', *National Bureau of Demographic Dividends Revisited* **21**.
- Banerjee, A. V. and Duflo, E. (2007), 'The economic lives of the poor', *The journal of economic perspectives: a journal of the American Economic Association* **21**(1), 141.
- Bank, W. (2014), Global Financial Development Report 2014: Financial Inclusion, Technical report, Washington, DC:World Bank.
- Browning, M. and Lusardi, A. (1996), 'Household saving: Micro theories and micro facts', *Journal of Economic literature* **34**(4), 1797–1855.
- Brune, L., Giné, X., Goldberg, J. and Yang, D. (2011), 'Commitments to save: A field experiment in rural Malawi', *World Bank Policy Research Working Paper Series*, Vol .
- Cole, S., Sampson, T. and Zia, B. (2011), 'Prices or knowledge? What drives demand for financial services in emerging markets?', *The Journal of Finance* **66**(6), 1933–1967.
- Deaton, A. (1989), 'Saving in developing countries: Theory and review', *The World Bank Economic Review* **3**(suppl 1), 61–96.
- Deaton, A. (1992a), 'Household saving in LDCs: Credit markets, insurance and welfare', *The Scandinavian Journal of Economics* pp. 253–273.
- Deaton, A. (1992b), 'Saving and income smoothing in Cote d'Ivoire', *Journal of African economies* **1**(1), 1–24.
- Demirgüç-Kunt, A. and Klapper, L. F. (2012), 'Measuring financial inclusion: The global finindex database', *World Bank Policy Research Working Paper* (6025).
- Dupas, P. and Robinson, J. (2013), 'Savings constraints and microenterprise development: Evidence from a field experiment in Kenya', *American Economic Journal* **5**(1), 163–192.
- Friedman, M. (1957), *A theory of the consumption function*, Vol. 63, National Bureau of Economic Research.
- Garon, S. (2004), 'The transnational promotion of saving in Asia.'Asian values' or the'Japanese model'', *The Ambivalent Consumer: Questioning Consumption in East Asia and the West*. Cornell University Press, Ithaca .
- Gugerty, M. K. (2007), 'You can't save alone: Commitment in rotating savings and credit associations in Kenya', *Economic Development and cultural change* **55**(2), 251–282.
- Hastings, J. S., Madrian, B. C. and Skimmyhorn, W. L. (2012), 'Financial literacy, financial education and economic outcomes', *National Bureau of Economic Research* .
- Jakiela, P. and Ozier, O. (2015), 'Does africa need a rotten kin theorem? experimental evidence from village economies', *The Review of Economic Studies* p. rdv033.
- Jappelli, T. and Modigliani, F. (1998), 'The age-saving profile and the life-cycle hypothesis'.

- Karlan, D., McConnell, M., Mullainathan, S. and Zinman, J. (2010), 'Getting to the top of mind: How reminders increase saving', *Center Discussion Paper, Economic Growth Center, N988*.
- Keynes, J. M. (1936), *The general theory of interest, employment and money*, London: Macmillan.
- Kong, M. K., Lee, J. Y. and Lee, H. K. (2008), 'Precautionary motive for saving and medical expenses under health uncertainty: Evidence from Korea', *Economics Letters* **100**(1), 76–79.
- Lundberg, M., Over, M. and Mujinja, P. (2003), 'Do savings predict death? Precautionary savings during an epidemic', *UNAIDS. Geneva. Processed*.
- Lusardi, A. (2008), 'Household saving behavior: The role of financial literacy, information, and financial education programs', *National Bureau of Economic Research*.
- Modigliani, F. (1986), 'Life cycle, individual thrift, and the wealth of nations', *The American Economic Review* **76**(3), 297–313.
- Modigliani, F. and Brumberg, R. (1954), 'Utility analysis and the consumption function: an interpretation of cross-section data,', *KK Kurihara (Ed.), Post-Keynesian Economics, NJ. Rutgers University Press. New Brunswick* pp. 388–436.
- Ndirangu, L., Burger, K., Moll, H. A. and Kuyvenhoven, A. (2009), 'Seasonality, precautionary savings and health uncertainty: Evidence from farm households in central Kenya', *Center of Evaluation for Global Action*.
- Platteau, J.-P. (2000), *Institutions, social norms, and economic development*, Vol. 1, Psychology Press.
- Robinson, J. (2012), 'Limited insurance within the household: evidence from a field experiment in Kenya', *American Economic Journal: Applied Economics* pp. 140–164.
- Rutherford, S. (2001), 'The Poor and Their Money (Oxford India Paperbacks)'.
- Schaner, S. (2013), 'The Cost of Convenience? Transaction Costs, Bargaining Power, and Savings Account Use in Kenya', *Dartmouth College Working Paper*.
URL: http://www.dartmouth.edu/~sschaner/main_files/Schaner_ATM.pdf
- Yin, T. (2010), 'Parent-child co-residence and bequest motives in China', *China Economic Review* **21**(4), 521–531.

Appendix

Table 4: Summary Statistics of the sample

Variable	Obs.	Mean	Std. Dev.	Min	Max
GENDER					
Female	3,727	0.546	0.498	0	1
Male	3,727	0.454	0.498	0	1
AGE (in Years)	3,727	36.440	15.514	18	80
GEOGRAPHIC AREA					
Rural	3,727	0.419	0.493	0	1
Urban	3,727	0.581	0.493	0	1
RELIGION					
Muslim	3,727	0.938	0.241	0	1
Non Muslim	3,727	0.062	0.241	0	1
HOUSEHOLD SIZE	3,727	11.082	6.730	1	38
MARITAL STATUS					
In monogamous union	3,698	0.383	0.486	0	1
In polygamous union	3,698	0.184	0.387	0	1
Not in couple	3,698	0.433	0.496	0	1
EDUCATION					
No education	3,382	0.596	0.491	0	1
Primary	3,382	0.204	0.403	0	1
Secondary	3,382	0.200	0.400	0	1
OCCUPATION					
Never Worked	3,614	0.288	0.453	0	1
Work in agricultural sector	3,614	0.160	0.366	0	1
Non-agricul informal worker	3,614	0.326	0.469	0	1
Non-agricul formal worker	3,614	0.093	0.290	0	1
Other occupation	3,614	0.133	0.340	0	1
KINSHIP LINK WITH HOUSE HEAD					
Household Head	3,727	0.229	0.420	0	1
Household head wife	3,727	0.199	0.399	0	1
Household Head Child	3,727	0.244	0.430	0	1
Mother/Father	3,727	0.039	0.193	0	1
Brother/Sister	3,727	0.076	0.264	0	1
Nephew/niece	3,727	0.030	0.171	0	1
Son (Daughter) in Law	3,727	0.035	0.184	0	1
SAVINGS					
Non saver	3,727	0.771	0.420	0	1
Saver	3,727	0.229	0.420	0	1
Savings (in thousands CFA)	3,727	48.275	329.336	0	10,500
Savings Rate (in %)	3,717	4.108	15.032	0	383
INCOME					
Not poor	3,727	0.528	0.499	0	1
Poor	3,727	0.472	0.499	0	1
Income (in thousands CFA)	3,727	683.746	1075.869	0	9,872.30
Consumption (in thousands CFA)	3,727	592.252	921.828	0	12,095.05
TRANSFERS					
Net sender	3,727	0.811	0.391	0	1
Net receiver	3,727	0.189	0.391	0	1
Net Transfers (in thousands CFA)	3,727	43.218	390.048	-8610	7,000.0
SHOCKS DURING THE PAST 5 YEARS					
Positive shock	3,727	0.328	0.469	0	1
Negative shock	3,727	0.517	0.500	0	1

Source: Poverty and Family Structure Survey, Senegal, 2006

Sample: Individuals aged 18-80 of both gender

Table 5: Summary of descriptive statistics

	N	Female	Age (in yrs)	Not educated	Poor	Savings Rate (in %)	Savings (in 1000 CFA)
<i>SAVINGS</i>							
Non savers	2,873	0.506	35.44	0.549	0.503	-	-
Savers	854	0.680	39.80	0.516	0.367	17.88	210.68
Diff (Non savers - Savers)		-0.17***	-4.35***	-0.03	0.14***		
<i>GENDER</i>							
Female	2,034		36.31	0.604	0.472	3.76	37.25
Male	1,693		36.60	0.466	0.472	4.53	61.53
Diff (Female - Male)			-0.29	0.14***	-0.00	-0.76	-24.28*
<i>AGE</i>							
Young: 18-24 years	1,042	0.569	20.73	0.419	0.485	1.07	8.48
Adults: 25 - 59 years	2,324	0.541	38.48	0.558	0.456	5.48	64.81
Old : More than 60 years	361	0.507	68.65	0.787	0.537	4.05	56.71
Diff (Adults - young)		0.03	-17.75***	-0.14***	0.03	-4.41***	-56.33***
<i>GEOGRAPHIC AREA</i>							
Rural	1,560	0.585	38.08	0.788	0.604	2.66	16.35
Urban	2,167	0.517	35.26	0.364	0.377	5.15	71.26
Diff (Rural - Urban)		0.07***	2.82***	0.42***	0.23***	-2.49***	-54.91***
<i>RELIGION</i>							
Muslim	3,497	0.545	36.47	0.559	0.480	4.08	48.26
Non Muslim	230	0.552	36.06	0.270	0.352	4.59	48.44
Diff (Muslim - Non muslim)		-0.01	0.40	0.29***	0.13***	-0.51	-0.18
<i>HOUSEHOLD SIZE</i>							
Small: Less than 5	367	0.436	37.41	0.493	0.134	5.76	116.55
Medium: Between 5 and 10	1,805	0.570	37.24	0.552	0.413	4.02	48.92
Large: More than 10	1,555	0.544	35.28	0.540	0.620	3.82	31.41
Diff (Small - Large)		-0.11***	2.13*	-0.05	-0.49***	1.95*	85.13***
<i>MARITAL STATUS</i>							
In a monogamous union	1,416	0.531	38.11	0.605	0.453	5.10	57.66
In a polygamous union	680	0.696	45.14	0.753	0.560	6.40	69.40
Single or else	1,602	0.493	31.16	0.394	0.449	2.29	31.50
Diff (Monoga - Polyga)		-0.16***	-7.03***	-0.15***	-0.11***	-1.30	-11.74
<i>EDUCATION</i>							
No level	2,017	0.609	40.03		0.557	3.68	29.12
Primary	690	0.499	31.90		0.404	3.97	46.08
Secondary	675	0.400	31.79		0.271	6.43	126.17
Diff (No level - Secondary)		0.21***	8.23***		0.29***	-2.75***	-97.05***
<i>OCCUPATION</i>							
Never worked	1,042	0.742	30.77	0.451	0.450	1.92	15.66
Agriculture	577	0.473	41.01	0.802	0.638	2.16	14.14
Non-agri informal	1,179	0.484	38.71	0.563	0.416	6.16	71.66
Non-agri formal	335	0.302	42.15	0.245	0.242	9.89	158.22
Other	481	0.528	34.92	0.686	0.615	2.72	36.47
Diff (Non worker - Worker)		-0.27***	7.87***	0.13***	0.03	3.04***	45.28***
<i>KINSHIP LINK</i>							
Household Head	854	0.217	48.93	0.623	0.403	7.57	128.20
Spouse/Wife	742	0.993	39.31	0.724	0.503	4.96	35.39
Others							
Diff (hh head - Wife)		-0.78***	9.61***	-0.10***	-0.10***	2.61**	92.81***

Source: Poverty and Family Structure Survey, Senegal, 2006

. *P < 0.05 ; **P < 0.01 ; ***P < 0.001

Read the Table following the rows

- N is the number of individuals in the sample

- Female: is the mean of N individuals that are female

- Age: is the mean of age over N individuals

- Not educated: is the mean of individuals that have no level of education

- Poor: is the mean of individuals that are poor (income below the national poverty line)

- Savings rate: is the average of the savings rate of the N individuals (in %)

- Savings: is the average of the stocks of savings of the N individuals over the year

Table 6: Characteristics of savers

	Overall			Savers			
	N	Non savers	Savers	N	Formal inst.	Informal inst.	Home
GENDER							
Female	2,034	0.714	0.286	581	0.105	0.843	0.174
Male	1,693	0.836	0.164	273	0.436	0.319	0.421
Diff (Female - Male)			0.1244***		-0.3309***	0.5247***	-0.2474***
AGE							
Young: 18-24 years	1,042	0.899	0.101	105	0.067	0.705	0.314
Adult: 25 - 59 years	2,324	0.708	0.292	678	0.220	0.687	0.239
Old : More than 60 years	361	0.803	0.197	71	0.338	0.521	0.296
Mean Age		35.44	39.80		43.77	38.65	39.89
Diff (Young - Adult)			-0.1910***		-0.1531***	0.0174	0.0753
Diff (Adult - Old)			0.0951***		-0.1183*	0.1662**	-0.0568
GEOGRAPHIC AREA							
Rural	1,560	0.817	0.183	285	0.109	0.758	0.256
Urban	2,167	0.737	0.263	569	0.262	0.634	0.251
Diff (Rural - Urban)			-0.0799***		-0.1531***	0.1234***	0.0048
RELIGION							
Muslim	3,497	0.770	0.230	803	0.200	0.687	0.245
Non Muslim	230	0.778	0.222	51	0.373	0.490	0.373
Diff (Muslim - Non muslim)			0.008		-0.1721**	0.1972**	-0.1272*
HOUSEHOLD SIZE							
Small: Less than 5	367	0.657	0.343	126	0.286	0.452	0.429
Medium: Between 5 and 10	1,805	0.779	0.221	399	0.223	0.712	0.203
Large: More than 10	1,555	0.788	0.212	329	0.167	0.717	0.246
Mean Size HH			10.50		9.26	11.03	9.86
Diff (Small - Large)			0.1317***		0.1185**	-0.2649***	0.1824***
MARITAL STATUS							
In a monogamous union	1,416	0.707	0.293	415	0.234	0.660	0.263
In a polygamous union	680	0.684	0.316	215	0.158	0.777	0.167
Not in couple	1,602	0.863	0.137	219	0.224	0.603	0.320
Diff (Not in union - In union)			-0.1621***		-0.0311***	-0.1270***	-0.0250**
Diff (Monogamous - Polygamous)			-0.0231		0.0185	-0.0521**	0.0240*
EDUCATION							
No level	2,017	0.781	0.219	441	0.125	0.726	0.277
Primary	690	0.746	0.254	175	0.171	0.691	0.246
Secondary	675	0.732	0.268	181	0.503	0.486	0.232
Diff (No level - Secondary)			-0.0495**		-0.1075***	0.0283	-0.0017
OCCUPATION							
Never worked	1,042	0.833	0.167	174	0.086	0.799	0.195
Agriculture	577	0.825	0.175	101	0.158	0.653	0.267
Non-agri informal	1,179	0.692	0.308	363	0.204	0.658	0.300
Non-agri formal	335	0.615	0.385	129	0.504	0.519	0.178
Other	481	0.836	0.164	79	0.114	0.747	0.278
Diff (Worker - Non Worker)			0.0863***		0.0471***	0.0297*	0.0352***
KINSHIP LINK WITH HOUSEHOLD HEAD							
Household Head	854	0.690	0.310	265	0.385	0.475	0.325
Spouse/Wife	742	0.633	0.367	272	0.085	0.871	0.154
Child	911	0.877	0.123	112	0.188	0.661	0.250
Mother/father	144	0.889	0.111	16	0.125	0.875	0.125
Brother/sister	282	0.837	0.163	46	0.283	0.500	0.304
Nephew/niece	112	0.902	0.098	11	0.091	0.545	0.545
Son's (daughter's) wife(husband)	130	0.638	0.362	11	0.091	0.545	0.545
Others	552	0.846	0.154	47	0.085	0.979	0.149
Diff (hh head - Spouse)			-0.0563*		0.0884***	-0.1719***	0.0441**
POVERTY							
Not Poor	1,969	0.725	0.275	541	0.264	0.621	0.277
Poor	1,758	0.822	0.178	313	0.118	0.770	0.211
Diff (Not poor - Poor)			0.0967***		0.1461***	-0.1489***	0.0664*

Source: Poverty and Family Structure Survey, Senegal, 2006

*P <0.05 ; **P<0.01 ; ***P<0.001

Read the Table following the rows

(a) N is the number of individuals in the sample

(b) The ratio of non-savers on the total of individuals (number of non savers divided by N)

(c) The ratio of savers on the total of individuals (number of savers divided by N)

(d) N1 is the number of savers

(e) The ratio of savers in formal institutions on the total of savers (number of savers in formal institution divided by N1)

(f) The ratio of savers in informal institutions on the total of savers (number of savers in informal institution divided by N1)