



WORKING PAPER

Health Insurance and Household Savings

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RÉSUMÉ

Cette étude examine la relation entre la couverture d'assurance maladie et le comportement d'épargne des ménages au Maroc, en s'appuyant sur des données représentatives au niveau national issues de l'enquête sur la consommation et les dépenses des ménages. L'analyse révèle que l'accès à une assurance maladie est associé à une diminution de l'épargne des ménages, en particulier parmi les groupes vulnérables tels que les familles à faible revenu, les ménages ruraux et les ménages dirigés par des femmes. Ces résultats suggèrent que la couverture d'assurance maladie pourrait influencer l'épargne de précaution, ce qui présente un intérêt dans le cadre des réflexions sur la protection sociale et l'inclusion financière. Cette recherche contribue à une meilleure compréhension de la manière dont l'élargissement de la couverture santé influence les décisions financières des ménages dans le contexte d'un pays en développement comme le Maroc et ouvre plusieurs pistes de recherches futures.

Mots-clés : Épargne des ménages, Assurance maladie, Maroc, Protection sociale, AMO.

Classification JEL : D12 ; D14 ; D91 ; E21 ; I13.

ABSTRACT

This study examines the relationship between health insurance coverage and household saving behavior in Morocco using nationally representative data from the household consumption and expenditure survey. The analysis reveals that access to health insurance is associated with reduced household savings, particularly among vulnerable groups including low-income families, rural households, and female-headed households. These findings suggest that health insurance may crowd-out precautionary savings, which may be of interest in the context of ongoing social protection and financial inclusion discussions. This research contributes to understanding how expanding health coverage influences household financial decision-making in the context of a developing country such as Morocco and opens many avenues for future research.

Keywords : Household savings, Health insurance, Morocco, Social protection, AMO.

JEL Classification Numbers : D12 ; D14 ; D91 ; E21 ; I13.

1 Introduction

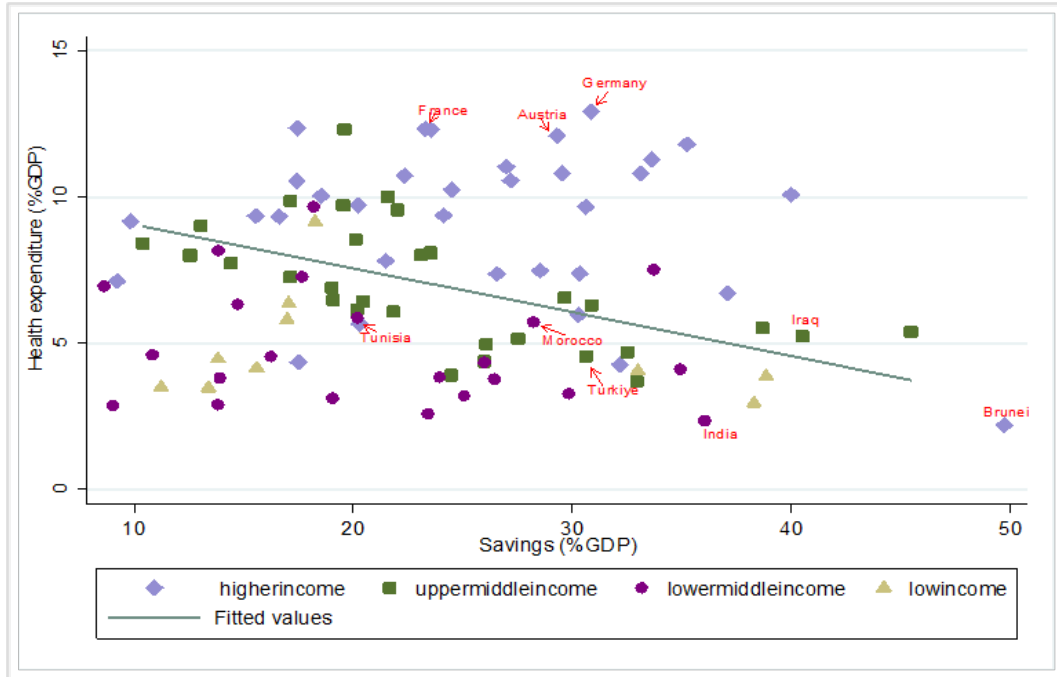
Household savings play a central role in both individual financial resilience and macroeconomic development. They serve as a source of investment, contribute to economic growth, and play a key role in the monetary transmission mechanism (BECKMANN et al. (2013)). For households, savings represent a vital tool for managing uncertainty—providing a buffer against income shocks such as unemployment or unexpected medical expenses (BROWNING et LUSARDI (1996)). In contexts of financial constraint, savings are also essential for achieving medium-term goals, such as financing children’s education or purchasing a home. Studying household saving behavior is therefore critical to understanding household vulnerability, exposure to risk, and capacity to absorb economic shocks (KULIKOV et al. (2007)).

Despite this importance, there is limited empirical evidence on household saving behavior in North Africa, and in Morocco in particular. The only notable microeconomic study in this area, to our knowledge, is by (ABDELKHALEK et al. (2010)), who investigated household saving behavior in the province of Essaouira. Building on and extending this work, our study offers two main contributions. First, we present a nationally representative microeconomic analysis of household saving behavior in Morocco, providing new insight into the drivers and nature of savings in a developing country setting. Second, we examine how access to health insurance influences household financial behavior, focusing on its potential to crowd out precautionary savings and enhance household well-being. By this, we aim to contribute to a better understanding of how social protection reforms influence saving and consumption decisions. Our findings offer valuable input for integrating household behavior into macroeconomic models and designing more responsive and inclusive public policies.

Traditional models of saving behavior, such as the permanent income and life-cycle hypotheses, assume perfect foresight and stable income expectations. However, more recent research has emphasized the role of uncertainty, such as health risks, in shaping household saving behavior (COIBION et al. (2024) ; XU (2023)). As such, households often accumulate liquid savings as a form of self-insurance, especially in the absence of formal risk-sharing mechanisms. In this context, access to health insurance reduces exposure to unexpected medical costs and may reduce the need for precautionary saving behavior.

While the relationship between health insurance and savings has been widely studied in developed countries with extensive medical coverage systems (ATTANASIO et ROHWEDDER (2003) ; DUPAS et ROBINSON (2013) ; STARR-McCLUER (1996)), it remains underexplored in developing contexts. Yet this issue is particularly relevant for countries like Morocco, where out-of-pocket health spending remains high and insurance coverage incomplete. As such, figure 1 illustrates the global relationship between public health expenditures and gross savings as a share of GDP. In middle-income countries, including Morocco, a

FIGURE 1 – The relationship between health expenditures and gross savings, (% GDP)



Source : Authors' elaboration. Note : Used data comes from the latest available World Bank national accounts data. Are included 95 countries that are classified by high-income, upper-middle-income, lower-middle-income, and low-income groups based on the latest World Bank country classifications by income (2022-2023)

downward-sloping relationship dominates, suggesting that higher public health spending correlates negatively with gross savings. In contrast, high-income countries often exhibit rising savings alongside significant public health expenditures. The later trend is likely driven by robust pension savings systems and greater access to financial instruments in contrast to most developing countries. For Morocco, a key and current question is the extent to which an expansion in public health spending, particularly through broader health insurance coverage, will influence household saving behavior, especially those dominated by the precautionary motive. Empirical evidence from several developing countries offers valuable insights into the relationship between health insurance and household savings. For example, (CHOU et al. (2003)) found that expanding national health insurance in Taiwan significantly reduced household saving. Similar effects were reported by (WAGSTAFF et PRADHAN (2005)) in Vietnam. These findings support the precautionary savings hypothesis and suggest that ongoing efforts to expand health coverage in Morocco could lead to comparable shifts in household saving behavior. Understanding this link is crucial, as household savings influence not only individual welfare but also macroeconomic stability—impacting capital accumulation, interest rates, and policy effectiveness. Low savings and high debt can increase economic vulnerabilities and worsen recessions (SUTHERLAND et HOELLER (2012)), making it essential to analyze how health insurance affects saving decisions to guide sound economic policies.

Morocco's current health system is marked by substantial disparities in access and quality. Many households remain uninsured or underinsured, with limited access to affordable

healthcare. According to recent national health accounts data, Moroccan households' out-of-pocket health expenditures share remains significantly above the World Health Organization's recommended threshold of 25 percent sitting at approximately 38 percent (National Health Accounts, 2022). These costs contribute to household financial insecurity. Against this backdrop, we argue that the ongoing efforts of expanding universal health care coverage, namely through the Assurance Maladie Obligatoire (AMO), have the potential to significantly reshape household financial behavior including savings and consumption decisions. As families gain health insurance, their exposure to health-related financial risks may decrease, reducing the need for precautionary savings. This could free up resources for other uses such as increased spending on education, housing, or durable goods, ultimately improving household welfare. Moreover, higher consumption could stimulate domestic demand and support broader economic growth.

Given these dynamics, understanding the relationship between health insurance and household saving behavior is both timely and essential for addressing broader socioeconomic challenges. The remainder of this paper presents empirical evidence on this relationship and is organized as follows. Section 2 reviews the relevant literature. Section 3 outlines key facts about the Moroccan context, including health insurance coverage, gaps, and ongoing reforms. Section 4 describes the empirical strategy and presents descriptive statistics. Section 5 discusses the results and underlying mechanisms, and Section 6 concludes with suggestions for future research.

2 Literature Review

Economic literature has long explored the determinants of household saving behavior, recognizing it as a crucial component of household welfare and macroeconomic stability. Conventional saving models emphasize the lifecycle and permanent income hypotheses, whereby households save to smooth consumption over time in response to predictable changes in income, such as retirement. Other motives include intergenerational transfers, target saving for investment in durable goods or education, and the accumulation of wealth. Empirically, savings decisions are influenced by a range of demographic and socioeconomic factors including income, age, education, household size, and access to formal financial services (DEATON (1989); HORIOKA et WATANABE (1997); LOAYZA et al. (2000)).

Beyond traditional determinants, theoretical and empirical research has highlighted the central role of uncertainty, mainly related to income and health risks, in shaping precautionary saving behavior. Households often save not only for planned future needs but also as a form of self-insurance against unexpected shocks (GOURINCHAS et PARKER (2002)). The strength of this precautionary motive depends on income volatility, the likelihood and cost of health shocks, and the availability of formal insurance or informal coping mechanisms (DYNAN (1993); LUSARDI (1998)).

In Morocco, recent studies on health insurance uptake and usage reveal that catastrophic health expenditures remain widespread and disproportionately affect vulnerable households (HASSANI et al. (2025)). Persistent inequalities in healthcare coverage, particularly among informal workers and rural populations, also limit the protective role of insurance (BOUZAIDI et RAGBI (2024); ZAHIDI et al. (2022)). In this context, the expansion of health insurance coverage can, in theory, reduce the need for such precautionary saving by lowering the expected financial burden of potential illness. This substitution effect is at the core of many theoretical models linking insurance and saving (CHOU et al. (2003); GRUBER et YELOWITZ (1999)). However, empirical evidence from developing countries suggests that the relationship is not always straightforward. In practice, public insurance schemes often provide partial coverage, involve significant co-payments, or fail to guarantee access to quality care. As a result, insured households may continue to save as a precaution, especially if the risk of catastrophic health spending persists (WAGSTAFF et LINDELOW (2008)).

Several studies show that the effect of health insurance on household saving depends heavily on the design and generosity of the scheme, besides household characteristics. When insurance induces higher utilization of health services, particularly among previously excluded groups, out-of-pocket spending may rise despite coverage, prompting households to maintain or even increase savings (WAGSTAFF et LINDELOW (2008); YIP et HSIAO (2009)). For example, when a scheme provides coverage only for certain types of care

or excludes high-cost treatments, households may still face significant residual expenses. Furthermore, wealthier households may increase savings not despite insurance coverage but because it enables access to previously unaffordable care, including costly surgeries or specialist consultations. Literature points to heterogeneity in response across income groups. Among the poorest households, limited awareness, administrative barriers, or indirect costs of care may constrain the uptake or effective use of insurance. In such cases, the insurance may have little to no impact on either health utilization or saving behavior (QIN et LU (2014)). Conversely, middle- and upper-income households, who are better positioned to benefit from coverage, may reduce savings for moderate health shocks while continuing to save against more severe or uncovered risks. In some instances, as shown in rural China and other contexts, health insurance has been associated with higher out-of-pocket spending and higher precautionary saving, due to increased healthcare use coupled with incomplete coverage (WAGSTAFF et LINDELOW (2008)).

Existing research thus challenges the simplistic assumption that universal health insurance straightforwardly crowds out savings. Instead, it reveals a more nuanced dynamic where insurance reshapes expected exposure to medical expenses but may not fully eliminate financial risk. Against this backdrop, this study seeks to establish baseline evidence on the relationship between access to health insurance and household saving behavior, without exploring the finer details of coverage scope or service quality. In Morocco, where universal coverage is expanding, particularly among informal workers, rural populations, and other vulnerable groups, understanding this relationship is crucial. When insurance coverage is perceived as incomplete or access to care remains constrained by systemic barriers, households are likely to maintain precautionary savings. Conversely, credible, and comprehensive insurance schemes could gradually reduce the need for such savings, freeing resources for consumption, education, or investment. While this study stops short of unpacking these complexities in full, it provides foundational evidence to inform future, policy-oriented research aimed at maximizing the benefits of health coverage reforms.

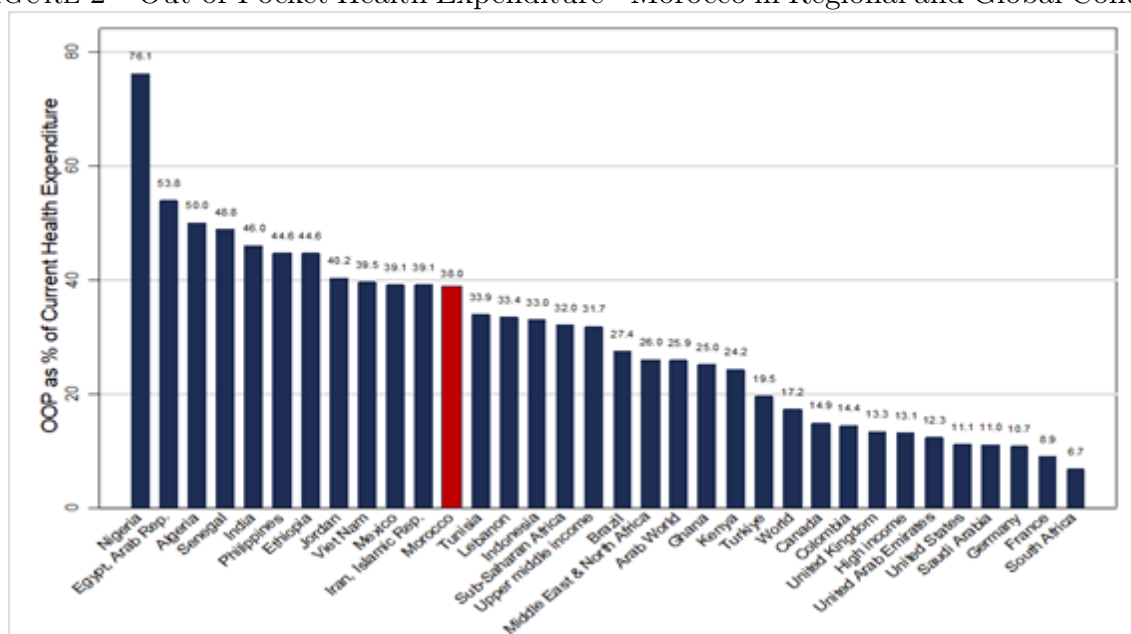
3 The Architecture and Coverage of Morocco's Health Insurance System

3.1 *Overview of Morocco's Health Insurance System*

Over the past decade, Morocco has undergone a profound restructuring of its health insurance system, with an objective of achieving universal health coverage. According to the most recent data from the National Health Accounts, as of December 2022, the health system covers approximately 85 percent of the population. The current health insurance landscape is organized around a multi-tiered architecture that blends contributory and non-contributory schemes.

- **Assurance Maladie Obligatoire (AMO) :** The AMO is the core component of the public health coverage framework and includes several institutional actors :
 - **CNSS (Caisse Nationale de Sécurité Sociale) :** Covers salaried workers in the private sector and, since recent reforms, also extends to the self-employed. It manages health coverage for over 11.6 million individuals in 2022. Contributions are income-based and mandatory for eligible workers.
 - **CNOPS (Caisse Nationale des Organismes de Prévoyance Sociale) :** Serves civil servants and public-sector employees. Benefits are co-managed with affiliated mutual organizations, and total coverage reached more than 3.1 million individuals in 2022.
 - **AMO-Tadamon (formerly RAMED) :** As of December 2022, the RAMED program, which had previously provided non-contributory coverage to vulnerable groups, was integrated into the AMO framework under the name AMO-Tadamon. Financed entirely by the State, it now covers over 11.4 million low-income individuals, identified via the Unified Social Registry, and administered by the CNSS.
 - **AMO Achamil :** Introduced as a complementary scheme for individuals without formal employment or social protection affiliation, but with the ability to contribute voluntarily. It targets previously uninsured segments and reinforces the inclusiveness of the system.
- **Complementary and Private Insurance Schemes :** In parallel to public coverage, voluntary private insurance schemes offer additional benefits. These are primarily used by higher-income individuals or employers as supplemental plans and remain largely inaccessible to low-income households.
- **Internal Schemes and Professional Mutuels :** A smaller portion of the population benefits from internal insurance mechanisms, including mutual schemes within large public enterprises or specific professional groups.

FIGURE 2 – Out-of-Pocket Health Expenditure - Morocco in Regional and Global Context



Source : Authors' elaboration. Note : Used data is from World Health Organization (2022). Out-of-pocket expenditure represents the share of total current health expenditures paid directly by households at the point of care, without reimbursement.

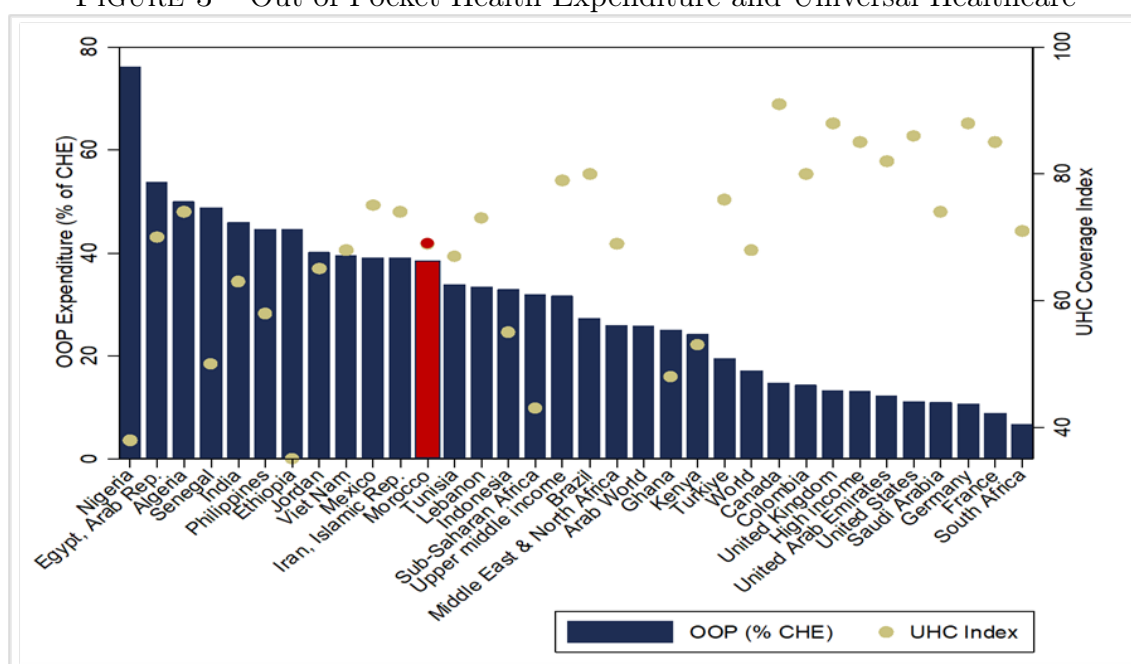
While Morocco's institutional reforms and the significant expansion of health insurance coverage represent substantial progress toward universal health coverage, out-of-pocket expenditures continue to represent a substantial share of total health spending (38 percent in 2022, National Health Accounts) posing a serious challenge to equity and social protection goals. This financial strain is particularly acute for low-income and rural households, for whom unexpected health shocks can lead to delayed care, asset depletion, or reduced investment in other essential or well-being enhancing needs such as education.

3.2 *The State of Health Insurance Coverage and Household Out-of-Pocket Payments in Morocco*

Moroccan households remain primary contributors to health spending through direct out-of-pocket (OOP) payments, that amounted to an estimated 31 billion dirhams or about 3.2 billion USD (approximately 848 dirhams per capita annually; or roughly 88 USD per capita) in 2022 (National Health Accounts). These payments represented 38% of total health expenditure. Compared to peers (figure 2), Morocco's out-of-pocket share remains above the MENA regional average (26%), higher than the upper-middle-income country group average (31.7%) and the global average (17.2%), and notably surpasses the World Health Organization's recommended threshold of 25%, beyond which health spending can lead to financial hardship.

Moreover, figure 3 compares countries by two key health system metrics : out-of-pocket expenditure as a share of current health spending and the Universal Health Coverage

FIGURE 3 – Out-of-Pocket Health Expenditure and Universal Healthcare



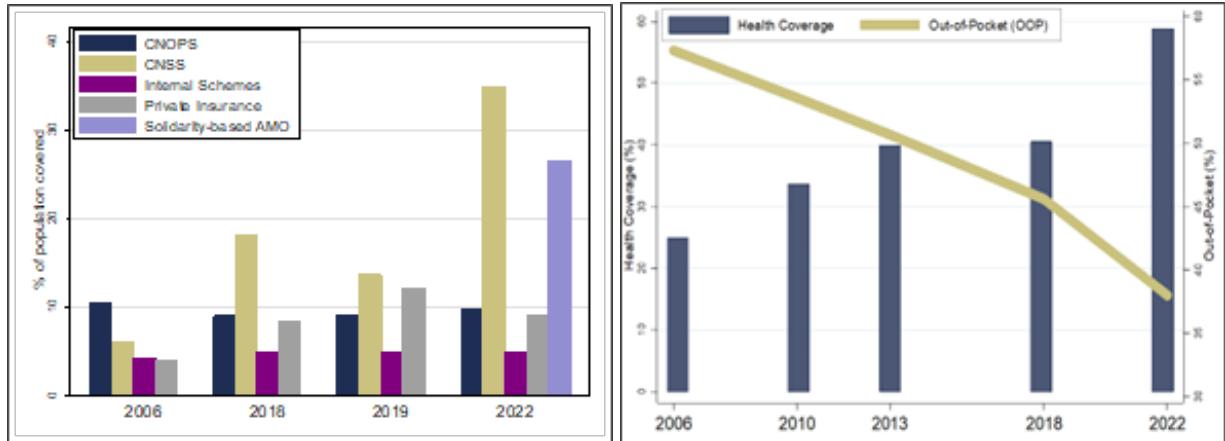
Source : Authors' elaboration. Note : Used data is from World Health Organization (2022). Out-of-pocket expenditure represents the share of total current health expenditures paid directly by households at the point of care, without reimbursement. The Universal Health Coverage (UHC) Service Coverage Index measures the extent of coverage for essential health services—such as those related to reproductive, maternal, newborn and child health, infectious and noncommunicable diseases, and health system capacity—on a scale from 0 to 100, based on tracer interventions.

(UHC) Service Coverage Index, calculated by the World Health Organization. First, an inverse relationship is evident where higher UHC scores generally correlate with lower out-of-pocket burdens. Morocco (marked in red) falls in the middle, indicating moderate service coverage but relatively high household out-of-pocket health costs.

This relationship aligns with broader economic research on household financial behavior : in contexts where health insurance is incomplete, households continue to burden high out-of-pocket expenses and often constitute precautionary savings to guard against income loss and unforeseen medical expenses. While universal health insurance is meant to reduce such uncertainty, limited coverage or access barriers often leave households exposed, prompting continued precautionary saving, even among the insured. Indeed, Morocco illustrates this dynamic well. Since 2006, health insurance coverage has expanded significantly from under 25% to over 85% by 2022 (National Health Accounts), but at the same time, out-of-pocket health expenditures remain significantly high.

Figure 4 illustrate Morocco's dual health financing challenge. The left panel shows the evolution of health coverage by institution (CNOPS, CNSS, Internal Schemes, Private Insurance, and AMO-Tadamon) from 2006 to 2022, highlighting the expansion of health coverage. Despite this progress, the right panel reveals that Moroccan households still face a persistently high out-of-pocket burden, with expenditures declining only gradually (e.g., from 57.3% in 2006 to 38% in 2022). This slow reduction suggests enduring financial

FIGURE 4 – Evolution of health insurance coverage (left) and household Out-of-Pocket Health Expenditure (right) - *National Health Accounts(2006-2022)*



vulnerability, as shallow or fragmented coverage often fails to meaningfully reduce health-related financial risk (GIEDION et al. (2013)). Gaps in coverage, high co-payments, and limited services continue to compel households to rely on personal savings, perpetuating precautionary savings behavior. Such savings reflect households' response to uncertainty, potentially crowding out investments in long-term wellbeing-enhancing expenditures like preventative healthcare and education. These dynamics underscore the need to pursue policy reforms in social protection design and health financing, a gap motivating our research into whether expanded insurance access reduces precautionary savings and enables greater household investment in human capital.

4 Empirical Framework and Used Data

4.1 Empirical Framework

To understand the relation between access to health insurance and household saving, we regress the saving rate on a set of covariates that capture both individual- and household-level characteristics including coverage by a health insurance scheme. Following (ABDELKHALEK et al. (2010)), our empirical model is specified as :

$$\text{SavingRate}_i = \alpha + \beta_1 \text{HealthInsurance}_i + \beta_2 X_i + \delta \cdot \text{AgeGroup}_i + \gamma \cdot \text{Region}_i + \varepsilon_i \quad (1)$$

where SavingRate_i denotes the saving rate of household i , HealthInsurance_i is a binary variable taking the value of 1 if the household is covered by a health insurance scheme (0 otherwise), X_i is a vector of explanatory variables, AgeGroup_i and Region_i are categorical variables capturing fixed effects for the age group of the household head and the region of residence, respectively, and ε_i is the error term.

The selection of covariates is grounded in the lifecycle and permanent income hypotheses, which emphasize the roles of income expectations, age, and consumption smoothing. Control variables include indicators for the head of household’s educational attainment (no education, low education, high education) medium education kept as the reference, marital status (single, divorced, widowed) married kept as the reference, employment status (unemployed and self-employed) employed kept as the reference. We include controls for the household size, homeownership status and access to basic amenities such as water and electricity. These proxies for household wealth are particularly relevant in the Moroccan context, where financial asset data are limited, and wealth is often embedded in real estate and housing infrastructure.

First, we estimate the model on the full sample to identify general patterns in saving behavior. We then estimate the same model separately for each income quintile to examine heterogeneities across different segments of the income distribution. In these quintile-specific regressions, the income quintile categorical variable is excluded. The results are presented in Table 1, Column (1) for the full-sample model and in Columns (2) to (6) for the quintile-specific regressions.

In the second part of the analysis, we examine the potential spillover effects of health insurance on household well-being through the lens of expenditure allocation. Specifically, we investigate whether having health insurance influences how households distribute their total spending across key consumption categories, including health, food, clothing, housing, transport, and education. Because these spending shares are fractional outcomes—bounded between 0 and 1—we estimate separate fractional regressions using the method proposed by Papke and Wooldridge (1996). Each regression takes the follo-

wing form :

$$\mathbb{E}[\text{ExpenditureShare}_{ic} \mid X_i, \text{Insurance}_i] = G(\gamma_0 + X_i\gamma_1 + \delta \cdot \text{Insurance}_i) \quad (2)$$

where

$$G(z) = \frac{1}{1 + e^{-z}},$$

and $\text{ExpenditureShare}_{ic}$ represents the share of total household expenditures allocated to category c (e.g., food, education). Insurance_i is a binary indicator for health insurance coverage. The model estimates how insurance status shifts the relative weight of each spending category, holding other factors constant.

This approach allows us to capture behavioral adjustments in consumption patterns resulting from the financial protection against unforeseen health related expenditures. For instance, if insurance reduces out-of-pocket medical expenses, households may reallocate resources toward education or acquiring durable goods. To further capture heterogeneity in consumption responses, we also estimate these models separately by income quintile. This allows us to identify consumption heterogeneities across the income distribution. For example, lower-income households may reallocate freed-up resources from health expenses to more basic services, while higher-income households might increase investments in education or housing quality. By disaggregating the analysis, we provide a more nuanced view of how health insurance interacts with household-level resource constraints and consumption priorities.

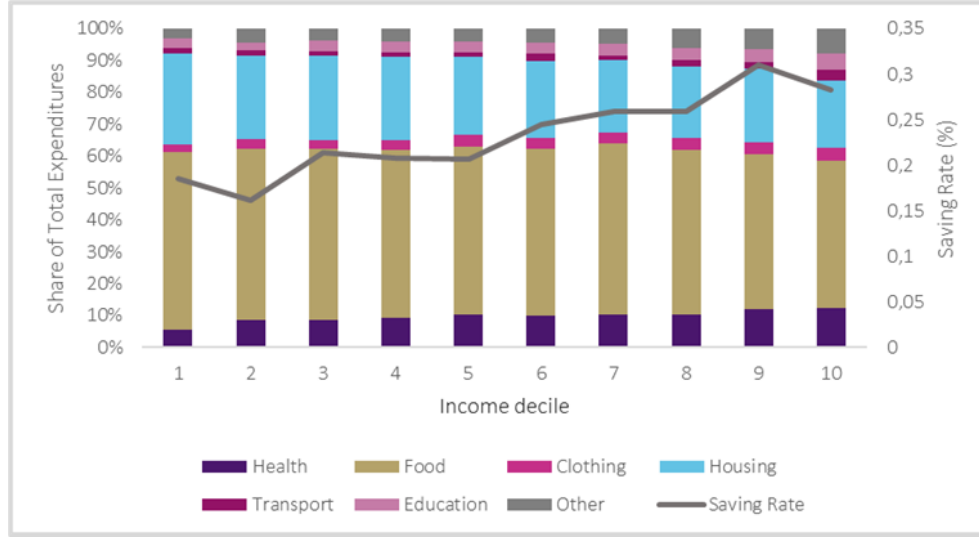
4.2 *Measuring Household Savings and Used Data*

Drawing on established theoretical and empirical research ([BUTELMANN, GALLEGO et al. \(2000\)](#)), we construct a household-level saving rate indicator. The dependent variable in our analysis is the household saving rate, defined as the share of disposable income that is not spent on consumption. Specifically, we calculate the saving rate for each household i as :

$$\text{SavingRate}_i = \frac{\text{Income}_i - \text{Consumption}_i}{\text{Income}_i} \quad (3)$$

This ratio captures a household's capacity to set aside resources for future needs and acts as a proxy for resilience to economic shocks. It is widely used in empirical studies on household saving such as ([ABDELKHALEK et al. \(2010\)](#); [BECKMANN et al. \(2013\)](#); [CHAMON et al. \(2013\)](#); [DEATON \(1989\)](#); [LE BLANC et al. \(2018\)](#); [LOAYZA et al. \(2000\)](#)). As a measure, it reflects both short-term consumption smoothing and precautionary saving behavior.

FIGURE 5 – Average spending composition and saving rate by income decile



Source : Authors' elaboration.

To minimize lifecycle bias and ensure comparability, we restrict the analysis to households headed by individuals aged 15 to 65, thereby excluding retirees whose saving patterns may follow different trajectories or be driven by transfers. This choice is supported by empirical findings showing significant variations in saving rates across age groups, with middle-aged households often saving the most (BARCZYK et al. (2023); BECKMANN et al. (2013); VAN OOIJEN et al. (2015)).

The empirical analysis relies on data from the National Survey of Household Consumption and Expenditure (circa 2014), a nationally representative household survey conducted by the Haut Commissariat au Plan.

The descriptive statistics reveal several important patterns. First, most household heads fall in the 25–44 and 45–59 age groups, which together account for over 70% of the sample. Household heads in the 45–59 age range report the highest average annual consumption per person after the under-25 group. Marital status is also a key differentiator : about 73% of household heads are married, followed by widowed (14%), single (7%), and divorced (6%). The average household size is 4.6 persons, with rural households averaging 5.1 and urban ones 4.1.

In terms of education, approximately 53% of household heads have no formal education, and around 29% have completed primary school. Insured heads are more likely to have secondary or higher education, and differences in perception of living standards over the lifecycle confirm a strong education gradient. Regarding employment, salaried and self-employed household heads represent the majority, although exact figures by occupation type are distributed across various statuses. More than 72% of households own their dwelling, while 15% rent and 4% own with a mortgage or similar arrangements. In terms of housing type, the majority live in traditional or modern Moroccan houses ; about 28% re-

side in rudimentary housing, while apartments are less common, especially in rural areas. To further explore how consumption and savings patterns vary across the income distribution, Figure 5 presents the composition of household expenditures alongside the average saving rate by income decile. The stacked bars in the figure represent the proportion of household spending allocated to key categories—health, food, clothing, housing, transport, and education—while the line shows the average saving rate for each income decile. The figure reveals several noteworthy trends. First, the share of total expenditure allocated to food declines steadily with rising income, consistent with Engel’s Law. Lower-income households spend a larger fraction of their budget on food and housing, whereas higher-income ones allocate relatively more to transportation, education, and health. This shift in spending priorities illustrates how discretionary and long-term investments become feasible only as households meet their basic needs. Second, the saving rate increases with income : households in the lowest decile save on average 17% of their income, compared to more than 30% for those in the top two deciles. The relationship between income and saving is nonlinear but strongly positive from the third decile upward, peaking around the ninth decile before slightly tapering off in the highest group. These findings underscore the structural constraints that lower-income households face in accumulating savings, as essential consumption absorbs a large share of their income.

5 Results

5.1 Health Insurance and the Crowd-Out of Precautionary Savings

The baseline estimates presented in Table 1 reveal that households with health insurance coverage exhibit lower saving rates relative to uninsured households, by 24.5 percentage points on average (Column 1). This substantial difference supports the hypothesis that health insurance can crowd-out precautionary savings, reducing households' need to maintain liquid assets as a buffer against potential financial shocks, particularly health-related.

The results are robust to the inclusion of comprehensive sociodemographic controls, including the education and marital status of the household head, as well as region and age group fixed effects. The sample sizes vary across quintiles due to income-stratified sampling but remain sufficiently large to ensure precise estimates.

TABLE 1 – Estimation results of household saving rate by income quintile

	(1) Total	(2) Bottom	(3) Second	(4) Third	(5) Fourth	(6) Top
Access to health insurance	-0.245*** (0.052)	-0.280*** (0.055)	-0.099** (0.037)	-0.147*** (0.030)	-0.144*** (0.028)	-0.059*** (0.030)
Adjusted R ²	0.251	0.111	0.141	0.128	0.177	0.166
Sociodemographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Age group fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Ramsey RESET (p-value)	Ok	Ok	Ok	Ok	Ok	Ok

Note : This table presents OLS regression estimates examining the relation between household saving rates and health insurance access across income quintiles (Columns 2–6) and the full sample (Column 1). The dependent variable, *SavingRate*, is defined as the share of disposable income that is not spent on consumption. Controls include the education and marital status of the household head, region fixed effects, and age group fixed effects. Standard errors are reported in parentheses (** p<0.01, * p<0.05, * p<0.1). The Ramsey RESET Test confirms no misspecification. Sample sizes vary due to income-stratified sampling.

Moreover, by income quintile, we find that households in the bottom quintile are 28-percentage points less likely to save (Column 2). They are thus the least likely to save among the income quintiles. This finding aligns with theoretical expectations, as lower-income households typically face greater financial vulnerability and are more likely to rely on savings to manage unexpected expenditures. The magnitude of the coefficients decreases monotonically across income groups : the second quintile shows a 9.9 percentage point (Column 3), the third quintile a 14.7 percentage point (Column 4), and the fourth quintile a 14.4 percentage point (Column 5) lower than their counterparts, respectively. For households in the top income quintile, we note that the coefficient remains statistically significant but is considerably smaller in magnitude at 5.9 percentage points

(Column 6). This pattern suggests that the marginal value of health insurance coverage diminishes with household income, as wealthier households have access to alternative risk-management tools and are less reliant on savings to smooth consumption.

Additionally, other studies support that health insurance could influence household financial decision-making. For instance, (KARLAN et al. (2016)) suggest that access to health insurance can encourage households to invest more in income-generating activities and durable goods. Health insurance could also facilitate consumption smoothing while also influencing saving and investment decisions. This idea is also reflected in studies on universal health coverage in developing countries, where similar dynamics have been observed in Taiwan (CHOU et al. (2003)), Vietnam (WAGSTAFF et PRADHAN (2005)), and China (QIN et LU (2014) ; WAGSTAFF et LINDELOW (2008)). All in all, these findings indicate that health insurance may play an important role in shaping household financial decisions, particularly for lower-income households. Understanding these potential dynamics is crucial for policymakers aiming to enhance household resilience against health-related shocks.

5.2 Sensitivity Analysis Across Vulnerable Household Groups

To strengthen the validity of our baseline findings and examine potential heterogeneities, we conduct additional analyses focusing on three vulnerable household subgroups : female-headed households, rural households, and cash-strapped households. These groups warrant special consideration due to their distinct financial constraints and risk exposure profiles.

Female-headed households represent an important subsample because they often face greater income volatility and limited access to formal employment (BERNHARDT et al. (2019) ; GOLDIN (2014)). Previous research has shown that women tend to exhibit greater financial risk aversion (CROSON et GNEEZY (2009)) and may rely more heavily on precautionary savings as buffers (SEGUINO et WERE (2014)). Our analysis of this subgroup will reveal whether health insurance produces differential effects in households where financial decision-making may be more conservative, building on findings that female-headed households often prioritize expenditure smoothing.

Rural households also represent a vital subgroup given their unique healthcare access challenges and irregular income flows. Limited proximity to healthcare facilities, high transportation costs for medical services (GERTLER et GRUBER (2002)), and the seasonal nature of agricultural income (KAZIANGA et UDRY (2006)) all necessitate different risk management and savings strategies. Financial diaries from rural contexts have further highlighted the precarious balancing acts these households undertake to manage unpredictable cash flows (COLLINS et al. (2009)). Understanding how access to health insurance can alter their need for precautionary savings is therefore essential for tailoring inclusive

financial protection mechanisms.

Finally, we analyze “cash-strapped” households—defined here as those facing acute liquidity constraints, such as self-employed individuals. These households often operate without access to formal credit due to capital market imperfections (EVANS et JOVANOVIĆ (1989)). While not all self-employed individuals face liquidity issues (HURST et LUSARDI (2004)), a significant subset is particularly vulnerable to financial shocks. (DEATON (1989)) model of “hand-to-mouth” consumption and subsequent empirical work (BANERJEE et DUFLO (2008) ; KARLAN et MORDUCH (2010)) highlight the fragile financial positions of such households, underscoring the potential value of insurance in alleviating their saving burdens.

For each of these three subgroups, we re-estimate our baseline model using identical controls and fixed effects to maintain consistency. Results are reported in Column 1 to 3 of table 2.

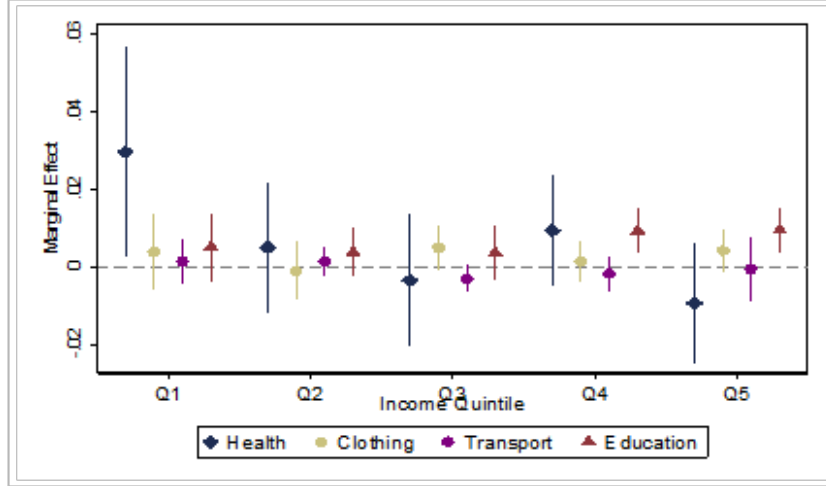
TABLE 2 – Estimation results of sensitivity check for household saving rate

	(1) Female-headed	(2) Rural	(3) Cash-strapped
Access to health insurance	-0.212* (0.100)	-0.222** (0.091)	-0.457** (0.233)
Adjusted R ²	0.264	0.278	0.331
Sociodemographic controls	Yes	Yes	Yes
Region fixed effect	Yes	Yes	Yes
Age group fixed effect	Yes	Yes	Yes
Ramsey RESET Test	Ok	Ok	Ok

Note : This table reports sensitivity analysis of the baseline household saving rate model across key subgroups : female-headed households (Column 1), rural households (Column 2), and cash-strapped households (Column 3). The dependent variable, *SavingRate*, is defined identically to the baseline specification, with covariates grounded in the lifecycle and permanent income hypotheses (Modigliani & Brumberg, 1954; Friedman, 1957). All specifications retain sociodemographic controls, region, and age group fixed effects. Standard errors are reported in parentheses (** p<0.01, * p<0.05, * p<0.1). Sample sizes reflect subgroup-specific restrictions, with cash-strapped households defined as those likely to face liquidity constraints, including self-employed workers (Evans & Jovanovic, 1989; Hurst & Lusardi, 2004). This aligns with the broader literature on financially constrained households (Zeldes, 1989; Banerjee & Duflo, 2008).

The sensitivity analysis reveals significant variation in savings responses to health insurance across vulnerable groups. First, among female-headed households, savings decline by 21.2 percentage points—a moderately significant coefficient suggesting that insurance reduces the need for precautionary buffers. However, the smaller magnitude may reflect ongoing income volatility (related to employment type and persistent income volatility) or limited access to financial tools (BERNHARDT et al. (2019) ; GOLDIN (2014))(Goldin, 2014; Bernhardt et al., 2018). Moreover, for rural households, the savings reduction is more pronounced at 22.2 percentage points. This supports evidence that insurance offers financial protection where healthcare access is limited and costs are elevated (GERTLER et GRUBER (2002)). Notably, the largest coefficient—45.7 percentage points—is observed among cash-strapped households, reflecting severe liquidity constraints. This aligns with

FIGURE 6 – Marginal propensity to consume by income quintile



Source : Authors' elaboration.

models of hand-to-mouth consumption and confirms the limited credit access among the self-employed. In this case, insurance appears to ease financial pressure, allowing resource reallocation from savings to immediate needs.

The consistent gradient across groups, where more financially vulnerable households exhibit greater sensitivity, reinforces the precautionary savings hypothesis. It also highlights the differentiated value of insurance across socioeconomic profiles, with potential for large welfare gains when coverage is expanded to groups with the most binding constraints.

5.3 Health Insurance and Well-Being Spillovers

While the reduction in precautionary savings demonstrates one important financial benefit of health insurance, it represents only part of the story. To fully assess how health insurance can influence household wellbeing, we must examine its spillovers on expenditure patterns—particularly how households reallocate their budgets when freed from the burden of health-related financial risk.

Literature shows that beyond lowering out-of-pocket medical costs, health insurance reshapes entire household economies. As (WAGSTAFF et al. (2018)) show, insurance reduces "catastrophic" and "impoverishing" health expenditures, allowing families to redirect funds toward other essential needs. This reallocation can have cascading benefits, from improved education access to greater food security (KARLAN et MORDUCH (2010)). A decrease in health spending coupled with increased investment in education or productive assets, for example, signals improved financial security and upward mobility. Finally, evidence from developing countries, such as Vietnam and Thailand (LIMWATTANANON et al. (2015)) suggests this dual effect is critical for understanding insurance's full economic value.

Figure 6 provides insight into this reallocation process focusing on four main spending categories that are related to enhanced well-being (health, clothing, transportation, and education) disaggregated by income quintile. The results show that in the lowest quintile (Q1), health insurance is associated with a statistically significant increase in health spending. This suggests that rather than reducing total health expenditures, insurance may be enabling previously underserved households to access care, consistent with Grossman’s health capital theory and is evidence that insurance enhances service utilization and access to some preventative care, especially among the most vulnerable households (MUGO (2023); ZHANG et al. (2022)). In contrast, the higher quintiles (Q3 to Q5) show muted or negative increases on health expenditure, suggesting insurance serves more as a financial protection tool than an access enabler. These findings align with recent research showing that the poverty-reducing benefits of insurance are often mediated by initial economic conditions (DONG (2024); HOOLEY et al. (2022)). The decline or stabilization of health spending in higher income groups implies reduced out-of-pocket burdens, with minimal overconsumption risk.

Importantly, results also highlight modest increases in education expenditure in Q4 and Q5, suggesting insurance facilitates productive budget reallocation among wealthier households. This supports the “crowding-in” hypothesis and mirrors findings from other studies, which underscore the role of household financial stability in promoting human capital investment. That such behavioral adjustments are absent in lower quintiles may reflect persistent liquidity constraints or incomplete insurance benefits, underscoring the concern that “insurance dividends” are often skewed toward higher-income groups.

6 Conclusion

This study investigates the relationship between health insurance coverage and household saving behavior in Morocco, using nationally representative data. The findings offer preliminary evidence that access to formal health protection tends to crowd out precautionary savings, particularly among vulnerable groups. Insured households, especially those with lower incomes or heightened financial precarity, demonstrate lower saving rates, indicating that health insurance partially substitutes for self-insurance through savings. Nonetheless, significant heterogeneity exists across household types : some households reallocate resources toward well-being-enhancing expenditures, while others continue to experience liquidity constraints. These complex dynamics highlight the need for further research employing longitudinal or quasi-experimental designs to reveal causal pathways and capture long-term behavioral adjustments.

Looking ahead, several priorities for future research emerge. Longitudinal studies tracking insured households over time are critical to differentiate short-term behavioral responses from sustained shifts in saving patterns. Disaggregated analyses by occupation, geographic region, and household composition will be essential to understand heterogeneity in impacts.

References

- ABDELKHALEK, T., ARESTOFF, F., de FREITAS, N. E. M., & MAGE, S. (2010). A microeconomic analysis of household savings determinants in Morocco. *African Review of Money Finance and Banking*, 7-27.
- ATTANASIO, O. P., & ROHWEDDER, S. (2003). Pension wealth and household saving : Evidence from pension reforms in the United Kingdom. *American Economic Review*, 93(5), 1499-1521.
- BANERJEE, A. V., & DUFLO, E. (2008). What is middle class about the middle classes around the world ? *Journal of economic perspectives*, 22(2), 3-28.
- BARCZYK, D., FAHLE, S., & KREDLER, M. (2023). Save, spend, or give? a model of housing, family insurance, and savings in old age. *Review of Economic Studies*, 90(5), 2116-2187.
- BECKMANN, E., HAKE, M., & URVOVA, J. (2013). Determinants of households' savings in Central, Eastern and Southeastern Europe. *Focus on European Economic Integration Q*, 3(13), 8-29.
- BERNHARDT, A., FIELD, E., PANDE, R., & RIGOL, N. (2019). Household matters : Revisiting the returns to capital among female microentrepreneurs. *American Economic Review : Insights*, 1(2), 141-160.
- BOUZAIDI, T. D., & RAGBI, A. (2024). An analysis of the trend towards universal health coverage and access to healthcare in Morocco. *Health Economics Review*, 14(1), 5.
- BROWNING, M., & LUSARDI, A. (1996). Household saving : Micro theories and micro facts. *Journal of Economic literature*, 34(4), 1797-1855.
- BUTELMANN, A., GALLEGO, F., et al. (2000). *Household saving in Chile : Microeconomic evidence*. Banco Central de Chile.
- CHAMON, M., LIU, K., & PRASAD, E. (2013). Income uncertainty and household savings in China. *Journal of Development Economics*, 105, 164-177.
- CHOU, S.-Y., LIU, J.-T., & HAMMITT, J. K. (2003). National health insurance and precautionary saving : evidence from Taiwan. *Journal of Public Economics*, 87(9-10), 1873-1894.
- COIBION, O., GEORGARAKOS, D., GORODNICHENKO, Y., KENNY, G., & WEBER, M. (2024). The effect of macroeconomic uncertainty on household spending. *American Economic Review*, 114(3), 645-677.
- COLLINS, D., MORDUCH, J., RUTHERFORD, S., & RUTHVEN, O. (2009). *Portfolios of the poor : how the world's poor live on 2aday*. Princeton University Press.
- CROSON, R., & GNEEZY, U. (2009). Gender differences in preferences. *Journal of Economic literature*, 47(2), 448-474.
- DEATON, A. (1989). Saving and liquidity constraints.

- DONG, B. (2024). The impact of basic health insurance participation characteristics on the health of mobile populations : the mediating role of health service utilization behavior. *Frontiers in Public Health*, 12, 1243703.
- DUPAS, P., & ROBINSON, J. (2013). Why don't the poor save more ? Evidence from health savings experiments. *American Economic Review*, 103(4), 1138-1171.
- DYNAN, K. E. (1993). How prudent are consumers ? *Journal of Political Economy*, 101(6), 1104-1113.
- EVANS, D. S., & JOVANOVIĆ, B. (1989). An estimated model of entrepreneurial choice under liquidity constraints. *Journal of political economy*, 97(4), 808-827.
- GERTLER, P., & GRUBER, J. (2002). Insuring consumption against illness. *American economic review*, 92(1), 51-70.
- GIEDION, U., ALFONSO, E. A., & DÍAZ, Y. (2013). *The impact of universal coverage schemes in the developing world : a review of the existing evidence*. World Bank Washington, DC.
- GOLDIN, C. (2014). A grand gender convergence : Its last chapter. *American economic review*, 104(4), 1091-1119.
- GOURINCHAS, P.-O., & PARKER, J. A. (2002). Consumption over the life cycle. *Econometrica*, 70(1), 47-89.
- GRUBER, J., & YELOWITZ, A. (1999). Public health insurance and private savings. *Journal of Political Economy*, 107(6), 1249-1274.
- HASSANI, A., BAKHAT, M., & BOUDHAR, A. (2025). The incidence of catastrophic and impoverishing health spending in Morocco : the value added of new methodologies : Hassani et al. *International Journal of Health Economics and Management*, 1-46.
- HOOLEY, B., AFRIYIE, D. O., FINK, G., & TEDIOSI, F. (2022). Health insurance coverage in low-income and middle-income countries : progress made to date and related changes in private and public health expenditure. *BMJ global health*, 7(5).
- HORIOKA, C. Y., & WATANABE, W. (1997). Why do people save ? A micro-analysis of motives for household saving in Japan. *The Economic Journal*, 107(442), 537-552.
- HURST, E., & LUSARDI, A. (2004). Liquidity constraints, household wealth, and entrepreneurship. *Journal of political Economy*, 112(2), 319-347.
- KARLAN, D., MCCONNELL, M., MULLAINATHAN, S., & ZINMAN, J. (2016). Getting to the top of mind : How reminders increase saving. *Management science*, 62(12), 3393-3411.
- KARLAN, D., & MORDUCH, J. (2010). Access to finance. In *Handbook of development economics* (p. 4703-4784, T. 5). Elsevier.
- KAZIANGA, H., & UDRY, C. (2006). Consumption smoothing ? Livestock, insurance and drought in rural Burkina Faso. *Journal of Development economics*, 79(2), 413-446.
- KULIKOV, D., PAABUT, A., & STAEHR, K. (2007). *A microeconomic analysis of household saving in Estonia : income, wealth and financial exposure*. Eesti Pank.

- LE BLANC, J., PORPIGLIA, A., TEPPA, F., ZHU, J., & ZIEGELMEYER, M. (2018). Household saving behavior in the Euro area. *44th issue (June 2016) of the International Journal of Central Banking*.
- LIMWATTANANON, S., NEELSEN, S., O'DONNELL, O., PRAKONGSAI, P., TANGCHAROENSATHIEN, V., VAN DOORSLAER, E., & VONGMONGKOL, V. (2015). Universal coverage with supply-side reform : The impact on medical expenditure risk and utilization in Thailand. *Journal of Public Economics*, 121, 79-94.
- LOAYZA, N., SCHMIDT-HEBBEL, K., & SERVÉN, L. (2000). *What drives private saving around the world ?* (T. 2309). World Bank Publications.
- LUSARDI, A. (1998). On the importance of the precautionary saving motive. *The American Economic Review*, 88(2), 449-453.
- MUGO, M. G. (2023). The impact of health insurance enrollment on health outcomes in Kenya. *Health Economics Review*, 13(1), 42.
- QIN, X., & LU, T. (2014). Does health insurance lead to ex ante moral hazard ? Evidence from China's new rural cooperative medical scheme. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 39(4), 625-650.
- SEGUINO, S., & WERE, M. (2014). Gender, development and economic growth in Sub-Saharan Africa. *Journal of African Economies*, 23(suppl_1), i18-i61.
- STARR-MCCLUER, M. (1996). Health insurance and precautionary savings. *The American Economic Review*, 86(1), 285-295.
- SUTHERLAND, D., & HOELLER, P. (2012). Debt and macroeconomic stability : An overview of the literature and some empirics.
- VAN OOIJEN, R., ALESSIE, R., & KALWIJ, A. (2015). Saving behavior and portfolio choice after retirement. *De Economist*, 163(3), 353-404.
- WAGSTAFF, A., FLORES, G., HSU, J., SMITZ, M.-F., CHEPYNOGA, K., BUISMAN, L. R., van WILGENBURG, K., & EOZENOU, P. (2018). Progress on catastrophic health spending in 133 countries : a retrospective observational study. *The Lancet Global Health*, 6(2), e169-e179.
- WAGSTAFF, A., & LINDELOW, M. (2008). Can insurance increase financial risk ? : The curious case of health insurance in China. *Journal of health economics*, 27(4), 990-1005.
- WAGSTAFF, A., & PRADHAN, M. (2005). *Health insurance impacts on health and nonmedical consumption in a developing country* (T. 3563). World Bank Publications.
- XU, C. (2023). Do households react to policy uncertainty by increasing savings ? *Economic Analysis and Policy*, 80, 770-785.
- YIP, W., & HSIAO, W. C. (2009). Non-evidence-based policy : how effective is China's new cooperative medical scheme in reducing medical impoverishment ? *Social science & medicine*, 68(2), 201-209.

- ZAHIDI, K., MOUSTATRAF, A., ZAHIDI, A., NAJI, S., & OBTEL, M. (2022). Universal health coverage in Morocco : the way to reduce inequalities : a cross-sectional study. *The Open Public Health Journal*, 15(1).
- ZHANG, Y., ZHAO, G., & GU, H. (2022). Investing in health capital : Does medical insurance matter ? *Research in International Business and Finance*, 61, 101661.

