

ANALYSIS OF SAVING BEHAVIOR FOR POOR AND NON-POOR HOUSEHOLDS IN AL-AHSA GOVERNORATE, KINGDOM OF SAUDI ARABIA, 2018

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ABSTRACT

This research was aimed at analyzing the saving behavior of Saudi households in AL-HASA governorate, the eastern region of Saudi Arabia. Data was collected via questionnaire randomly distributed to a sample of 308 Saudi households. The poverty line income was estimated as equivalent to break-even level in saving function, was estimated at 10500 Saudi Riyals per month. Using OLS method consumption and saving functions for Saudi households in AL-HASA governorate were estimated. The marginal propensity to save for poor was higher than that of non-poor households with a statistically significant difference of about 0.35. This indicates that poor households are more willing to save compared to non-poor households if income increases for both. For the determination of factors affecting saving behavior, the study applied the binary logistic regression, using maximum likelihood method with the dependent binary dummy variable of two values defining saving and non-saving households. Results indicated that the probability of saving for non-poor households is affected positively by household income; however, both the size of household and the dwelling type realized negative effects. Hence, the probability of increased saving for a rise in household income by SR 1,000 /month was estimated at 12.5%. In the case of an increase in the number of family members by one person, the probability of saving was less than 29.4%. The probability of saving for households living in rented houses was 60.6% less than the probability of saving for household living in their owned houses. Hence, residential rent represent an obstacle to saving for non-poor households. The most important factor influencing the probability of saving for poor households is number of family labor, where an increase in the number of workers in the poor family by one factor increases the probability of saving 34.6%.

Key words: poverty line; break-even level; saving; logistic model

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تحليل السلوك الادخاري للأسر الفقيرة وغير الفقيرة في محافظة الأحساء ، المملكة العربية السعودية، 2018

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المستخلص

يهدف البحث لتحليل السلوك الادخاري لدى الأسر الفقيرة والأسر غير الفقيرة في محافظة الأحساء بالمنطقة الشرقية من المملكة العربية السعودية، بالاعتماد على بيانات مقطعية أولية تم جمعها من خلال استبانة لعينة عشوائية لنحو 308 أسرة. وللتمييز بين الأسر الفقيرة والأسر غير الفقيرة تم تقدير خط الفقر المطلق والذي يساوي مستوى التعادل للدخل بدالة الادخار، وبلغ خط الفقر المطلق بمحافظة الأحساء في عام 2018م على مستوى الأسرة نحو 10500 ريال/شهر. وتبين أن الميل الحدي لادخار الأسر الفقيرة بالمحافظة يزيد عن نظيره للأسر غير الفقيرة بفرق معنوي احصائياً بلغ نحو 0.35 مما يعني أن الأسر الفقيرة أشد حرصاً ورغبة في الادخار مقارنة بالأسر غير الفقيرة إذا ما زاد الدخل لكليهما. ولتحديد أهم العوامل التي تؤثر في سلوك الادخار العائلي لنوعي الأسر بالمحافظة تم تقدير نموذج الانحدار اللوجستي الثنائي بطريقة الاحتمال الأعظم، وتبين أن فرص ترجيح ادخار الأسرة غير الفقيرة عن عدم ادخارها تتأثر طردياً مع دخل الأسرة، وعكسياً مع حجم ونمط سكن الأسرة. حيث أنه في حالة زيادة دخل الأسرة بمقدار 1000 ريال/شهر فإن نسبة ترجيح احتمال ادخار هذه الأسرة يزيد بنحو 12.5%، بينما في حالة زيادة عدد أفراد الأسرة بفرد واحد فإن نسبة ترجيح احتمال ادخار هذه الأسرة إلى عدم ادخارها تقل بنحو 29.4%، أما بالنسبة لنمط السكن فقد تبين أن فرصة ترجيح احتمال ادخار الأسرة التي تقطن سكن بالإيجار تقل بنحو 60.6% عن نسبة ترجيح احتمال ادخار الأسرة التي تتمتع بملكية السكن، مما يعني أن قيمة الإيجار السكني مرتفعة بالمحافظة وتمثل عائق ذو أهمية لادخار الأسر غير الفقيرة. في حين تبين أن أهم العوامل المؤثرة في ترجيح احتمال ادخار الأسرة الفقيرة هو: متغير عدد العاملين بالأسرة فزيادة عدد العاملين بالأسرة الفقيرة بمقدار عامل واحد تزداد نسبة ترجيح احتمال ادخار هذه الأسرة بنحو 34.6%، مما يوضح مدى أهمية توفير فرص عمل لتلك الأسر من أجل زيادة تعبئة مدخراتها.

الكلمات المفتاحية: خط الفقر المطلق، مستوى التعادل للدخل، دالة الادخار، نموذج الانحدار اللوجستي

INTRODUCTION

Given the importance of household savings as a source of funding providing opportunities for investment and hence contributing to economic growth, some researches were undertaken at various levels. Ang (7) examined the factors affecting household saving in India and China over the last few decades, applying a modified life cycle model to account for expected benefits of pension saving. Results indicated that higher income growth encourages more household saving. In addition, an increase in inflation rate encourages household saving. Results showed that an increase in anticipated pension benefits discouraged household saving in China in the long run, however, the opposite was observed in India. Moav and Neeman (19) a large proportion of income of Poor households around the world is spend on goods that do not seem to alleviate poverty, while saving at low levels. According to them, this behavior is interpreted as conspicuous consumption, which provide a signal of unobserved income. They argued that if human capital is correlated with income, an equilibrium where poor individuals spend a large proposition of income on conspicuous consumption would emerge. According to their argument, the equilibrium will generate a poverty trap via increased marginal propensity to save. Remble, et al. (20) tested the differences in saving behavior between entrepreneurial households in comparison to average United States households using a limited dependent variable model. Results indicated that households owning a farm or nonfarm business showed significantly higher probability of preserving private saving. Findings highlighted the need for research on household saving behavior, accounting for different objectives and choices available for households having businesses. The study by Suppakitjarak and Krishnamra (25) investigated saving levels, saving objectives, and the determinants of saving forms in Thailand. The results revealed that the main purpose of saving was for post-retirement expenditure. Conventional saving such as bank deposits and insurance policies dominated saving forms for lower income levels. However, as income increases savers resort to

investments with expected higher returns. The highest proportion of saving was devoted to properties including real estate. Ana-Gabriela and Aniela (6) applied regression model for explanation of evolution of monthly household deposits in Romania using consumer price index, net average earning for total economy and interest rate as explanatory variables. Based on the results the only variable significantly affecting household's deposits is the interest rate. Finlay and Price (15) investigated households saving and the drivers behind the increase in households saving ratio in Australia. According to results households saving ratio tends to rise with income, however, decreased with wealth. At risk households such as single parents and migrant households, tend to save more compared to other households. Households with debt and/wealth and highly educated households tend to raise their propensity to save attributed to expectation of reduction in future income growth affected by financial crisis coupled with efforts for rebuilding wealth and repaying debt. Brounen, Koedijk et al. (12) examined behavioral factors that lead households toward financial planning and saving using panel data of 1253 Dutch households. Results indicated that an individual propensity to save diminished with age. In addition, saving behavior differ across generations, where, generation effect is lower when consideration was given for specifics that are more individual. Results give evidence for parental influence and effects of psychological and behavioral metrics of numeracy. Based on the results understanding of personal variables could help in explanation of attitude towards financial responsibility. Brewer, Etheridge et al. (11) analyzed the joint distribution of income and expenditure in UK. Results indicated that households in the UK with extremely low measured income spend much more compared to low income households. The expenditure level of bottom of the income is equal to the median level of population expenditure. The above results were explained by over reporting of expenditure coupled with under reporting of income attributed to inaccurate data due to households avoiding higher taxes or reduced entitlement to benefit Steinert, Zenker et al. (24) investigated the

effects of saving promotion on increasing consumption, saving, and future investment in sub-Saharan Africa using 27 randomized controlled trials on promotion interventions of saving. Robust-variance estimations of pooled effect sizes indicated small however, significant effects on poverty reduction, including increases in household incomes and expenditures, higher returns from household businesses, and enhanced food security. Moreover, results showed positive and significant effects on investments in small-scale household businesses, pro-saving attitudes and total savings. However, results indicated insignificant effects on assets, housing quality, education, or health. Results proved superiority of supply-based programs to demand-enhancing programs including financial education. The saving promotion programs less affect women. Hence, findings from the analysis suggest that saving promotion schemes are substantially relevant in reducing poverty in Sub-Saharan Africa. Hassan (17) initiated a direct address concerning focus on Islamic microfinance program for the economic development of the poor marginal households in India. Failure of conventional institutions to attract the poorest households among Muslim society is a focal issue in the research. The research explored a Sharia's-compliant system of microfinance expected to create field for possible financial inclusion of poor. The research was based on theoretical discussion of Islamic microfinance inclusion of the poor. The research reviewed conventional microfinance model and suggested an alternative model of Islamic micro financial aiming at the inclusion of poorer households. Results indicated some opportunities capable of enhancing the economic situation of the poor Muslim societies by adopting some innovative approaches, emphasizing designing Islamic micro financial projects suitable for the poor households based on the principle of Islamic unity and solidarity. Hence, this will reflect on poor households saving satisfying a range of social, personal, small business and consumption needs. Based on (18) most macroeconomic studies on Saudi Arabia have qualified the distribution system of this country as the welfare state. However, the

study of the specific forms of distribution and the debates related to them indicated the extent of ambiguity between public aid and private donation, or charity. A study carried in some charity institutions and encouraged by the state, supports job of members of the royal family and the private sector in this issue. In Riyadh, charity institutions and foundations claim to secure support from members of royal family, who contribute with the private institutions to their funding. Charity organizations, despite being legally private, are constrained by royal family patronage and bureaucratic monitoring by the Ministry of Social Affairs. Fadaak (14) performed an exploratory research in Jeddah City, Saudi Arabia, using government and non-governmental data related to poverty and poverty alleviation policies. Female-headed households were identified, referring to a list of poor households receiving assistances from charitable associations and social security department in Jeddah. Identification was based on circumstances of the female head. In addition, for analyzing aspects of everyday lives, interviews with a sample of female-headed households was used as a method of collecting data. Results revealed weaknesses in Saudi Arabia's welfare system. In particular, there is no coordination between government and nongovernment organizations in relation to statistics and services. In addition, despite major concern from the state in poverty alleviation, there is no clarity in relevant programs and policies. Results of the survey showed that the majority of female-headed households in Jeddah City are single mothers due to divorce, widowhood abandonment, or absent husband. Further, high rates of illiteracy and low levels of education unemployment, and low levels of spending, were observed. Based on results the research suggested high levels of concern to establish clear and precise policies and programs to mitigate poverty in Saudi Arabia with emphasis on female-headed households. Haj-Kacem (16) analyzed the impact of age distribution on household consumption expenditure at the total level in Saudi Arabia, using statistical and econometric techniques. Empirical validation for Saudi Arabian case indicated the causality's effect differs significantly according to the size

against the ratio of each age group. In addition, the analysis and discussions of results for each age categories gave specific conclusions for the long run causality effect on Saudi Arabian household final consumption. Albrithen (2) argued that, despite of the fact that Saudi Arabia owns the largest petroleum reserves globally, its per capita income has diminished since the beginning of the present century. Further, He argued that Poverty in Saudi Arabia has grown in recent years. The purpose of the study by (22) was to design a new model supporting the real objectives of Zakat emphasizing elimination of poverty, by increasing saving habits of the beneficiaries of Zakat and raising their prosperity using Salwa Fund. A survey method among zakat payers was adopted for the analysis. Respondents affirmed the urgent need for the financial model designed to achieve the economic goals of financial inclusion, provision of new financial product to relevant institutions including intermediaries and present zakat administrations. The model is designed to help proper distribution of zakat funds aiming at achieving corporate social responsibility through conversion of zakat beneficiaries to payers. Saudi Vision 2030 (21) is looking forward for progressing of the economy of the Kingdom of Saudi Arabia to be one of the first fifteen ranks of the world's largest economies (9). One of the objectives of 2030 vision, for higher economic growth is to raise the rate of households saving from 6.0% to reach 10% in 2030 (8). This research aimed at analyzing the saving behavior of poor and non-poor households in AL-HASA governorate in eastern region of Saudi Arabia. More specifically, the study aimed at estimating the poverty line and marginal propensity to save for poor and non-poor households. Moreover, the study considered determining factors that significantly affect the saving behavior of poor and non-poor households.

MATERIALS AND METHODS

This study was based on primary data collected via a questionnaire distributed to a random sample of Saudi families during July 2018 in AL-Ahsa governorate in eastern region of Saudi Arabia. Selection of AL-AHSA governorate was justified by the fact that its area constitutes 68% of the eastern

region. In addition, the eastern region of Saudi Arabia is considered as one of highest welfare administrative regions which rank first regarding the average monthly income of Saudi Families compared to other administrative regions, (23) from <https://www.stats.gov.sa/en/37> (23) Some reviewers and some respondents did preliminary test of the questionnaire for suitability and clarity of questions. Using (10) equation for estimating the sample size given by equation (1) below, the sample size was equal to 383 households.

.....(1)

Where, n = sample size, N = population size, t = t value corresponding to 0.95 level of significance, equals to 1.96 P = the probability of occurrence of the phenomena equals to 0.50, SE = error percentage equals to 0.05 It may be noted that the actually analyzed sample was equal to 308 after discarding some questionnaires due to some reasons including incomplete responses, attributable to unwillingness of some respondents to answer questions requiring disclosing their financial status. The study adopted (13) methodology for estimating the poverty line income justified by, the fact that Saudi Arabia being a high income country requires higher welfare levels for determining the absolute poverty line. Methodology is demonstrated as follows:

1- Estimating the household consumption function given by:

$$HC_i = \alpha + \mu HI_i + \partial_i \quad (2)$$

Where, HC_i is the total consumption expenditure of household i in Saudi Riyals, HI_i is the total income of household i , ∂_i is the disturbance term satisfying the conditions of the basic regression model.

2- Obtaining the saving equation from the consumption equation given by:

$$HS_i = -\alpha + (1 - \mu)HI_i + \partial_i \quad (3)$$

Where, HS_i is the monthly saving of household i in Saudi Riyals

3- Estimating the breakeven level of household income, defined as the income level that hardly satisfy the basic consumption requirements for a household, where little or no saving would be expected. Hence, the

breakeven level, is used as synonymous to poverty line income and is given by the following equation:

$$PL = \frac{\alpha}{1-\mu} \quad (4)$$

Where, *PL* is the estimated poverty line

The marginal propensity to save was estimated for both poor and non-poor households, where, a dummy variable was included as an explanatory variable for differentiation between poor and non-poor households. For the determination of factors influencing the saving behavior for poor and non-poor Saudi households in Al-HASA governorate, the study applied the binary logistic regression model, with the dependent binary dummy variable of two values defining saving and non-saving households. Logistic regression models are widely used in economic studies and in measuring economic efficiency (3, 4) The model is estimated using maximum likelihood method to avoid regression problems using ordinary least square model. The estimated model is given by the following specification:

$$\text{logit}(S_i) = \alpha_0 + \alpha_1 HI_i + \alpha_2 M_i + \alpha_3 L_i + \alpha_4 W_i + \alpha_5 J_i + \alpha_6 E_i + \alpha_7 D_i \quad (5)$$

$S_i = 1$ for saving household and 0 otherwise.

HI_i = Household *i* total income (1000 SR/month).

M_i = size of household *i*

L_i = Number of working labour in household *i*

W_i = wealth index for household *i*

$J_i = 1$ if household head is working at public sector

= 2 if household head is working at private sector,

=3 if household head is retired

$E_i = 1$ if education level of household head is illiterate or primary

= 2 if education level of household head is intermediate

= 3 if education level of household head is university or higher

$D_i = 1$ if the dwelling type is leasehold (rent),

= 2 if the dwelling type is property

The logit transformation is defined as the logit odd given by the following equation:

$$\text{odds} = \frac{P}{1-P} = \frac{\text{probability of presence of characteristic}}{\text{probability of absence of characteristic}} \quad (6)$$

$$\text{logit } P = \ln \frac{P}{1-P} \quad (7)$$

RESULTS AND DISCUSSION

In this section we present and analyze results obtained by applying the above equations to data collected by surveying the selected random sample of households.

Estimation of absolute poverty line in AL-HASA governorate Applying data on monthly total household income and expenditure to equation (1), using ordinary least square regression method we obtained the following consumption regression equation:

$$HC_i = 3120.3 + 0.7029HI_i \quad (8)$$

(5.4)* (5.1)* $R^2 = 0.28$ $F^* = 26$
N=308

* indicates significance at 5% level

From equation (8) the model and regression coefficients are significant at 5% level. Marginal propensity to consume for households in AL-HASA governorate in 2018 was equal to 0.70. Driving saving function, shown by equation (3) for households in AL-HASA governorate during 2018, estimated from equation (8) we obtained the following equation:

$$HS_i = -3120.3 + 0.2971HI_i \quad (9)$$

The break-even level of income which is defined by El-Eraky, (1998) as the poverty line income is estimated using equation (4). As we noted earlier this methodology of estimating the poverty line income is considered by the study as more suitable for high-income countries. Hence, the break-even income (Poverty line) is obtained by the following equation:

$$\{HI|HS = 0\} = 3120.3 / 0.2971 = 10502.39 \quad (10)$$

The above results showed that the poverty line income for households living in AL-HASA governorate in 2018 calculated by assuming no saving was estimated at 10500 Saudi Riyals. Applying the above poverty line to sample data, the percentage of absolute poverty in AL-HASA governorate was estimated at 16.2%.

Estimation of marginal propensity to save

Based on the methodology adopted for poverty line estimation, it was expected that all poor households consume all their income. However, collected data revealed that not all poor households pursue negligible or no saving, instead some poor households enjoy positive saving, other showed negative or no

saving. It could be rationally accepted that non poor households have excess income for saving, however, based on results some poor households sacrificed part of their basic needs for saving, either to pay for durable goods, pay for costly services including health services and going to Al Haj In addition, to raising their standard of living in the future. The above results necessitates the estimation of saving functions for poor and non poor households for testing the significance of the difference in marginal propensity to save for poor and non poor households. Subtracting total consumption expenditure from total income for individual households, we obtained values for monthly saving for all sampled households. Applying ordinary least square method after adding a dummy variable, which commonly used to quantify qualitative variables (1, 5) to saving function in equation (3) to differentiate between between poor and non poor families we obtained the following estimated regression equation;

$$HS_i = -6079.45 + 0.423HI_i + 0.345D_i \quad (11)$$

(-5.9)* (2.1)* (14.4)* $R^2 = 0.41$
 F = 107.2* N = 308

Where:

D_i is a dummy variable = 1 for poor families and 0 otherwise

From equation (11) the model and regression coefficients are significant at 5% level. The t value for the dummy variable indicated significant difference between the marginal propensities to save for poor and non-poor households in AL-HASA governorate. In addition, from equation (11) the marginal propensity to save for poor households exceeded the marginal propensity to save for non-poor households by 0.35, which indicated

that poor households are keener to save. In other words, poor households save around 77 Saudi Riyals out of an increase in income by 100 Saudi Riyals compared to 42 Saudi Riyals saved by non-poor households. The above results necessitates the study of factors affecting the different saving behavior for poor and non-poor households in AL-HASA governorate.

Determinants of consumption behavior for non-poor households : Estimating equation (5) for non- poor household, removing insignificant variables, we obtained results summarized in table (1) below. Results indicated the significance of the model based on Chi-square value, and the included explanatory variables for $S_i=1$ (non-poor households) contributed by 23% in forecasting based on the value of Nagelkerke R Square. In addition, the most important determinants which significantly increase the odds ratio in case of $S_i=1$ (based on Wald statistic) include, household income, size of household, and the type of dwelling. The most important determinant variable is the household size, where an increase of household size by one member will reduce the odds ratio for $S_i=1$ by 71%, indicating a reduction in the probability of saving for non-poor households by 29 %. Next come household income variable, positively affecting household saving by 12.5%. The third determining factor is the type of dwelling where, the probability of saving for households living in rented houses is lower by around 60% compared to households living in their own houses. This result indicated that the value of renting houses is a barrier to households saving for non-poor households.

Table 1. Results of logistic regression model for non-poor families

Variables in the Equation	B	Wald	df	Sig.	Exp(B)
M_i Household size	-.348-	24.576	1	.000	.706
HI_i omeHousehold inc income	.188	12.881	1	.001	1.125
D_i (1) Dwelling type	-.930-	4.757	1	.029	.394
Constant	2.290	24.405	1	.000	19.114
Chi-square = 36.428 Sig. = .000				-2 Log likelihood = 182.728	
Cox & Snell R Square = .132				Nagelkerke R Square = .230	

Source: Author’s calculation based on survey data

Determinants of consumption behavior for poor households: Results of the estimated logistic regression for poor households, using equation (5) ,excluding insignificant variables, are shown in table (2) below. Based on Chi-square statistics the model is significant at 5% level, the included explanatory variables for $S_i=1$ accounted for 41% in forecasting based on the value of Nagelkerke R Square. Based on Wald statistic the significant factors which increase the probability of saving for poor households (increase the odd ratio of $S_i=1$) include, number of working labor, household income, and the level of education for the head of household, respectively. Results indicated that increasing the number of household working labor by one will increase the probability of saving for poor households by 34.6%. This result gives a signal to the importance of securing employment opportunities for mobilization of saving for

poor households. Total household income comes next in importance, where, the probability of increased saving for poor household more than doubled, (159%). The level of household education ranked third where, the probability of saving for households whose head is illiterate or received primary education is below the probability of saving for households headed by graduates and those at the postgraduate levels by 89%, which is high, though not significant. The probability of saving for households, where the head of household received intermediate education is below the probability for households, where, the head of household received, university and postgraduate studies education by around 43%, which is significant at 5% level. The above results assured the importance of education, where, the probability of saving for poor households increased with higher levels of education.

Table 2. Results of logistic regression model for poor families

Variables in the Equation	B	Wald	df	Sig.	Exp(B)
L_i Working labor	.297	7.884	1	.005	1.346
I_i Household income	.953	6.187	1	.011	2.594
E_i		5.213	2	.034	
E (1)	-2.22	.683	1	.408	.109
E (2)	-.567	4.212	1	.040	.567
Constant	1.352	3.410	1	.065	3.866
Chi-square = 18.336 Sig. = .001				-2 Log likelihood = 49.693	
Cox & Snell R Square = .307				Nagelkerke R Square = .413	

Source: Author’s calculation based on survey data

CONCLUSION AND POLICY RECOMMENDATIONS

Marginal propensity to save is higher for poor households compared to non-poor. The value of residential rent in AL-HASA governorate proved to be a significant obstacle to saving for non-poor Households. Creation of job opportunities is of vital importance for mobilization of saving for poor households. The higher the educational level of the head of the household the greater the opportunity of saving for poor households. Based on results, the research recommends adopting mechanisms that reduce the rent prices of

housing to mobilize domestic saving for non-poor households. In addition, application and expansion of Sawada program to create jobs and assure higher levels of income for Saudis, especially poor households is recommended. Moreover, the study recommends encouragement of higher levels of education for poor households to generate higher saving opportunities.

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