

# HOUSEHOLD SAVING BEHAVIOUR IN PAKISTAN



*By*

*Umbreen Iqbal*

*Department of Economics*

*Supervised by: Dr. Zafar Mueen Nasir*

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## **Abstract**

*Savings plays vital role in the growth of economy. It provides funds for investment and hence contributes to economic growth. Unfortunately saving performance of Pakistan is not promising as it should be in case of developing economies. Micro level determinants of household savings have been analyzed in this study. Non linear saving functions suggested by Keynes, Klein and Landau are estimated for Pakistan by using Household Income and Expenditure Survey (HIES) for the year 2007-08. The Ordinary Least Square method of estimation is adopted to analyze the impact of income, age, dependency ratio, education, occupation, employment status, earning status, marital status, gender, home owner ship, presence of secondary earner and region on household saving behavior. Income was found to have important determinant of household savings. Dependency ratio, education level, employment status, marital status and homeownership have negative impact on household savings; where as gender and earning status have positive impact on savings. The impact of various categories of occupation was found insignificant. The value of coefficient of age and age squares proves the life cycle hypothesis for Pakistan. Finally, urban households were found to be low savers as compared to their rural counterparts.*

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# Chapter 1

## Introduction

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Saving is vital macroeconomic variable in the theory of economic growth. It helps in maintaining higher level of investment that contributes to growth of the economy. Its critical role in investment and economic development has also been accepted in growth theories. In Harrod-Domar growth model, saving level and capital output ratio of the economy are major factors affecting growth rate. The Harrod-Domar model says that savings arrange funds for the purposes of investment. His theory was commonly used by developing economies in the past for planning. An example in the Asian context is of Japan and china who has confirmed the relationship between high growth rates and saving rates. According to Neoclassical growth model, savings do not accelerate economic growth in steady state but helps saving rate and level of income in movement towards long run equilibrium. Solow (1956) also recommends that higher saving provide funds for capital accumulation. That will in turn leads towards economic growth.

A statistical overview of Pakistan's saving rate reveals that the saving rate has never been as promising as it should be in the case of a developing economy. It has a lower saving rate as compared to other neighboring countries. In 2010-11 the rate National Saving rate was 13.6 percent of GDP. This is very low if we compare it to other developing economies. For instance, national saving rate of China is three times greater than that of Pakistan; in India it is two times greater than that of Pakistan. Moreover, Pakistan has been experiencing a marked decline in saving rates since the last two decades. Domestic savings declined substantially from 18.1 percent of GDP in 2001-01 to 9.5 percent of GDP in 2010-11. The low saving rates have become a major and constant source of inefficiency of macroeconomic performance of Pakistan<sup>1</sup>. This is a serious and inevitable restraint to a sustainable economic growth.

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<sup>1</sup> see Nasir and khan (1999)

National saving is a combination of both public and private savings. In case of Pakistan, government sector has remained a major dis-saver on account of its large fiscal deficit and external debt burden. The revenue expenditure gap has further widened in the recent year due to emergence of heavy expenditure on flood relief activities, security related expenditures and additional subsidies for the electricity sector. According to economic survey of Pakistan 2010-11, fiscal deficit as a percentage of GDP stood at 5.3 percent during the 2010-11.

Another way is to concentrate on the foreign investor in the form of capital inflows to finance domestic investment needs. However, unfortunately, Pakistan is facing supply shocks especially in energy and food in the aftermath of flood crises that has raised the general price level. Furthermore, security challenges are posing high risks for investment that shatter the confidence of foreign investors. It is also proved by the fact that the investment has declined as compared to the previous years. It was 22.5 percent of GDP in 2006-07 and now recorded to 13.4 percent of GDP in 2010-11. According to Economic Survey (2010-11) this is lowest rate ever in the past four decades. More importantly, borrowing funds to finance domestic investment result in debt accumulation that affects the fiscal and external balance of the economy.

The more efficient way to increase the savings is to channelize the unutilized funds with the households to productive uses. In case of Pakistan household sector's savings has remained major contributor in the national savings accounting approximately three-fourths of national savings. This is significantly high proportion if we consider the meager total national saving rates. Hence, the importance of household savings is undeniably greater on account of its huge share in the aggregate savings.

Despite its dominance in total savings, sufficient work has not been done for analyzing the household saving behavior in Pakistan. The analysis of the household saving behavior is important for several reasons. Firstly, it is the major contributor in total national savings yet its share has been declining with the passage of time. An important concern is to identify the factors responsible for that trend. Secondly, Pakistan is facing a large current account deficit which raises the issue of mobilizing resources. Thirdly the gap



between saving and investment is rising with the passage of time. The saving investment gap is financed through foreign savings which enhances foreign debt. A thorough understanding of saving patterns of households will play vital role in analyzing the current trends of household savings and help to determine the major factors which are influencing household savings in Pakistan. This study, therefore, will help in tracing out the trends, composition and distribution of household savings in Pakistan. The major objectives of the study are as follow;

1. The achievement of a better revelation of the factors which drives household saving in Pakistan.
2. The differences in the household saving pattern of rural and urban areas.
3. The evaluation of the behavior of the house owners towards savings.
4. The comparison of the saving behaviors of people in different decades.

The factors which influence household savings, as examined in this study, will be income of the household head, education, gender and age of household head, employment status of household head, dependency ratio and homeownership of household. The study will use most recent HIES data for the year 2007-08. Three different functional forms of the saving function as proposed by Keynes, Klein (1951), and Landau (1971) respectively will be estimated separately for Pakistan households. The method of estimation will be ordinary least square (OLS) estimation technique. Saving function given by Keynes is based on his Absolute Income Hypothesis which shows linear relationship between saving and income. Where, Klein (1951) and Landau (1971) have suggested the alternative forms to include nonlinearities between income and savings.

The methodology of this study has been based upon previous study made by Nasir (1999). Similar analysis was made by Burney (1992). Followings are the differences between this study and the earlier work perpetrated in this connection. This study will be

based on the latest data of HIES (2007-08). New variables will be added and these new variables are homeownership, marital status and gender.

The study will be structured in the following way. Second part will discuss the brief situation analysis of household savings in Pakistan. Third part will review the related literature. Fourth part will discuss data and methodology, adopted in this study. Fifth part will contain results of present analysis and last part consists of conclusion and policy recommendations.

## Chapter 2

### Literature Review

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In the past many studies have been conducted to analyze the household saving behavior at micro as well macro level. Keeping in view the importance of household savings these studies are reviewed as under.

Matur et.al (2012) investigated policy and non-policy determinants of private savings rates in the Turkish economy by using saving data series for 1980-2008. The study focuses on the interaction variables between public and private savings that could determine potential fiscal policy options to increase domestic savings in Turkey. A reduced form equation was estimated in order to identify the impact of relevant explanatory variables on private savings. The possible determinants included were Public saving rate, Per capita real income, Growth rate of per capita real income, Inflation, Real exchange rate, The ratio of banking credits to the private sector to GDP, The ratio of broad monetary base to GDP, Real interest rates, Old dependency ratio, Young dependency ratio, Urbanization rate, Female and labor force participation rate. The results of the benchmark model estimated found that

Per capita income has positive and significant impact on private saving, where as growth of per capita income has negative impact on it. Dependency ratio and banking credit has a negative impact on private savings. Inflation and real interest rate, which represents uncertainty in the model, has a positive impact on savings due to precautionary saving motives in case of turkey. The results also suggest that an increase in public savings will partially offset private savings. the findings regarding the relationship between fiscal variables and private savings, it was concluded that increasing public savings will result in increasing national savings until and unless the extra saving in the public sector comes from unproductive expenditures. Productive expenditures, which support future development, cannot be considered as a good source of increasing savings, since growth

of the economy that raises level of per capita income plays a very important role for savings.

Rehman et.al (2011) examined the household saving behavior of various income groups of Pakistan. They explored the households' socio economic and demographic factors influencing the saving pattern. The sample constitute of 88, 97 and 107 households from lower, middle and higher income group selected from Multan district using stratified random sampling technique. The study found negative impact of education, children's educational expenditure, family size, liabilities and value of house on saving while positive impact of total dependency rate and income on savings of lower income groups. Savings of middle income group was inversely affected by children's educational expenditures, liabilities, marital status, size of land holdings, and value of house and positively related to total dependency rate and total income. Higher income household's savings increases due to age, spouse participation, total income and size of land holdings and decreases due to age square, educational expenditures and marital status. The marginal propensity to save was reported as 0.43 for lower income group 0.53 for middle income group and 0.64 for higher income group.

Another study by Rehman et.al (2011) explored the rural and urban household saving differentials in Pakistan by using same primary cross sectional data of Multan district. A preliminary level analysis as well as multivariate regression analysis was carried out to pin down the various demographic and socio – economic factors affecting rural and urban savings. The findings of the study indicate that educational expenditures, family size, and value of house changes household savings negatively. Whereas, spouse labor participation, dependency rate, income raises saving level of rural households. Age of household heads and income are major factors determining urban savings. Marginal propensity to save was calculated 0.68 in rural case and 0.55 for urban areas.

Rehman et.al (2010) studied the determinants of households' saving in Pakistan. The factors whose impact was studied were education level, family status, age, region of residence, assets, income, spouse participation, total dependency rate and educational expenditures etc. Sample was collected from Multan district by field survey 2009-10 drawn through stratified random sampling technique. It contained information about rural

and urban households. Ordinary Least Square method was used for estimation. It is reported that total income of the household head, dependency rate, spouse participation, and size of landholdings have positive impact on savings. Whereas the education of head, educational expenditures, family size, marital status, liabilities to be paid and value of house had negative influence saving level of households. MPS value was recorded 0.63 for Multan district.

Prasad (2010) investigated reasons for remarkable increase in china's household saving rate during 1990's and a U-shaped age saving profile. The transition of Chinese economy from a closed to an open economy and from planned to a more market oriented economy has resulted in increased income uncertainty. Moreover china has also undergone through significant policy changes including pension reforms. The study analyzed the role of income uncertainty and pension reforms in rising household saving and age saving profile. It used panel data from the China Health and Nutrition Survey (CHNS) covering the period 1989-2006. The sample focused on the urban sub-sample of the survey involving households with heads having age between 25 and 59. A simple regression was run firstly, for each year regressing log income on region dummies, age, education level of the household head, number of income earners in the household, household size, and dummies for the employment and marriage status of the household head.. The residual of this regression was used to estimate two types of variances in income i.e., the permanent and the transitory income shock. The estimated values showed a relative stable trend in permanent income shock while an upward trend in transitory income shock.

In order to quantify the effect of rise in uncertainty and pension reforms on household savings the author undertook a calibration of a buffer stock model with actual predicted values. This provided a quantitative measure of how the increase in the variance of transitory shocks to household income influenced saving among the younger households, while changes in pension influenced the savings of the older households.

The saving age profile was constructed by simulating the model for 5,000 households and averaging their saving rates at each age. The saving rates showed a U-shaped pattern when plotted against age. That was consistent with the life cycle model. The plot of the change in the saving rate after the shock as a function of the age of household head showed rising savings of younger household heads. The results suggested that if a

household head begin working life at age 25 already under the higher uncertainty regime, that household would save about 4.5 percent more than older heads. Onwards the difference in saving rates relative to the baseline regime tends to decline with age. After the initial jump the household with older head save less for instance the household head with age forty on saves 2.5 percent point more than the elder household head. The plot of change in saving rates after the pension reform as a function of age demonstrated that the change in the replacement ratio induced a substantial increase in savings, particularly for older household heads nearing retirement. The increase in the saving rate relative to the pre-reform baseline was less than 1 percent point for a household head in early thirties; it was 5 percent points for those with a household head in mid-forties and 8 percent points for households with heads in retirement age. Hence both these effects have led an increasing in household saving in china.

Salotti (2010) paper investigated the determinants of aggregate household savings using panel data of 18 Developed Countries for the period 1980-2005. He merges two different strands of literature: one consumption and wealth effect and the other aggregate private saving theory. The main explanatory variables of the model were two measures of household wealth i.e., financial wealth and tangible wealth. The other variables used in model were government savings, two different dependency ratios, inflation, and the long-term interest rate and liquidity constraints. Five different models with the fixed effect estimator were estimated. The first model had only two measures of wealth as explanatory variables, while the others contain more to check the significance of other variables. The fully modified ordinary least square FMOLS technique was utilized to estimate a long run savings relationship.

The results found a negative impact of wealth on household savings. When government savings and population dependency ratios were included in the model, tangible wealth affect household savings very weakly. A similar effect was not found for financial wealth. However, the results were ambiguous on the significance and on the sign of the effects of government savings, inflation, interest rate and population changes.

In case of US data wealth effect was found negative in case of tangible/housing wealth. Salotti (2010) concluded that the boom in the stock and the real estate market are not

responsible for the decline in private savings of U.S. households. The government savings and population changes are responsible for decline of saving in U.S. during the past two decades. This finding was against the past empirical literature.

Abid and Ghulam (2010) analyzed the saving behavior of rural and urban households residing in district Muzaffarabad. The empirical model contains the income, family size locality and education on saving. The sample contained 120 households, 60 from rural households and 60 from urban households. Questionnaire method was used for collection of data. The results of economic model revealed the truth the coefficient of income is highly significant and positive. The family size showed a negative and significant impact on savings. Education effect savings negatively but its coefficient was insignificant. Further results showed that locality and saving have positive impact on household saving behavior this means that household living rural areas are likely to save more due to low consumption. On the bases of their study Abid and Ghulam (2010) recommended government to create job opportunities and subsidize general price level and education facilities in the district of Muzaffarabad.

Kibet et al. (2009) studied the saving behavior of households of teachers, entrepreneurs and farmers in Kenya using microeconomic approach. The sample constitute of household of 359 teachers, entrepreneurs and farmers of rural parts of Nakuru District. Nakuru district was used for analysis. The cross-sectional primary data was collected by interview method and the least square estimation technique was adopted to pin down the major determinants of household savings in Kenya.

Saving functions were estimated separately for households of teachers, entrepreneurs, farmers and for overall households. The variables included in the regression were income, education level, occupation, dependency ratio, age and gender of the respondent, rate of interest on saving, transport costs to and from financial institutions of saving, service charges by financial institutions, and credit access. Saving was considered as an element/item in the household budget rather than as a residual. The income variable in the study was monthly disposable income of the households. Dependency ratio was defined as the ratio of unemployed members of the household over the household size.

Credit access was defined as the average monthly expenditure on loan repayment. The results found that saving varied through different occupations. The estimated coefficient of the dummy for business profession in the saving function for overall households showed that the businessmen households save greater than that of farmers and teachers. The marginal propensity to save was 0.06 in the case of teachers and 0.25 in the case of businessmen and averaged 0.15 for all households. It shows that income positively affect saving levels. The dependency ratio and age negatively impact on savings. Savings of teachers and businessmen were found strongly affected by age. The coefficient of credit access in all households was negative were as, variable for transportation cost was negative only in case of teachers. All other variables were insignificant. Overall it was seen that income, gender, education and different occupation will increase amount of savings while credit access, age, and dependency ratio decreases household saving.

Khalekh (2009) analyzed the microeconomic factors affecting household saving behavior in Morocco by using CBMS data (Community Based Monitoring System). Household saving functions were estimated to investigate households' savings to fluctuations in income, monetary or non-monetary wealth and socio-demographic variables in urban and rural areas. The variables included in the saving functions were disposable income, gender, age, household size, employed and unemployed in the household, ownership of livestock in case of rural household, and ownership of land in case of urban household. A reduced form of saving functions was estimated separately for urban and rural households in Morocco. The results of the study confirmed the strong role of income in determining household saving level. The coefficient of household size was significant and negative only in case of urban households in Morocco. That shows that an addition in the household will likely to reduce household savings. The negative sign of the coefficient of gender of household head suggests that Moroccan women save more than men. In case of wealth effect, the study didn't found any significant results which shows that land or other real estate holdings do not change saving pattern of households. The data also did not support life cycle hypothesis because the coefficients of age were not significant.



The heterogeneity in the household's socio-economic characteristics leads to heterogeneity in the household saving behavior with respect to two dimensions i.e., how much households save and how they plan their savings. The study done by Schunk (2009) tried to link the heterogeneity in the saving behavior retirement motive, precautionary motive, bequest motive, and house motive. For the purpose, the relationship of saving motives with saving rates and saving motives with saving type was estimated. To identify the importance of various motives of savings the study used the SAVE survey dataset 2003 for Germany. The heads of households were directly asked about their savings for different motives and their plans to save. The distribution of answer found precautionary saving and retirement savings as the most important saving motive as compared to bequest and housing motives. While the statistics for saving type found a very large proportion of households engaged in planned fixed savings and their average saving rate was also highest. The empirical analysis consisted estimation of saving function where annual household saving rate was regressed on household income, financial wealth, age and gender, number of children, homeownership, education level and job characters. The variable that captures the self assessed risk attitude of household head and expectations about future income growth was also included in the regression. Finally measures of four saving motives and interactive dummies of motives with age were added in the model. The coefficients of these interaction dummies measured the change in the saving rate in percentage points. Censored least absolute deviations (CLAD) estimator technique was used to estimate the coefficients. The age, education level, job characteristics and home ownership coefficient were statistically significant. The results found higher savings for households head with higher education and lower savings for unemployed. The coefficient of home ownership was positive indicating that households have higher savings if they own their house as compared to those who are not homeowners.

Gonzalez and Ozcan (2008) investigated the effect of rise in risk of marriage instability on saving of married households of Ireland. The data was taken from European Commission Household Panel Survey (1994-2001). The study analyzed the impact of legalization of divorce in Ireland in 1996 on the likelihood of marital dissolution. A

difference-in-differences approach was used to compare groups of married couples in other European countries (not affected by the law change), and the Irish families. It was found that the non-religious family and larger family risk brings inverse impression on saving behavior after the law of legalization of divorce in Ireland. These households save more due to risk of marital disintegration showing precautionary motive for saving.

Horioka (2007) evaluated the reasons for Japanese high saving rates in the past and sudden decline in it. The Japan's household savings temporarily rose in 1960s and 1970s but started declining unusually after 1990's. It was found that these high rates of savings were due economic, demographic, and institutional factors, which include high growth rate of income, the low wealth holdings, the unavailability of consumer credit, and the young age structure of the population, tax breaks for saving and low level of public pension benefits. Also the rapid aging of Japan's population had played the most important role in decline of household saving.

Kulikov (2007) examined the determinants of household saving in a transition economy Estonia using micro data for the year 2002 to 2005. The study focused on the impact of income, wealth and financial exposure on household savings. The Ordinary Least Squares estimation technique was used to estimate the saving function.

Saving rate was calculated by differencing log of consumption and log of income. The saving rate was regressed on variables capturing income and income variability, various measures of wealth, proxies for credit access, household characteristics including gender, age, education, employment status and ethnicity as well as the regional dummies.

Income was decomposed into regular monthly income and transitory income comprising that part of income that the household deems to be temporary for the interview month. Various categories of financial wealth possessed by households included debt servicing payments, liquidity level, saving deposits, investments in financial securities, household's loans, household's lease obligations and other types of financial assets. The wealth measures included dummies for the ownership of real estate, possession of durable goods (cars, fridge, and dishwasher). The estimated results found both variables of income significant however the temporary income shock effects were found substantially larger than regular income. The coefficients labor market status of a household were statistically

insignificant suggesting that labor market affiliation i.e., the household member is inactive in labor force or unemployed, did not effect the decision to save. The measures of non-financial assets ownership of home and other real estate were also found statistically significant. The possession of durable goods likes cars, fridge and dishwasher had a negative relationship with savings. The estimated results for financial exposure of households were somewhat contradictory to the expectations. The coefficient of debt servicing was negative and significant implying that greater the debt servicing burden on household lesser is their savings. The coefficient for liquidity access indices of deposits and financial assets, household's debt and lease obligations were found negative. The age variables were statistically significant implying U-shaped saving pattern. Negative coefficient of gender showed that woman save less man. The effect of level of the household's education was negative, i.e., higher the level of education lesser the saving. This indicated due to education future income become less uncertain that reduces precautionary savings.

Orbeta Jr. (2006) examined the relationship between household savings, family size and number of children in household by using cross sectional data of Annual Poverty Indicator Survey (APIS) for Philippines. Saving was defined as a difference between total income and total expenditures. The study found the negative impact of number of children on household savings on average. This finding was more prominent for poorer households. It is suggested that as children are old-age security for parents there considered as alternative to savings. Whereas, at aggregate level increase in the number of children in the economy will add to dependency burden that results in shortfall of savings. The study also found that per capita income, availability of banking institutions positively affects the savings rates. The marginal propensity to save ranged from 0.52 to 0.59 depending on different definitions of saving.

Hasnain et.al (2006) investigated the behavior of household saving by using co integration technique and error correction model to determine the long run and short run relationships among the determinants of household saving. The time-series data for Pakistan (1972-2003) was used. Determinants of household saving were categorized as

demographic, growth and policy variables. The population structure was identified as a possible demographic variable affecting saving behavior. Population structure includes both the young age and old age dependency ratio. It was shown that dependency had exerted significant negative impact on household saving rate in Pakistan. Changes in savings due to dependency were result of high health expenditure, education expenditures and retirement consumption. Moreover, it was found that young dependency coefficient was larger as compared to old dependency coefficient which suggests that there is urgent need of control over population growth in Pakistan.

The income and growth variables were significant and positive. Similarly, the real interest rate also had positive impact on savings. However high and significant value of coefficient of real interest rates showed that substitution effect dominates income effect in Pakistan. The inverse relationship between public and household saving indicating crowding out effect of public saving on private saving but in a less proportion. Inflation rate also impede household savings in Pakistan.

Grace (2006) examined the pattern and determinants of household saving in Philippines. He documented household saving patterns across different regions and income categories by using survey data for the years 1985, 1988, 1991, 1994, 1997, 2000, and 2003. A downward trend was observed in Philippines' household saving since 1988. Moreover there was high relative variability in household saving. For example in 2003, the coefficient of variation was 810 percent indicating high variation in household savings.

The possible determinants of household saving identified were demographics, level of education, female labor force participation, longevity, growth, inflation, presence of financial infrastructure and remittances. The data set used was a panel data with 6 time periods corresponding to the above mentioned years of survey data and 14 cross-sectional units' equivalent to the 14 regions of Philippines. The method of estimation was Generalized Least Square estimation and Instrumental variable techniques.

The income and education level were found to have positive and significant effects on saving rate. The percentage of income from abroad also had positive and significant effect on the saving rate, while the female labor force participation and measure of longevity were found insignificant.

The results found an important role of country's population dynamics in determining aggregate household saving rate. The coefficients of two demographic variables were significant but bears opposite signs. The young dependency rate had negative while elderly dependency rate had a positive sign. The positive sign of elderly dependency rate depicted that the older population still saves, contrary to the expectation of the lifecycle model. Education and remittances were also found vital to increasing aggregate household saving. In the model 2 where the inflation rate was incorporated into the regression and the two insignificant variables i.e., female labor force participation and life expectancy were excluded from the model 1. The results showed the insignificant role of inflation rate in determining the aggregate saving rate.

Ahmad and Asghar (2004) analyzed the household saving behavior in Pakistan using micro data of Household Integrated Economic Survey 1998-99. Three separate saving functions for Pakistan, rural and urban household savings were estimated. The variables included were income, wealth, dependency ratio, employment status, age, sex and education. The Ordinary Least Square Method was used to estimate the saving functions. The Sample consists of 8933 rural households and 5374 of urban households. It was reported that that income, employment status, square of age and sex of household head positively affect saving rates while wealth, dependency ratio, education levels and age of household head had negative effect on both rural and urban households. The most significant role was played by household's income in determining savings. MPS was 0.88 in case of overall Pakistan's data, 0.79 in urban Pakistan, and 0.940 in rural Pakistan. Furthermore the results suggested that urban households save less as compared to rural households.

Sung (2003) tested the life cycle hypothesis of saving and effect of income growth in Korea using cross-age pooled time series data of households for the period 1977-2002. The econometric models took into consideration determinants of savings from life cycle hypothesis and the others including loan market imperfections and income growth variables. In the recent past Korea has experienced a rapid change in its population which has resulted in micro as well as macro economic consequences related to savings. The

lifetime expectancy and the increase in the elderly population would affect savings positively and negatively. In the credit market Korean economy is facing number of restriction regarding the consumer access to credit and mortgage loans. These restrictions and imperfections in the credit market would raise household savings. In the theoretical specification of life cycle income hypothesis of the individual household saving rate, the effect of rise in the growth rate of income on the saving rate depends on the expectations formed. If the household form forward looking expectations the rise in the growth of income will effect saving rate negatively, the growth rate effect will be positive if adoptive expectations are formed, and no growth effect in case of static expectations.

In the empirical analysis the real saving per unit of household real disposable income was regressed on years of life time horizon of the household, real disposable income and its growth rate, the household net worth, real loans outstanding of the commercial banks to the individual sector of the economy, D24 dummy variable for 24 years and below age group, and D55 dummy variable for 55 year and above age group.

Out standing loans of the commercial banks to the household sector as a proportion of gross domestic product was used as a proxy to encounter imperfections in the consumer credit market. D24 and D55 represent two different age intervals i.e., the young dependents and old aged dependents. According to life cycle hypothesis both dependency ratios were expected to have negative sign. The life time horizon was calculated as the difference between average life time expectancy and the mean age of the individual age group, while the household net worth is the nominal net worth of the individual sector divided by the GDP deflator.

The estimated coefficients for all variables were highly significant except for ratio of bank loan to GDP. The coefficient of life time horizon was positive and significant indicating that longer life time horizon raises savings implying higher savings by young than the old aged households. The coefficient of growth rate of real disposable income was negative this suggest that Korean consumers form forward looking expectations meaning Koreans have optimistic view about the future and hence have lowered savings.. The two demographic dummies were statistically significant, however the young dependency D24 was found to have negative effect on saving rate while old dependency had positive effect. To estimate the adjustment of the saving rate one period lag of saving

was introduced in the model. The coefficient estimate of lag saving was 0.44 indicating the slow saving adjustments.

Prema-Chandra (2003) examined the reasons for changes in the household savings in Taiwan. The life cycle model was tested by using variables that are population dynamics, disposable income, social security contributions, and credit availability and financial reforms, inflation and real interest rate, corporate and government savings. The population variables included both young and old dependency ratio. The annual data on the variables comprising the years from 1952-99 was compiled from various issues of the Taiwan Statistical Data Book.

The augmented Dicky-Fuller test and the Kwiatkowski-Phillips-Schmidt-shin (KPSS) tests were firstly applied to test the stationarity of the data. According to the test results some variables under consideration were found to be non stationary, more over all of them did not follow same order of integration resulted in spurious relationships. To achieve stationarity, process of differencing the non-stationary variables was adopted. The unrestricted error correction modeling procedures was used involving lag variables. Afterwards simple OLS procedure was followed to show the direction and strength of relationship. The result found vital role of income growth in determining saving performance. Age, social security contributions, and the availability of institutional credit for households were also significant. Public savings crowd out private saving but less proportionally. The effect of real interest rate was positive but its magnitude of effect was modest. The impact of rate of inflation was significant and negative.

Gibson (2001) examined the household saving behavior in New Zealand using household expenditure survey (HES) over the period 1984-1998. The tabulation method was used to explore the basic pattern of household saving. A regression analysis was also carried out to investigate the effect of basic characteristics of the household on saving including family type, dwelling tenure, ethnicity, labor market status, gender and age. The cohort effects were also introduced to capture the effect of macroeconomic shocks which effect employment or earnings that may alter saving rate.

The saving rates reported in the study showed a hump shaped life cycle pattern. The statistics showed that a very large share of total household savings is coming from rich households of the sample. Absolute savings were negative only for the lower earning group. Female headed households were found to have low saving rates because they represent the old category of population or are sole parents. Households in the labor force had high savings than those who were not in the labor force. No differences were observed in savings across different ethnicity. The distribution of household saving is becoming more unequal with time. The Lorenz curve plotted indicated increased inequality in income and savings with the passage of time.

To study the life cycle pattern of saving income and consumption age, cohort and year effects were separated by imposing restrictions on the data. The estimated age effects showed a life cycle trend in consumption and income. The average consumption reaches its peak by the time household head is in the age 40, however income tends to peak latter. Consequently saving rates follow the same hump shaped track. It tends to peak after the household head reaches age 50 and then declines in the age of 60's but remains above zero. A linear trend was observed in both consumption and income across different cohorts. At any given age the consumption level appeared to be higher for the households whose heads born in the earlier years. The cohort effect in the mean household income also roused with time. For example household head in age 20's in 1984 had real income 2 percent higher than those household whose head are in its 40's.

The age and cohort effects in income and consumption were also plotted for population subgroups and ethnicity. The age profile of consumption appeared to closely following age profile of income for female headed households. Whereas, for male headed households' consumption and income tracks appeared to detach each another. Moreover female headed households exhibit less pronounced rise than male headed households in saving rates in the age 40-50. The decline in the real income and saving rates for the households in the age 40-55 in 1984 was observed for both male and female headed households. This cohort effect was stronger for female headed households. The plots of age and cohort effects in consumption and income according to ethnicity and employment appeared to follow same hump shaped tracks, however due to problems in the data and high year to year variability it was suggested to capture these effects in



intercept rather than the slopes of age saving profile. Using different definitions of savings the basic results remained the same.

The time effects in the mean saving rate did not alter the basic shape of age profile of saving rate while cohort effects were more pronounced. The plot of relationship of these time effects with real growth rate, government saving rate, unemployment rate and real interest rate showed the effect of macroeconomic shocks on saving rates. Statistically significant negative relationship was observed with real growth rate and government savings. Hence unpredictable shocks that raises growth rate or raises government saving will reduce household savings.

Browning (2000) developed a behavior model of household savings and portfolio choices to capture intra household decision making. The theoretical modeling was based on the fact that in a married household with forward looking member, wives are typically more inclined towards saving than their counterparts. The base line model of the study accounted the possibility of this difference between husband and wife preferences for saving. Based on the number of assumptions of the model it was affirmed that a household saving decisions depends on the relative incomes of the two persons. This outcome is efficient even in a non corporative framework. Furthermore the reaction of the household saving to a change in household income depends on who receive the extra income. It implies that the marginal propensity to save would depend on whether wife or husband is receiving the extra income. As well as like relative income, saving decisions would also depend on the relative ages of the two partners. A disagreement between husband and wife about how much to save would be expected due to differences in survival probabilities. The above model was based on the assumption that the households can carry funds to future only by saving. However, in the second variant of the model this assumption was dropped that presented the implication for household saving decisions and portfolio choices with state pension or annuities and insurance. The introduction of state pension increases second period consumption and make wives better off. In presence of annuity and insurance the behavioral responses of husband and wife will be different. The husband will choose to contribute in annuity since it has a higher effective rate of return than private saving or insurance. Conversely, wife will never choose to

contribute to annuity, although it has the same rate of return for her but some uncertainty is attached to it so she will prefer certain second-period income.

Kraay (2000) tried to provide empirical evidence for intertemporal considerations in explaining inter-provincial variation in household saving in China. He looked into that how the expectations of future income growth, future income uncertainty and subsistence consumption influence saving patterns of urban and rural households. He used panel data of Chinese provinces from china's household survey for the period 1978-83 and 1984-89. The result of the regression supports the fact that the higher expected future income will decrease current saving rates. Generally people raise their current consumption in anticipation of higher income in future that reduces savings. The future income uncertainty did not appear to raise current saving rates, as it was expected according to precautionary saving motivations. As households near to the subsistence level have less ability to save, therefore share of food expenditure in total consumption will negatively affect saving rates. This was found significant in case of rural households. The dependency ratio defined as the ratio of employed to the total population was negative and significant.

Harris (1999) analyzed the saving behavior in Australia. He used the data from quarterly sample survey for the years from 1994 to 1999 comprising 17,000 households. The factors whose impact examined were household income, age of respondent, rate of interest, number of children and wealth. Income was grouped into 10,000 \$ per annum and above, 21,000 \$ per annum and above and so on. Similarly age was also grouped into age groups. Interest rate was the interest offered by commercial banks on savings. Home ownership was used as one of the proxy for wealth. The other proxy for wealth was household's asset holdings of shares, bonds, or investment properties etc. The probit model was estimated by maximum likelihood method to investigate the nature of relationship of saving ratios with the other explanatory variables. The data on saving ratios were collected by interview from the respondents. The question asked was "which one of the following statement better explains your present situation of your household". The available options ranged from 0 to 4 and were running into debt, have to draw

savings, managing to meet ends on our income, saving little and saving a lot. Their answers were recorded as the proxy for saving ratios. The result found income to be the most important determinant of income in Australia. The coefficient of the gender variable was also positive and significant indicating that men have higher savings than women. The interest rate was found to have insignificant effect on saving ratios. In order to calculate relative income, the peer group of the respondent was proxied using the median income level for the respondent occupation. The result on distribution of income showed that coefficient on “relative high income” was significant and positive indicating that this group represents the “saving a lot” category. The coefficient on relative low income was insignificant this suggested that the low relative income group would have balance their budget on average with dissaving as a temporary phenomenon. The coefficient of the precautionary variable ‘optimism’ was negative and significant indicating that if individuals are pessimistic about their future financial condition they are likely to be saving more, proving the precautionary saving hypothesis for Australia.

Wakabayashi (1999) investigated the role of demographic structure in determining household savings in China. By using data from the China statistical Year books for 1993-98 and applying random effects generalized least square (GLS) method of estimation the study found the negative impact of dependency on savings. The effect of elderly dependency ratio was far larger than that of the youth dependency ratio. Following these results the study predicts that the household savings would start decreasing after around 2025 in China due to the demographic changes. The demographic change is due to the increase in number of elderly population because of the aging process and decrease in the youth dependency ratio because of one child policy in china. The study used two model specifications of the saving functions, the absolute income model (AIM) and permanent income model (PIM). PIM specification further disaggregated income into permanent and transitory components. The permanent income was defined as a mean value of past three year’s current income, while transitory income was defined as current disposable income minus permanent income. The AIM and PIM models were estimated separately for urban and rural areas and found negative impact of demography on savings. The study also calculated marginal propensity to save MPS out

of various kinds of income by estimating AIM and PIM models with and without the dependency variables. That helped to find the strength of relationship between income and saving. When demography was statistically controlled the marginal propensities to save was very small as compared to when demography was made explicit. It shows strong and significant relationship between income and savings.

Horioka, Charles Yuji & Watanabe (1997) analyzed the saving behavior of households in Japan using the micro data. The study tried to explore the main motive for savings households. He categorized these motives into three groups, i.e., the life cycle motive, the precautionary motive and the bequest motive. The life cycle motive and precautionary motives are consistent with the life cycle models and the bequest motive is consistent with dynasty models of saving according to him. In order to analyze whether the life cycle model or the dynasty model is more applicable for the Japanese households, he estimated the contribution of net saving for each of the motive for saving. It would enable to recognize the relative importance of each motive for household savings. Using survey on the Financial Asset Choice of Households collected by Government of Japan, he estimated the current amount of wealth i.e., financial assets, the wealth targets and the number of years for realization of each motive. The values of amount of wealth, wealth targets for future and years of realization were high in case of retirement motive, housing and bequest motives. The average dissaving was estimated to be highest for the housing motive. The high estimates of net saving for retirement motive and the two precautionary motives confirms that life-cycle model is highly applicable in case of Japanese economy.

Callen (1997) applied cross-section and panel estimation techniques to the data of 21 OECD countries to investigate the determinants of household saving. The particular focus of the paper was to investigate the impact of public policy on household saving behavior. Variables capturing tax structure, social security and welfare system were taken as explanatory variables. Specifically, the variables included: the ratio of the general government surplus to GDP, the ratio of corporate saving to GDP, growth rate of household disposable income, unemployment rate, real interest rate, inflation rate, old dependency ratio, share of direct and indirect taxes in total tax revenue, government

transfers to the household sector and proxy for financial deregulation. The empirical results indicate that public and corporate saving, growth, and demographics are all important determinants of household saving, while inflation, unemployment, the real interest rate, and financial deregulation play minor in determining household savings.

Tax and welfare systems significantly affect household saving. Specifically, a higher reliance on direct income taxes as opposed to indirect taxes appears to be associated with lower saving, while higher government transfers to households also reduces saving. The study thus suggested that the public policy have important role in household's saving decision, not only through the level of public saving itself, but also through the tax and welfare systems.

Kelly (1996) investigated empirical relationship between population growths (demographic change) and savings by considering two saving models, the Leff (1969) and Mason (1982) life cycle model. The OLS estimation technique was used on cross section data for 88 countries separately for three decades, 1960's 1970's and 1980's. Panel estimates were also explored by using pooled and fixed effect models. The Leff model included coefficients of percapita income; growth rate of percapita income used as life cycle proxy, youth and aged dependency rates. The estimated coefficients for life cycle proxy and percapita income were statistically significant, while fairly weak demographic effects were found over time. In the 1960s and 1970s dependency coefficients were small and statistically insignificant. In 1980s, both youth and aged dependency coefficients were negative

Browning and Lusardi (1996) made a detailed review of household saving literature. Eight motives for savings identified by Keynes (1936) have been reported in the study that include; precautionary motive, life cycle motive, intertemporal substitution motive, improvement motive, independence, enterprise motive, bequest motive and lastly the down payment motive. Through a complete analysis of saving literature it was found there is significant high heterogeneity in the motives for savings. Everyone behave differently from other or even differently to him also, therefore a single explanation will not be enough for all members. Secondly in the presence of well developed theory of

intertemporal consumption, defining saving as residual between income and consumption will be inappropriate. Lastly Browning and Lusardi (1996) enlists five major determinants of household savings that are discount factor, demographic factors, real interest rate, uncertainty of consumption expenditures and liquidity constraint.

The Browning and Lusardi (1996) survey has also emphasized that it is difficult to set up the motivations behind savings. For example celebrated life-cycle hypothesis, provides evidence for continues savings till the age of retirement. Similarly, empirical literature has shown that with higher income households save more. But these hypotheses fail to find the motives behind savings. In this regard Standard Optimizing Model is more powerful framework. Even though the Certainty Equivalence model CEQ model is incomplete in capturing all the motives. It put in lifecycle, intertemporal substitution and bequest motives for saving, while the down payment motives and improvement motive are ruled out by the assumptions of additive utility and perfect capital market. The more general standard model adds in the precautionary motive, which has been the focus of much of the theoretical work. The Browning and Lusardi (1996) survey also emphasized that one of the great virtues of the standard model is to integrate short run and long run consumption decisions in a coherent way. Given the standard additive model assumptions one can use standard variational methods to derive the Euler equation for optimal allocation between two periods. Thus the parameters that enter the Euler equation for the determination of consumption changes from period to period are the same as those that govern the allocation of resources between the present and the distant future. The researcher suggests that one should estimate jointly Euler equations and long-run consumption functions to parameterize standard models. But this is analytically and computationally infeasible. A promising intermediate step is simulation models with parameters chosen either by taking values from other or from Euler equation estimates. Finally, dropping the "additive" assumptions we can incorporate habits and imperfections in the capital market. Thus the standard model provides a powerful and flexible framework.

Husain (1996) examined the short run as well as long-run saving behavior in Pakistan. Engle-Granger cointegration tests were employed to obtain long-run movements in the

private saving rate and its determinants, where as Error Correction method were used to confine the short run behavior of saving rates. The potential determinants of private savings; growth rate of disposable income, demographic structure, interest rates, wealth, and public sector debt were included in the model.

The impact of financial development and deepening on saving performance of Pakistan was also analyzed. It was found that both short run as well as long run saving rates were significantly affected by these variables. However, disposable income resulted in increase in long-run saving rates only, whereas income growth raises savings only in short run. The demographics did not influence the long-run saving rate in Pakistan.

Muradoglu (1996) examined the differences in household savings behavior from cross-country perspective. The sample covered the period between 1975 to 1989 for nineteen developed and eleven industrial countries. The factors whose impact on household saving examined were household disposable income, trend per capita household income, deviations from trend per capita income, growth rate of the trend per capita income, real interest rate, inflation rate, wealth, and foreign savings and dependency ratio. The data on household savings was taken from UN System of National Accounts. Since this data set used the same definition for calculating household savings for all countries it is thus comparable across countries. The data on disposable income was also obtained from UN system of nation accounts while other variables were collected from International Financial Statistics (IFS). A reduced-form behavioral function of household saving rate was estimated for all countries. The model was estimated by ordinary least square method with and without country dummies. The countries were first pooled in one group and then disaggregated into developed and developing countries to know the differences in behavior of different groups of economies. When countries were divided into two subgroups of developed and industrial countries it was found that the value of independent variables rises significantly, suggesting that the household savings behavior of different groups of economies is not identical.

The important results of fixed effect model were that the income growth and inflation rate are significant variable in determining saving patterns. Surprisingly, income variable was positive only in case of developed economies while negative for developing countries.

This finding shows that in developing economies as income rises household rose their consumption that lessens the amount of income saved. The effect of domestic real interest rates was negative for industrial countries. For developing countries the results showed no definite relationship. Similarly the effect of inflation rate was also negative for industrial countries, while there was no significant effect was found in case of developing countries. On the other hand dependency ratio showed a negative effect on savings for developing countries while it did not make a significant contribution for industrial countries where age composition is relatively stable. The coefficient of foreign savings for both industrial and developing countries was insignificant.

Azhar (1995) reported the facts about the saving behavior of the rural households of Pakistan using information of farm and nonfarm households of Punjab. The data was taken from the Punjab Economic Research Institute, Lahore. The sample was composed of small, medium and large farm households. Data on the savings of rural households revealed that the large, medium as well small farmers had very high saving rates. This result was compared with the Taiwan, Japan, South Korea, Malaysia and India, The evidence from these economies too supports the findings of Pakistan. According to the author, though these saving rates are high among rural households, but small in magnitude that are scattered in millions of small savers. And mostly the savings are in the form of jewelry, cattle, grain and some other commodity which is economically unproductive. He suggests that the prime need is therefore to provide outlets like banking facilities in the rural areas for mobilization of rural savings that can reduce rural savings.

Engelhardt (1995) examined the link between real housing capital gains due to the house price appreciation and saving behavior of home owners. The analysis used household asset and debt data to construct real changes in household wealth. The sample of home owning households from the PSID in 1984 was used. The study expected an offset in real gains in housing through the reduction in non housing saving following the life cycle hypothesis. However the empirical results found asymmetric response in saving to both total and unanticipated real housing capital gains. The households that have capital gains



did not alter their saving decisions. While savings offsets came from households that experience capital losses.

The empirical analysis used two measures of saving, the active saving and the passive saving. Active saving was defined as the portion of income that is not consumed and used to purchase assets and passive saving reflects the increases in real wealth due to real capital gains on existing assets that is not consumed. Both measures of savings were used in regression as the dependent variable. The explanatory variables were real housing capital gains, income, household head's age, employment status, marital status, number of children and education. The estimation results revealed a negative offset in household saving as a result of real housing capital gains. The mean regression results show that if real housing capital increases by 1 percent saving reduces by 14.2 percent. When passive saving was used as dependent variable the results suggests that for 1 percent increase in real housing capital gains there is a 1 percent increase in real wealth, but that result was insignificant suggesting that the negative offset exists only when active saving was used.

Siddique and Siddique (1993) explored household saving behavior at a disaggregated level for the years 1969 to 1988. The period of analysis were 1968-1969, 1969-1970, 1970-1971, 1979, 1984-1985, 1986-1987, 1987-1988. The study covered the urban and rural areas and incorporate economic and demographic variables. The three saving functions suggested by Keynes, Kelvin and Landau were estimated by using four different definitions of household savings. The definitions applied were S1 i.e., surplus/deficit reported in the consumer budget; S2 is S1 plus unconsumed goods; S3 includes S1 and expenditure on education and finally S4 includes S1, unconsumed goods, purchase of jewelry and assets and total durable. Saving functions were estimated for each component separately and jointly, and both. At disaggregated level each component of saving responds differently to changes in the determinants of the saving. According to the results of the study income is the major determinant of the household savings. The effect of dependency ratio was also strong and negative on saving particularly in the year 1988. Accordingly the study suggests that there is an urgent need for the appropriate population policy. An interesting aspect of the study was that its results did not support the presence of the non-linearity with respect to the income. The marginal propensity to

save varies between  $-0.008$  (S1) and  $0.455$  (S4) for 1969 and between  $0.02$  (S1) and  $0.234$  (S4) for 1988. This shows that the marginal propensity to save is very sensitive to the definition of the saving. However the results suggest that the MPS had reduced over the time of study, confirming that the variation in the saving had declined over time.

Iqbal (1993) used time series data for the period 1969-70 to 1989-90 to estimate household, corporate and public saving functions. Household saving function included growth rate of GDP, percapita income, domestic rate of interest bank credit to private sector, export earnings, worker remittances, expected inflation dependency ratio, and foreign capital inflows. The empirical estimation oh household saving found positive relationship between real interest rate and savings. The coefficient of bank credit was negative and significant that implies that that availability of bank credits discourages savings. Coefficient of expected inflation showed that high level of inflation in future will force the households to substitute future consumption with present consumption resulting in low savings. Impact of remittances was found positive and significant. Important variables in case f corporate savings were GNP growth, foreign capital inflows real interest rate, wage rate, profitability terms of trade expected inflation rate, export earnings and nationalization measures. For public savings, per capita income, domestic transfers, net foreign capital inflows, foreign interest rate, terms of trade, debt servicing and private capital out flows were found important variables.

Burney and Khan (1992) analyzed the household savings behavior, using micro level data of the HIES for the year 1984-85. The study examined the impact of income of the household along with the various socio-economic and demographic factors. The socio-economic and demographic variables included were; dependency ratio, age, education, employment status, earning status, occupation and the presence of secondary earner in the household. Unlike Siddique and Siddique (1993) this estimated saving functions for urban and rural areas separately. The study has used five different definitions of savings. Three different functional forms of saving functions proposed by Keynes, Klein and Landau were estimated separately for the urban and the rural households using the ordinary least Square (OLS) estimation technique. It was found that all the variables have

significant high values in case of rural households. Besides household income, the dependency ratio, education, and age of the household head and secondary earner in the household have significant negative impact on the saving behavior in case of urban as well as rural households. The marginal propensity to save (MPS) calculated at the mean value of household income varied from 0.21 to 0.23 and 0.30 to 0.37, respectively for urban and rural households, depending on the choice of functional form. Various categories of education were found to have significant negative influence on the household saving. This finding suggests that as the level of education of household head rises the savings are reduced. The results regarding the impact of dependency ratio was found to be in the line with the finding of Leff. The impact of the employment status was found negative suggesting that self-employed saves less as compared to the employees in both the urban and rural areas. The coefficients of different kinds of occupation of household head and the presence of secondary earner in the household were found to be statistically insignificant for both urban and rural areas. The coefficient of age of household head and its square were also statistically significant with negative and positive sign, a finding consistent with life cycle hypothesis. Moreover, the result supports nonlinearly of the saving function in Pakistan.

Collins (1991) examined saving behavior in ten developing economies since 1960s using time series data. Sample included Asian economies; Singapore, Taiwan, Malaysia, Korea, Philippines, Thailand, Hong Kong, Burma, Indonesia and Turkey. The paper explored the reasons for high saving rates in these developing Asian economies. The facts provided in the study highlighted the significant role of income growth and age distribution of population as important determinants of aggregate savings. The high saving economies were tended to have high growth rates and low dependency ratios. It has been observed that the major contribution in the aggregate savings was coming from the household sectors. For the analysis ten countries were grouped into four groups. The first group consisted of the countries that experienced trend increases in saving. The second group constituted low-income countries. The third group was made up of countries where saving declined over the sample period. The fourth group contains Turkey which did not fit to any of the above groups. For each group it was found that both the trend rise and

fall in aggregate savings was coming from the household sector. However, corporate and government savings had remained relatively stagnant. The determinants of aggregate savings were expected to have both level effect and growth effect. In order to capture the growth effect interactive terms were included in the regression. These two effects would not need to have same signs. The regression included two sets of samples. The first set included all 10 countries. The second set excluded the two low income countries, Burma and Indonesia. The regression results found population share of children, standard of living and the real growth rate as significant determinants of the aggregate savings. More over there were structural differences in saving behavior between low income and middle income groups. For the middle-income countries, the dependency rate has a positive level effect and a negative growth effect on savings. It implies that given the level of living standard and real growth rate increase in population share of children raise household savings. When the two low-income countries are included in the sample, the effects retain their signs, but the magnitudes decrease. It suggests that changes in the age distribution have less effect on the mean of consumption relative to income in the poor countries. Per capita income had a positive level effect on savings but a negative growth effect in middle income group implying that saving rises as country's per capita increases even though younger households dis-save more relative to older households.

Bautista (1990) evaluated the comparative saving behavior of rural and urban households in the Philippine using Survey data for 1985. The total sample consisted of 17,495 households' categorized as urban and rural households. He emphasized on the essential role of agricultural and the rural sector in promoting rapid economic growth in low developing economies. The expansion of public investment and removal of price biases of agricultural products would raise farm productivity, agricultural output and rural income which in turn stimulate consumption demand generating employment and income multiplier effects on the rural and national economy.

The study also examined the comparative saving behavior of farm and non farm households classified according to whether their income is derived from agricultural or nonagricultural activities. The sample households were then divided by location/region of household representing different income groups. Due to lack of correspondence between

rural and farm households and between urban and non farm households, separate saving functions were estimated for these four categories independently for each region. The explanatory variables included in the regression were age and age square of household head, educational attainment of household and wife's employment status (employed or unemployed). The coefficient of income in the Keynesian current income model was highly significant indicating income as the most important determinant of saving. In the comparative saving behavior of rural and urban households, rural households were found to have higher savings than urban households both on average and at the margin. Moreover the marginal saving rates also varied widely among households in different regions and among different income sources. The coefficient for dependency ratio was negative for rural households, possibly suggesting greater opportunities for farm work among young and members of rural households and less opportunity for spending the additional income, as compared to urban households. In the permanent income model the coefficient for both permanent income and transitory income were statistically significant. The MPS out of transitory income was higher than MPS out of permanent income in all the estimated equations.

Nicola (1989) developed a theoretical frame work as well as conducted an empirical estimation to explore the nature of relationship between dependency rates and savings in developing economies. It presented two dynamic models; the equivalent adults' model and over head cost model for the representative households by introducing demographic variables in the demand system. Both models identify the relationship between the expected dependency rate and the growth rate of consumption; however they have different implications for the magnitude and direction of the relationship.

The adult equivalent model implies a negative relationship between expected dependency rate and growth rate of consumption and the magnitude depends on the expected changes in the size and composition of family. In the over head cost model the relationship can be positive, negative or no effect depending on the intertemporal elasticity of substitution and share of committed consumption. Since the share of committed consumption is always positive, the direction of relationship will only depends on consumer willingness to smooth the consumption path. The empirical analysis was carried out by using data of private savings for the period 1973-83 for 49 developing economies. Data was grouped

into six sets of cross-section observations referring to a single geographic region. The over head cost model was considered appropriate for developing economies. The results reported estimated values of elasticity of substitution and liquidity constraint.

Qureshi (1981) tested household savings hypotheses for Pakistan using time series data over the years 1950-51-1976-77. The hypotheses tested were the household savings-income relationship and the relationship between household savings and financial market variables including the rate of interest and the rate of inflation. It was found that permanent income model give a much better explanation of the year-to-year variations in household saving than does the simple current income model in case of Pakistan. The study also found highly significant positive correlation between changes in the real rate of return and household saving. The real rate of interest on bank deposits was in particular found to have strong effect on household saving in financial assets. Inflation was also reported to have strong and negative impact on household saving. The adverse effect of inflation on household financial savings more than counterbalanced any positive effect it might have had through its income-redistributive effects. On the bases of his study Qureshi (1981) suggested that financial policy should ensure a reasonable real return to savers on their financial investments by following a flexible interest rate policy, one that follows the nominal rates to adjust in line with the rate of inflation. , that will boost household savings. As the interest payments have negative impact on financial savings it may be abolished completely and replaced by profit sharing, the attractiveness to savers of financial instruments would then increase.

Espenshade (1975) analyzed the impact of age of children and family size on household saving behavior by using data of “Survey of Consumer Expenditures” conducted in U.S for the year 1960-61. The sample constituted 3,888 urban consumer households units which had either children of under age 18 or without children where the age of the head did not exceeded 45 years. Household annual net savings was regressed on annual disposable income, household size inclusive of the parents and age of the children. The results found insignificant results for family size on savings in either its linear or in its squared form but significant impact of age of the children. Coefficients of age and age square were highly significant. The direction and magnitude of the impact depends upon

the average age of the children. The partial derivative of savings with respect to age of the children showed that for values of age less than 9.5 years an increase in the mean age of children causes a reduction in household savings, whereas increase in age for values of age greater than 9.5 increases household saving. Thus children have the greatest positive impact on family savings when they are nearing the completion of high school. These results suggest that parents at this time begin to anticipate the cost of college education and decide to save accordingly.

Allen C. Kelley (1968) provided an analysis of household saving behavior in the Jogjakarta region of Indonesia for the year 1958-59. It examined the impact of occupation and source of income on household savings. The Life-cycle hypothesis was also investigated. The data comprised sample survey of 490 urban and rural households of Jogjakarta.

The estimated model postulated two-factor-growth frame work based on the hypothesis that different income recipients respond differently to saving. It assumes that propensity to save out of wage earnings is less than that out of profits and in extreme case it is even equal to zero. It implies that profit-making entrepreneurs are significant savers in the society as compared to wage earners. The wage-earner receives income only for their labor services; on the other hand self-employed entrepreneur receives income for labor services, for the use of nonhuman earning assets, and for managerial abilities which give rise to different consumption behavior of wage earners and profit earners. This distinction becomes even more prominent in the LDC's where the roles of entrepreneurs are far greater due to the relative size of the agricultural sector and due to the relative backwardness of the corporate movement in the nonagricultural sector. Based on the household's income sources occupation was classified into six categories, which were; the farmers, the traders and craftsmen, the owners of business, the government employees, other wage earners and unclassified occupations. Simple linear savings function of per capita form was estimated separately for each occupation category.

The range of estimated  $\beta$  coefficients across occupational groups varied largely. For the total sample the marginal propensity to save was approximately equal to 10 percent. The MPS for wage and salary recipients was equal to the total sample. The government

employee, with the highest income in the group, had very low marginal savings rates. The very high marginal savers were the traders and the owner of business, with coefficients of 0.4257 and 0.3077, respectively. The range of average savings ratio also varied significantly across all occupations. The APS for the total sample was about 1.6 percent. The farmers, the government employees and the urban wage-earner were found to have negative savings, while the traders and the owner of business had 7.5 and 5.8 percent average saving rates respectively. These saving shares are estimated at the mean income of each group. In order to isolate source of income effects as opposed to occupational effects the farm group was stratified further into different groups by the share of income derived from owned land. The farm group was considered to be the most heterogeneous group in the occupation categories according to the type of income source, as it included both labors who owned and who rented land. The households in farm group were therefore having varying degrees of ownership or of management of land. Cumulative sub samples were utilized starting from farm category with zero percent of income from owned land to a group who earn greater than 91 percent or more of their income from owned land. The result of this analysis found the marginal and average savings rates rising with the degree of landownership revealing positive impact of

In order to examine the life cycle hypothesis sample was grouped into five age cohorts into its rural and urban components. These age cohorts included: 20-29, 30-39, and 40-49, 50-59 and 60-69 age groups. The results confirmed the life cycle hypothesis. The marginal propensity to save varied over each age group. The marginal propensity to save showed increasing trend as household age increases. For example in the rural sample it raised from 0.133 for the youngest group to 0.759 for the retirement proving the life cycle hypothesis.



## Chapter 3

### Pakistan Economy

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Pakistan is a developing economy with a growth rate between 70's to 20's averaging 4.9 percent per annum<sup>1</sup>. That is relatively low rate as compared to other developing countries. To spur its economic growth it needs investment in the physical as well as human capital. Investment needs of the country can be mainly funded by the domestic and foreign resources. However, the domestic saving rate is also very low for financing growing investment needs of the country. Therefore to fill up the resource gap between domestic saving and investment needs Pakistan rely heavily on foreign resources. Performance of Pakistan's GDP has become significantly dependent on the availability of foreign resources. Moreover, the ongoing power crises, high security risks, political noise, low corporate earnings and deterioration in macroeconomic stability Pakistan have not remained an attractive destination for investment for foreign investors.

Economic growth of Pakistan has suffered a lot due to low domestic saving rates which is unable to fulfill the investment needs of a growing economy. To sustain its growth momentum Pakistan needs to focus on raising domestic saving rate and resolve its challenges for investment.

#### ***3.1 Trend in Saving Rates of Pakistan***

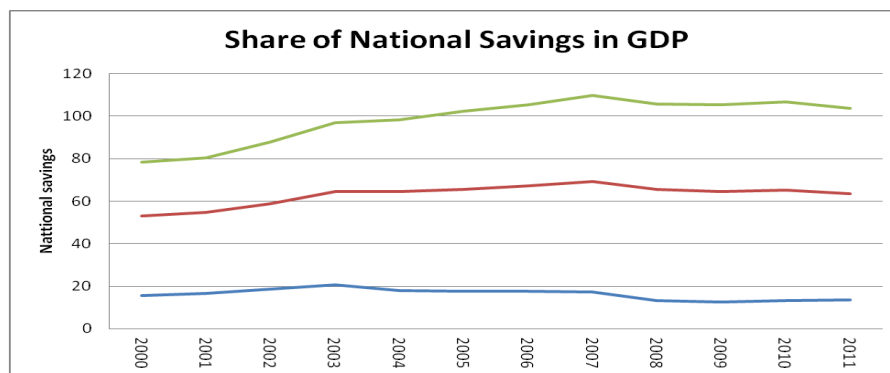
Saving is a path for high growth in the economy. More saving rates means more resources for investment. More investment leads toward higher growth, employment generation, and better living standards of people. A historical overview of Pakistan's saving rate reveals that the saving rate is not as satisfactory as it should be in the case of a developing economy. The average national saving rate of 15.1 percent of GDP for the period FY60-FY09 is significantly lower relative to the other developing Asian

economies. For example national saving rate of China is three times greater than that of Pakistan; in India it is two times greater than that of Pakistan ( State Bank annual report 2008-09).

**Table 1: Country wise Comparison of National Saving Ratios**

Country	GDP Growth (%)	National saving Ratio
China	9.1	52.2
India	5.3	40.6
Malaysia	6.4	35.0
Indonesia	6.0	28.2
Thailand	5.9	30.4
Pakistan	4.9	13.6

**Figure 1**



Source: State Bank Annual Report 2010-11

It can be illustrated by the above figure 1 that the Pakistan’s value of national savings as percentage of GDP with comparison of other given countries (China and India) remained low since FY2000. Its national saving rate during 1970’s was 11.2% of GDP which increased to 14.8% in 1980,s but again fell down to 13.8% for 1990’s. This is very low rate of saving as compared to other growing economies. It can also be observed from the figure 1 that the national saving trend of India increases slightly, whereas, of China it dramatically increased; on the other hand, National saving trend of Pakistan is decreasing.

**Table 2: Saving trends (As Percentage of GDP – Current Market Price)**

<b>Years</b>	<b>Growth Rate</b>	<b>Investment</b>	<b>National Savings</b>	<b>Foreign savings</b>	<b>Domestic savings</b>
1970's	4.8	17.1	11.2	5.8	7.4
1980's	6.5	18.7	14.8	3.9	7.7
1990's	4.6	18.3	13.8	4.5	14.0
2000's	4.8	19.0	17.0	2.1	15.6
2001	3.1	16.8	18.6	1.9	18.1
2003	7.5	16.6	17.9	1.3	15.7
2005	5.8	22.1	18.2	4.5	16.3
2007	3.7	22.5	17.4	1.8	15.6
2008	3.4	22.1	13.6	2.0	11.5
2009	3.6	18.2	12.5	2.7	9.8
2010	4.1	15.4	13.1	3.8	9.3
2011	2.4	13.4	13.6	4.3	9.3

*Source: Economic Survey of Pakistan (various editions)*

Pakistan has seen fluctuations in its growth rate since its inception. Growth rate was 4.8, 6.5, 4.6 percent in 1970's 1980's and 1990's respectively. In 1980's Pakistan experienced very high growth rate of about 6.5 percent that was due to more investment and more domestic and national savings. In 2003, Pakistan again attained a very high growth of 7.5 percent. Surprisingly; in this year, foreign saving was negative and very high domestic savings. Afterwards national saving showed negative trend.

In 2009-10, national savings as percentage of GDP increased by 0.3 percentage points over the preceding year. The rise was considered to be because of increase in household savings. However other sources of national savings i.e., public savings and private corporate savings had remained unchanged during this year. According to State bank, annual report even though this is an improvement as compared to the previous years but still unsatisfactory with respect to investment (State Bank Annual Report).

The domestic savings declined substantially in 2010-11 to 9.3 percent of GDP. This is the lowest ever domestic savings level in almost two decades. According to state bank annual reports low income, high propensity to consume, inaccessibility to the financial market, financial illiteracy, culture of saving in durables like gold and silver and avoidance of interest-based financial system due to religious beliefs are the cause of decreasing domestic savings in Pakistan. Also the growing inflation in the recent past has reduced the will to save.

In this background, there is an urgent need of steps to prop up domestic savings and channel the unutilized funds to more worthwhile and productive use to cater investment needs and help to achieve stable growth path. Like in East Asian countries the inflow of foreign saving gave an initial boost to growth, domestic saving remained the key force in sustaining high rates of investment.

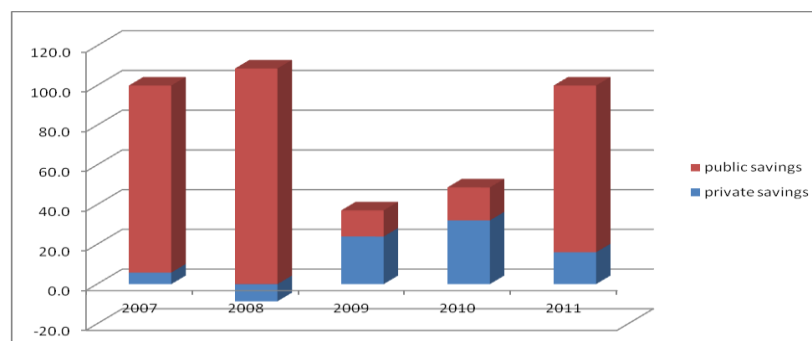
### **3.2 Components of Savings**

National savings comprises of public savings and private savings.

**Table 3: Components of Savings**

Years	National Savings	Public Savings	Private Savings	Corporate Savings	Household Savings
2000	16	5.7	16.1	1.9	14.2
2001	16.7	5.8	15.1	1.8	13.3
2002	18.5	4.2	16.9	2.0	14.9
2003	20.1	3.8	18.7	2.2	16.5
2004	17.9	4	13.1	0.1	13.0
2005	17.1	4.3	13.7	2.0	11.7
2006	17.4	2.5	14.8	2.0	12.9
2007	17.1	-1.0	16.4	2.0	14.4
2008	13.6	-1.2	14.7	2.0	12.7
2009	12.5	3.0	9.5	1.9	7.5
2010	13.1	4.2	8.9	1.9	6.9
2011	13.6	2.2	11.4	2.0	9.4

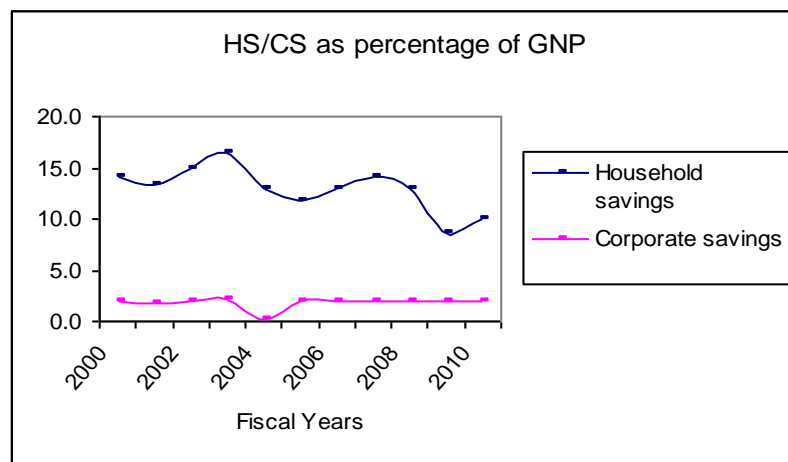
**Figure2: Share of Public and Private Savings in National Savings**



From the above figure 2, it is seen that private savings contributes more than 90 percent of the total national savings. Within the private sector, household savings has the major share in national savings. Corporate saving have meager share in total private savings.

During the period 1981-2005 it accounts only about 10 percent of private saving on average. It was merely 1.3 percent of total GDP of Pakistan during the same period. This is very small value as compared to other developing economies. High corporate taxes, utility charges, high cost of imported inputs, energy crises and inflation have been marked in the literature as the major factors responsible for low corporate sector profit. Consequently, corporate savings have been very low in Pakistan since 1990's.

**Figure 3: HS/CS as percentage of GDP**



Public sector has remained low savers in case of Pakistan. Their contribution in national savings is meager. It mostly depends on government budgetary position which is always subject to fiscal deficits. The fiscal deficit has remained 5 percent during the FY 2010. Low tax-GDP ratio, tax evasion and heavy administrative expenses and external debt servicing are some of the reasons behind low public savings. The government of Pakistan also pays subsidies to different sectors and funded the PSEs ( Public Sector Enterprises) which are mostly operating inefficiently and due to them government bear huge losses In the situation, the transparent privatization of loss making entities is the only way to serve the broader interests of economic growth in Pakistan. (Pakistan: Framework for Economic Growth, Planning commission, 2011).

Saving in informal forms is very common in Pakistan. Most popular informal form of saving is in form of gold and silver. This could channelize 0.45 percent of GDP toward household saving if changed into financial saving instruments. Another popular form of

household saving is committee system. In committee system person pool together their regular monthly contributions and distributes to each member on monthly basis. An enterprise survey estimates that 13.6 percent of new businesses are financed by this informal source which is especially popular in rural areas. (working paper 2006).

## Chapter 4

### Methodology

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#### 4.1 *The Model*

The absolute income hypothesis proposed by Keynes states that savings depends upon income and the following restrictions hold;

(a)  $0 < s_y < 1$  where  $s_y = \bar{\sigma} s / \bar{\sigma} y$

(b)  $s/y > s_y$

(c)  $\bar{\sigma} s_y / \bar{\sigma} y < 0$

According to the Keynes linear saving function representing the absolute income hypothesis is written in the form,

$$S = \alpha_o + \alpha_1 Y + \mu \dots\dots\dots (1)$$

Where S represents savings, Y is the income and  $\mu$  is the stochastic error term. This equation however does not actually meet the third condition (c). The addition of a term  $Y^2$  would capture the non-linear effects of changes in income. The saving function thus turns into following specification.

$$S = \alpha_o + \alpha_1 Y + \alpha_2 Y^2 + \mu \dots\dots\dots (2)$$

The most obvious problem of the above equation is that the summation over a heterogeneous population might introduce the problem of heteroscedasticity into the regression results. Further more in the cross section studies the marginal propensity to consume often turns out to be smaller than the average propensity to consume. In the heterogeneous population propensity to consume could differ regionally, by sex of the household head, by race or religion, by activity or by the age of the household head. All these factors appear to have some bearing on the saving function, especially in the cross section tests, where such factors are more easily identified. The functional forms of



savings will thus turn to unstable, as the estimation of the coefficient suffers from the problem of heteroscedasticity.

Furthermore the parameter estimates are subject to the danger of bias from two sources: the parameter estimates may be dominated by the extreme values and is not likely to be independent of S. In actual practice a more realistic form of equation is preferably used, expressing the saving ratios as a function of income i.e,

$$S / Y = \beta_0 + \beta_1 Y + \beta_2 (1 / Y) + \mu \dots\dots\dots (3)$$

In the literature a combination of an absolute income equation along with the demographic variables such as the age of the person, sex or gender, location, occupation and education, marital status, earning status etc have been used plenty of times giving the following functional form of saving function:

$$S / Y = \gamma_0 + \gamma_1 Y + \gamma_2 (1 / Y) + \gamma_3 Z + \mu \dots\dots\dots(4)$$

To take into account nonlinearities into the saving function Klein (1951) has suggested the alternative formulation if saving function as:

$$S_r / Y = \lambda_0 + \lambda_1 \log(Y) + \lambda_2 (Z) + \mu \dots\dots\dots (5)$$

In an attempt to better capture the shape of saving function Landau (1971) suggested another functional form of saving as following:

$$S_p / Y = \phi_0 + \phi_1 Y + \phi_2 (\log Y)^2 + \phi_3 Z + \mu \dots\dots\dots (6)$$

Equation (4), (5) and (6) represents three different functional forms of the saving function given by Keynes, Klein and Landau respectively. These three functional forms have been used in this study to estimate the strength of relationship between household savings and income and the following demographic variables in case of Pakistan.

## **4.2 *The Variables***

The factors whose impact will be estimated in the study includes income, dependency ratio, age, education, employment status, earning status and occupation of household head, sex and marital status of household head, the presence of secondary earner in the household and home ownership. The brief discussion of the variables is as follows:

### **4.2.1 Savings**

In the literature, saving is simply defined as the residual between income and current consumption (Browning 1996). In particular household savings are part of disposable income that is not consumed by the household. However the analysis of household saving is difficult because there is no standard definition used in the literature. There may arise many questions while defining it e.g., what part of income may be considered as household savings? Should we consider durable goods as household savings, what form of saving would be considered for analysis; in monetary terms or in the form of accumulation of wealth like in property assets, gold etc? Should human capital be considered as a part of savings? Since in household surveys both income and expenditure are measured with some error, the quality of current savings depends crucially on how well various items of expenditures and income are recorded. Saving is therefore simply defined as the difference between total expenditure and income.

$$\text{Saving} = \text{Household income} - \text{total household expenditure}$$

### **4.2.2 Income**

The gross income is used in this study instead of disposable income because the information regarding the income tax is not available in the survey. Household gross income includes earned income as well as income from various sources such as income from home production, transfer payments and gifts, rent, interest, land, livestock etc.

Empirical tests of relationship between income and savings have been estimated plenty of times in the literature based on different model specifications. However, the broad specification is based on the Keynesian income hypothesis which explains positive linear

relationship between income and savings. It says that as the income rise the household tends to save more.

In case of Pakistan all the studies on household saving behavior had found strong positive relationship between the two variables (e.g. Siddique 1993, Burney and Khan 1992, Nasir 1999). The studies only differ in sense of different samples, model specifications and estimation technique. However the coefficient of income was estimated to be always significantly positive across different studies.

### **4.2.3 Dependency Ratio**

Dependency ratio is defined as the proportion of non-working population in the young age bracket (0-14), or/and in the older age group (65 +) to the total population. The importance of dependency ratio in the analysis of saving behavior has been emphasized extensively in the literature. Leff's (1969) paper was the first to find the inverse relationship between dependency ratio and saving rates. On the basis of multiple regression analysis of data of seventy four countries, Leff found the significant and quantitatively important influence on aggregate saving ratios. On the basis of his analysis he concludes that "a rapidly growing population includes a large number of young people, who tends to consume more that they produce. In absence of an offsetting increase in the income of adults or a decrease in their consumption, the effect will be a reduction in aggregate savings". In accordance with theoretical framework supported by Modigliani's empirical results, the retired older population also constitutes a dependency burden by being claimants on consumption without contributing to output.

Although Leff's paper generated considerable intention towards the relationship between dependency ratio and income, however there is no general consensus found in the literature about the direction of the relationship between the two variables.

Following the previous studies done in Pakistan, instead of putting restriction on the age of the household members, dependency ratio is defined as following

$$DR = (HS-NE)/HS$$

Where DR is the dependency ratio, HS is the household size and NE is the number of earners in the household.

#### **4.2.4 Education**

Education level of the person is also believed to be an important factor influencing saving behavior. It could affect saving rate positively as well as negatively. It is seen that people with more education will earn more income, thereby saving more as compared to less educated i.e., there exists a positive relationship between level of education and saving behavior. However some of the researchers have found a negative relationship between income and education. According to Morisset (1995) the negative relationship between the household savings and education level may be because of the fact that household savings increase expenditures that reduces disposable income. Due to low disposable income people will be unable to save more. Moreover, as people get more educated their saving for precautionary motive will reduce because they have less risk of unemployment. With less need for precautionary saving will be low among educated persons.

In the present study, the impact of level of education on savings is analyzed by describing education of the head of the household by five categories i.e., uneducated, primary but less than matric, matric but less than intermediate, intermediate but less than graduate and graduate and above.

#### **4.2.5 Employment status**

In the literature the employment status has received a considerable attention as a source of differences in savings. A somewhat different approach and one that is employed here is to distinguish between the entrepreneur (self employed) and wage earners. Assuming the propensity to save out of wage earnings is less than that out of the profit, Lewis argues that the profit making entrepreneurs are the significant savers in the society and that the landlords, wage earners, peasants and salaried middle classes contribute relatively little. The wage earners offers only their labor service to the factor market, the self employed on the other hand, receives income for labor service, for the use of his non

human earning assets and for managerial abilities. Their income level will be higher than wage earners.

According to Kelley and William (1968) the distinctiveness of entrepreneurial saving can be explained by sociological characteristics. Since the entrepreneur manages a depreciating stock of capital, exhibits preferences for internal finance in order to maintain stock of capital and possesses clear preferences for his own funds for reinvestment, and thus saving will be higher. These findings suggest that a self employed save more as compared to wage earners.

To measure the impact of employment status on household savings, the variable is categories into two broad categories i.e., the employee and the employer or self employed.

#### **4.2.6 Gender of the Household Head**

In the literature gender is also known as an important variable in determining household saving behavior. The gender analysis is important variable in the household saving behavior. The gender analysis is important because saving strategies of men and women are different. It has been noted that saving rate of female headed households is mostly very low. This is because of the reason that the female headed households represent single parent households. In this case, saving is generally low as compared to male headed households (Gibson and Scobie 2000).

Harris and Webster (1999) have also found positive and significant coefficient for the gender of the head of household that proves the established view than men are positive savers.

Abdelkhalik and Sabine (2009) on the other hand emphasized on higher savings for female. According to them, women are more capable of managing actively their needs and economic activities.

In this case, the assumption that woman would save less than men are therefore questionable.

The impact of gender of the household head on the savings will be examined by introducing dummy for sex of the household head. It takes value '1' if the household heads is male and '0' otherwise.

#### **4.6.7 Secondary earner**

Secondary earner in the household is qualitative variable and represented by a dummy variable taking the value '1' if there are more than one earner otherwise. The increase in the household size with multiple income recipients can affect significantly the saving rate, to the extent that it reduces household earning uncertainty and the need for precautionary saving motive. Attanasio and Weber (1997) found that households with working wives tend to save less than households in which the women are not in the labor force. However, Jappelli and Marco (1997) found that increase in the number of earners in the households could hardly account for and significant decline in aggregate savings. Similarly Burney and Khan (1992) and Nasir (1999) found no significant impact of the presence of secondary earner in the household in case of Pakistan.

#### **4.6.8 Age of the household head**

The life cycle model suggests that there exist a relation between age and the saving behavior. Individual age is expected to be negatively correlated with savings, such that, older people less than the younger people. Incorporating the fact that the younger ones who earn little or no income save less but as they grow and starts earning more tends to save more. However as they reach older age of retirement their income once again starts declining which will likely decrease their share of saving in their income. This pattern of saving and age of the person implies that there is nonlinear relationship between the two. Thus to investigate the impact of age of the household head and savings nonlinearities will be introduced in the saving function.

#### **4.6.9 Home ownership**

The wealth effects have been extensively estimated in the literature. The wealth changes the contemporaneous sets of budget of the households that will result in an increase in consumption and decrease in savings.

As it is not possible to measure the wealth variable for each household, it is possible to look whether holding wealth or owning property would affect saving pattern of household or not. Following Salotti (2010) home ownership is used as a proxy for tangible wealth holding.

In 1951 Klein have also used homeownership as a measure of wealth by estimating different saving functions for renters and home owners. The distinction between renters and homeowners was made for the reason that these two groups constitute different socioeconomic classes. Their initial conditions are different, one has housing wealth and other does not have. Mortgage holders among the homeowners have contractual saving obligations in the form of debt repayments; their saving rate is likely to be greater than renters. Harris and Webster (1999) have also found higher saving rates for homeowners. To study its impact a dummy variable that assumes value '1' if the household owns their home and '0' otherwise will be introduced in the model.

#### **4.2.10 Marital Status**

A Dummy variable to represent marital status of household head =1 If household head is married. =0 if household head is un-married is introduced in the model. According to the previous studies marital status have negative impact on saving behavior. As the married persons have to perform family responsibilities therefore less capable of saving (Rehman et.al 2010).

#### **4.2.11 Region**

A dummy variable region of household i.e., urban=1 if household live in urban areas and urban=0 otherwise is introduced in the model. The variation in saving behavior of rural and urban households has been analyzed extensively in the literature. Different relationships have been found among household savings and region. Rehman et.al (2011) has found lower savings for rural areas due to family size and liabilities to be paid. They suggest that there is a need of educational and financial education in the rural areas.

However Burney and Khan (1992) found much higher savings for rural areas than their counterpart. Similarly Nasir (1999) findings were also in line of Burney and Khan (1992).

#### **4.2.12 Earning Status**

In order to examine the impact of earning status of the household head on savings a dummy variable will be introduced in saving function assuming value '1' if household earner is earner and '0' otherwise. It is expected to believe that savings will increase if the person is earner due higher income as compared to non earner.

#### **4.2.13 Occupation**

Various categories of occupation are included in the study i.e. professional workers, administrative and managerial workers, clerical staff, sales and miscellaneous workers, production related workers and others including retirees. A set of five dummies will be included in the saving equation taking values (0, 1).

### ***4.3 Estimation Technique***

#### **4.3.1 Data**

Micro level data of Pakistan Social and Living Standards Measurement Survey (2007-08) compiled by the statistical division of the Government of Pakistan will be used. The study covers 15,512 households across urban and rural communities.

The Pakistan Social and Living Standards Measurement survey contains detailed cross section information about economic and social condition of households of Pakistan including both urban and rural areas separately. Each household is interviewed about its income and expenditure, with the help of which saving of the household is calculated. The other information is on variables like age, household size, employment status, marital status, gender, education, place of residence etc.

With the help of HIES data, facts about major variables concerned in this study are given as follows:



**Table 4: Some facts about data**

	<b>Sample Size</b>	<b>Household size</b>	<b>Average No. of Earners</b>	<b>Average Monthly Income Per Household</b>	<b>Average Savings per Household</b>
<b>Total</b>	15,512	6.58	2.00	11651.06	1322.03
<b>Urban</b>	62,55	6.31	1.84	11797.54	1097.82
<b>Rural</b>	92,57	6.72	2.00	12626.34	1667.98

#### **4.3.2 Estimation Method**

In assuming the relative significance differences in household saving behavior of various occupational and regional groups model given below will be estimated by using randomly selected sample of households. The data contains information about both urban and rural households. Saving functions for over all Pakistan will be estimated by Ordinary Least Square Method (OLS).

#### **4.3.3 Model Specification**

If we include all the possible determinants of household saving behavior stated above variables in the saving function proposed by Keynes we get;

$$S/Y = \alpha_0 + \alpha_1 Y + \alpha_2 (1/Y) + \alpha_3 A + \alpha_4 A^2 + \alpha_5 Dep + \alpha_6 Edu-1 + \alpha_7 Edu-2 + \alpha_8 Edu-3 + \alpha_9 Edu-4 + \alpha_{10} O-1 + \alpha_{11} O-2 + \alpha_{12} O-3 + \alpha_{13} O-4 + \alpha_{14} O-5 + \alpha_{15} Em + \alpha_{16} Es + \alpha_{17} G + \alpha_{18} Se + \alpha_{19} H + \alpha_{20} U + \alpha_{21} M \mu$$

Where;

S = household savings for Pakistan

Y= Income

A= Age of the household Head

A2 = square of the age of Household Head

Dep= Dependency Ratio

Em = Dummy for employment status

It assumes value

= 1 if the Household Head is Employer or/ self Employed

= 0 otherwise

Es = Dummy for Earning Status

It assumes value

= 1 if the Household Head is Earner

= 0 otherwise

G = Dummy for Gender of the Household Head

It assumes value

= 1 if the Household Head is Male

= 0 otherwise

Edu = Dummy for Education Level

Edu-1 assumes the value of

= 1 if the Household Head has primary Education

= 0 otherwise

Edu-2 assumes the value of

= 1 if the Household Head has primary Education but less than matric

= 0 otherwise

Edu-3 assumes the value of

= 1 if the Household Head has intermediate education

= 0 otherwise

Edu-4 assumes the value of

= 1 if the Household Head is graduation and above

= 0 otherwise

O= Dummy for Occupation of Household Head

O-1 assumes the value of

= 1 if the individual is professional worker

=0 otherwise

O-2 assumes the value of

= 1 if the individual is managerial worker

=0 otherwise

O-3 assumes the value of

= 1 if the individual is clerical staff

=0 otherwise

O-4 assumes the value of

= 1 if the individual is sales, services and miscellaneous worker

=0 otherwise

O-5 assumes the value of

= 1 if the individual is production related worker

=0 otherwise

Se = Dummy for Secondary Earner in the household

It assumes value

= 1 if there is more than one earner in the Household Head

= 0 otherwise

H = Dummy for Homeownership

It assumes value

= 1 if the household owns the house

= 0 otherwise

M = Dummy for Marital Status

It assumes value

= 1 if the household head is married

= 0 otherwise

Similarly, the other saving equations suggested by Klein (1951) and Landau (1971) will be of the following specification

Klein saving function:

$$S_p / Y = \lambda_0 + \lambda_1 Y + \lambda_2 \log Y + \lambda_3 A + \lambda_4 A^2 + \lambda_5 \text{Dep} + \lambda_6 \text{Edu-1} + \lambda_7 \text{Edu-2} + \lambda_8 \text{Edu-3} + \lambda_9 \text{Edu-4} + \lambda_{10} \text{O-1} + \lambda_{11} \text{O-2} + \lambda_{12} \text{O-3} + \lambda_{13} \text{O-4} + \lambda_{14} \text{O-5} + \lambda_{15} \text{Em} + \lambda_{16} \text{Es} + \lambda_{17} \text{G} + \lambda_{18} \text{H} + \lambda_{19} \text{U} + \lambda_{20} \text{M} + \mu$$

Landau saving function;

$$S_p / Y = \varphi_0 + \varphi_1 (\log Y)^2 + \varphi_2 A + \varphi_3 A^2 + \varphi_4 \text{Dep} + \varphi_5 \text{Edu-1} + \varphi_6 \text{Edu-2} + \varphi_7 \text{Edu-3} + \varphi_8 \text{Edu-4} + \varphi_9 \text{O-1} + \varphi_{10} \text{O-2} + \varphi_{11} \text{O-3} + \varphi_{12} \text{O-4} + \varphi_{13} \text{O-5} + \varphi_{14} \text{Em} + \varphi_{15} \text{Es} + \varphi_{16} \text{G} + \varphi_{17} \text{H} + \varphi_{18} \text{U} + \varphi_{19} \text{M} + \mu$$



## Chapter 5

### Empirical Results

Household savings were estimated using three non linear functional forms of savings i.e., Keynesian, Klein and landau saving equation. The models were estimated with the help of OLS (ordinary least square) technique using average savings as dependent variable. Although three different definitions of household savings have been listed but only results pertaining to definition S1 were considered in evaluating results as the estimated model gives the higher adjusted R<sup>2</sup>. However the size and sign of the parameters were almost same.

Cross sectional data of 15,512 households of Pakistan Social and Living Standards Measurement Survey (2007-08) was taken to analyze the household saving situation. It was seen that many households have misreported their expenditures and income. In order to avoid misleading results such cases were eliminated from the data. The results pertaining to Keynesian, Klein and Landau saving functions are given in below tables.

**Table 5: Empirical Results**

Variable	Keynesian Model	Klein Model	Landau Model
Constant	4.057 (15.998)	-2.698 (37.364)	-1.021 (32.970)
Income	0.0000036 (2.274)		-0.00000151 (28.307)
Inverse of Income	-76834.016 (-251.132)		
Log of Income		0.636 (42.383)	
Log of Income Square			0.109 (45.011)
Age	-0.004 (4.471)	-0.005 (2.911)	-0.027 (1.562)
Age square	0.000044 (2.521)	0.000051 (3.469)	0.000056 (2.015)
Dependency ratio	-0.474 (12.267)	-0.841 (11.032)	-0.803 (10.986)

<b>Education</b>			
<i>Primary</i>	-0.217 (4.556)	-0.413 (4.037)	-0.406 (4.008)
<i>Less than Matriculation</i>	-0.380 (5.982)	-0.060 (7.735)	-0.899 (6.617)
<i>Less than Intermediate</i>	-0.482 (5.288)	-0.474 (7.535)	-1.110 (5.718)
<i>Less than Graduate</i>	-0.520 (5.717)	-0.147 (11.070)	-1.390 (7.177)
<b>Occupation</b>			
<i>Professional</i>	-0.003 (0.035)	-0.370 (1.759)	-0.396 (1.904)
<i>Managerial</i>	-0.117 (0.704)	-0.900 (5.516)	0.511 (1.456)
<i>Clerical</i>	0.010 (0.085)	0.159 (0.655)	-0.457 (1.899)
<i>Sales Workers</i>	-0.037 (0.547)	-0.004 (0.31)	-0.090 (0.635)
<i>Production related workers</i>	0.035 (0.502)	0.157 (1.054)	0.237 (1.608)
<b>Employment status</b>	-0.066 (1.98)	-0.049 (3.814)	-0.024 (1.913)
<b>Earning status</b>	0.037 (5.051)	0.062 (6.658)	0.073 (4.616)
<b>Secondary earner</b>	-0.031 (6.414)	-0.083 (10.224)	-0.096 (9.212)
<b>Sex of Household Head</b>	0.025 (1.782)	0.078 (2.391)	0.049 (4.544)
<b>Marital status</b>	-0.276 (3.682)	-0.500 (3.122)	-0.470 (2.967)
<b>Homeownership</b>	-0.108 (1.846)	-0.117 (0.933)	-0.098 (0.789)
<b>Urban</b>	-0.262 (5.558)	-0.20 (6.559)	-0.558 (5.953)
<b>R Square</b>	0.511	0.33	0.250
<b>Adjusted R Square</b>	0.510	0.32	0.249
<b>F-Statistic</b>	315.876	119.202	130.296
<b>No. of observations</b>	15,512	15,512	15,512

The value of adjusted R squared was calculated as 0.510, 0.32 and 0.24 respectively for the Keynesian, Klein and Landau models, suggests that 51, 32 and 24 percent variations in household savings is explained by the variation in all explanatory variables. Though, the value of R square is not very high but quite reasonable for the cross-sectional data. R-squared of the Keynesian function shows that it better fits the Pakistan's data. Of all the

variables income, dependency ratio, age, education, secondary earner was found to have significant role in determining household saving behavior. The probability of F-statistic also certifies that overall saving models were reliable and statistically significant.

Marginal propensity to save calculated from mean value varied from 0.16 to 0.19 depending on the functional form of the saving function. This finding reports that propensity to save has been decreased as compared to the previous years. For example Burney and Khan (1992) calculated marginal propensity to save (MPS) varying from 0.21 to 0.23 in case of urban areas and 0.30 to 0.37 in case of rural areas. Likewise Nasir and Khan (1999) found MPS ranging from 0.26 to 0.29 depending on the form of saving function.

In all the three saving functional forms, dependency ratio was found to have negative effect on the household savings in case of overall Pakistan's data. Its impact was much stronger and significant as compared to other variables. As dependency ratio has been defined as the ratio of non earners to the household size the results of young dependency and old dependency could not have been separated in the study. However, with this result one could easily envisage the picture that how the increasing burden of the population and unemployment are adversely affecting the economic well being of households.

Education level of the household head was found to have negative and significant effect on household savings. This result was in the line with the other studies done on Pakistan's data, like Burney and Khan (1992), Zafar (1999) and Rehman et al (2011). The result suggests that more educated will tend to save less as compared to uneducated. Rehman et al. (2011) explains the reason for negative relationship as the educated persons are more inclined towards higher education of their children. Therefore household's education expenditures are higher as compared to uneducated households. The educated people even sacrifice their savings for their children education.

The coefficient of age and age square of the household head follows the life cycle hypothesis. The coefficient of age was negative and significant in all the specifications of the saving functions suggesting that the life cycle hypothesis is true in case of Pakistan.

The value of coefficient -0.1 approximately in Keynesian, Klein and Landau models of marital status shows that the saving of the married household head decreases by 1 percent



as compared to unmarried head. This inverse relationship was found in all the three types of functional forms of household savings. The reason for negative relationship may be that the expenditure after getting married usually increases as the size of household increase. To fulfill the requirements of the spouse the married household head is less capable of saving (Rehman et.al 2011). The results were statistically significant at 5% level in all the three models.

Similar to Burney and Khan (1993) and Nasir (1999) the coefficient of presence of secondary earner in the household was estimated negative and significant across all model specifications. According to the previous literature the reason for negative relationship between presence of secondary earner and household savings is that the secondary earner in the household provides potential income insurance inside the house that reduces precautionary savings. Due to this the earning of the second person in the household inversely contributes in the savings of the household.

The home ownership relation with household savings was found negative. The value of coefficient of home ownership was almost same across all model specifications. According to Keynes there are eight motives behind savings i.e. Life cycle motive, precautionary motive, the intertemporal substitution motive, bequest motive, improvement motive, independence motive, the avarice motive and down payment motive. The down payment motive reveals that usually people accumulate deposits to buy houses, cars and other durables. If however, household own their house their down payment saving will be zero. Because of this, negative relationship hold between the homeownership and household savings. However, the value of coefficient was insignificant in three models that show that it does not affect much household saving patterns.

The coefficient of gender of the household head shows that the average household savings of male headed households are higher by 0.02 percent in case of Keynesian model. This result reveals that male member of household save greater as compared to females. This was found true in all the other functional forms of savings with minor differences in the value of coefficient. The rationale behind this relationship may be the fact as mostly the female headed households are single parent families. Their income is

usually low as compared to male headed households. Therefore, they have low potential to save, thus save less.

The positive and significant value of coefficient of earning status across all saving functions suggests that if the household head is an earner their savings are likely to be higher. This result was in the line with Burney and Khan (1993) but opposite estimated by Nasir (1991) done on Pakistan's data. The finding that saving of households is higher if the household head is an earner specifies that these households have higher earnings thus can save more than the non earner headed households.

To measure the impact of employment status on household savings, dummy was introduced taking value '1' if the household head is employer or/ self employed and '0' if the household head is employee. The negative sign of the coefficient of the employment status indicates that the employer saves less than the wage earner. The result is against the expectations. Kelley and William (1968), Ramanathan (1969) estimated positive value of the coefficient. As self employed or employer have saving obligations for capital formation in business they save larger part of income as compared to wage earners. The negative sign of the coefficient in this study was not surprisingly different from the studies done on Pakistan data (Nasir (1999), Rehana (1993) and Burney and Khan (1999)). The reason behind the negative relation is that the employer income depends on uncertain profit of the business, that make him a saver at one time and a dis-saver at the other time.

The coefficient of marital status was negative and significant. It shows that if the household head is married he is likely to save less. The rationale behind this negative relationship is that as the married people have taken care of family he is less capable of saving money (Rehman et al. 2010).

The impact of various categories of occupation was different across all types of saving functions. Following the standard Keynesian model it could be concluded that if the household head is a clerical and production related workers their savings will be higher as compared to a clerical, sales or production related workers. The value of the coefficient in all types of saving function was not only very small but also insignificant, which proves that the type of the occupation does not affect much the saving behavior of the household. The results were similar to Khan (1999), Burney and Khan (1992) and Rehana (1993).

The results corresponding to the dummy for the region was statistically significant and bears negative sign depicting different saving behavior of rural and urban households. The negative sign provide evidence of low saving in urban areas of Pakistan. Mostly people in rural areas of Pakistan are engaged in agricultural business. The income out of agriculture is uncertain. Therefore, due to precautionary saving people save more in rural areas.

## Chapter 6

### Conclusion and Policy Recommendations

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The study has analyzed the trends, composition and distribution of household savings in Pakistan. The purpose was to highlight the impact of different factors on saving behavior of households including income of the household head, education, gender and age of household head, employment status of household head, dependency ratio and homeownership of household. Three different functional forms of the saving function as proposed by Keynes, Klein (1951), and Landau (1971) were estimated separately for Pakistan data by ordinary least square (OLS) estimation technique.

The empirical results have revealed that the Keynesian model better suits the Pakistan data. Moreover, the significant values of inverse of income in Keynesian model, log of income in Klein model, and log of income square in Landau model have shown the nonlinear trends in saving behavior in Pakistan.

The analysis has also shown that Life cycle hypothesis is true in case of Pakistan. It has been seen that household saving is positively affected by age of household head and negatively by the square of age of household head. Income was found to be most important determinant of household savings. Its coefficient across all the model specifications was highly significant and positive.

The variable for education of household head has negative influence on saving pattern of households. It is seen that as level of education raises people intended to save less. According to Rehman *et.al* (2010) if the house head is highly educated person he will also like to educate his children. That will raise the education expenditures of the households, thus reducing their savings.

The study has found strong negative impact of rising population. The coefficient of dependency rate was negative and significant showing a strong negative influence on savings. Presence of secondary earner in the household, home ownership, and employment status poses negative and significant impact on household savings. Male headed households married household heads and employers have found to save more.

Finally it was seen that urban households save more as compared to rural households. The study has not found any systematic relationship between occupation and savings. Based on our results it suggested that:

Of all the variables income of the household was seen to be the major determinant of household saving. The rise or fall in the income will significantly affect the saving pattern of households. As higher economic growth means higher income, therefore the policies should be directed towards achieving higher economic growth which result in higher savings.

Rising population increases dependency burden that depress savings of households. In order to enhance savings, government should focus on slowing down of population growth.

Standardized education policy should be adopted. More education facilities and scholarships should be provided so that people are capable of saving more rather than investing in children education.

Efforts should be made to boost rural savings. Availability of agricultural credits and financial institutes in rural areas of Pakistan will help to improve the farmer's income that would increase their savings.

The network of National Savings Schemes, microfinance institutions and banks should be should be made more strong in the country. Strong financial institutions can create opportunities to raise savings.

As it has been seen that if the household head is male he will save larger amount of saving as compared if the household head is female. Therefore, efforts should be made to provide job opportunities for females, so that they earn more.

The campaigns should be launched to explain the value of financial savings to Pakistanis who prefer savings in gold and silver.

## APPENDIX

### Empirical Results

#### Model 1 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.600 <sup>a</sup>	.511	.510	2.38032

a. Predictors: (Constant), Urban, Primary, dependencyratio, marriage, O2, O3, inverseinc, agesquare, O1, O5, Intermediate, homeownership, Matriculation, employmentstatus, y, sex of person, secondary, Gradute, earningstatus, O4, Age in completed years

#### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	375380.855	21	17875.279	315.876	.000 <sup>a</sup>
1	Residual	87765.108	15490	5.666		
	Total	463145.964	15511			

a. Predictors: (Constant), Urban, Primary, dependencyratio, marriage, O2, O3, inverseinc, agesquare, O1, O5, Intermediate, homeownership, Matriculation, employmentstatus, y, sex of person, secondary, Gradute, earningstatus, O4, Age in completed years

b. Dependent Variable: avrgsav

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.	
		B	Std. Error	Beta	t		
	(Constant)		4.057	.254		15.998	.000
	y		3.639E-7	.000	.009	2.274	.003
	inverseinc		-76834.016	305.951	-.906	-251.132	.000
	Age in completed years		-.004	.008	-.010	-4.471	.638
1	agesquare		4.436E-5	.000	.011	2.521	.603
	dependencyratio		-.474	.120	-.054	-12.267	.000
	Primary		-.217	.048	-.018	-4.556	.000
	Matriculation		-.380	.063	-.024	-5.982	.000

Intermediate	-.482	.091	-.021	-5.288	.000
Gradute	-.520	.091	-.027	-5.717	.000
O1	-.003	.098	.000	.035	.972
O2	-.117	.166	-.003	-.704	.482
O3	.010	.114	.000	.085	.932
O4	-.037	.067	-.003	-.547	.584
O5	.035	.069	-.002	-.502	.616
employmentstatus	-.066	.060	-.006	-1.98	.272
earningstatus	.037	.075	.026	5.051	.000
secondary	-.031	.049	-.029	-6.414	.000
sex of person	-.025	.152	-.066	-1.782	.000
				1. -	
marriage	-.276	.075	.017	3.6	.000
				82	
homeownership	-.108	.059	.007	-1.846	.065
Urban	-.262	.044	-.023	-5.958	.000

a. Dependent Variable: avrgsav

#### Model 2 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.365 <sup>a</sup>	.33	.32	5.09021

a. Predictors: (Constant), Urban, Primary, dependencyratio, marriage, O2, O3, agesquare, O1, O5, Intermediate, homeownership, Matriculation, employmentstatus, sex of person, LNy, secondary, Gradute, earningstatus, O4, Age in completed years

#### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	61770.865	20	3088.543	119.202	.000 <sup>a</sup>
1	Residual	401375.098	15491	25.910		
	Total	463145.964	15511			

a. Predictors: (Constant), Urban, Primary, dependencyratio, marriage, O2, O3, agesquare, O1, O5, Intermediate, homeownership, Matriculation, employmentstatus, sex of person, LNy, secondary, Gradute, earningstatus, O4, Age in completed years

b. Dependent Variable: avrgsav



### Model 1 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.600 <sup>a</sup>	.511	.510	2.38032

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
	(Constant)	-2.698	.768		-37.364	.000
	LNy	.636	.062	.398	42.383	.000
	Age in completed years	.005	.017	.131	2.911	.004
	agesquare	.000	.000	-.156	-3.469	.001
	dependencyratio	-.841	.257	-.104	-11.032	.000
	Primary	-.413	.102	-.034	-4.037	.000
	Matriculation	-.060	.137	-.066	-7.735	.000
	Intermediate	-.474	.196	-.063	-7.535	.000
	Gradute	-.147	.194	-.111	-11.070	.000
1	O1	-.370	.210	-.016	-1.759	.079
	O2	-.900	.351	-.044	-5.416	.000
	O3	.159	.243	-.005	-.655	.513
	O4	-.004	.143	.000	-.031	.976
	O5	.157	.149	-.009	-1.054	.292
	employmentstatus	-.049	.129	-.043	-3.814	.000
	earningstatus	.062	.159	.074	6.658	.000
	secondary	-.083	.106	-.099	-10.224	.000
	sex of person	-.078	.329	-.023	-2.391	.017
	marriage	-.500	.160	.031	-3.122	.002
	homeownership	-.117	.126	.007	-.933	.351
	Urban	-.20	.095	-.055	-6.559	.000

a. Dependent Variable: avrgsav

### Model 3 Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.387 <sup>a</sup>	.250	.249	5.04093

a. Predictors: (Constant), logysq, Primary, homeownership, dependencyratio, O5, O3, marriage, O2, Intermediate, agesquare, O1, Matriculation, employmentstatus, Urban, sex of person, secondary, Gradute, earningstatus, O4, y, Age in completed years

#### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	69529.742	21	3310.940	130.296	.000 <sup>a</sup>
1	Residual	393616.221	15490	25.411		
	Total	463145.964	15511			

a. Predictors: (Constant), logysq, Primary, homeownership, dependencyratio, O5, O3, marriage, O2, Intermediate, agesquare, O1, Matriculation, employmentstatus, Urban, sex of person, secondary, Gradute, earningstatus, O4, y, Age in completed years

b. Dependent Variable: avrgsav

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
	(Constant)	-1.021	.638		-32.970	.000
	Age in completed years	.027	.017	.070	1.562	.118
	agesquare	.000	.000	-.090	-2.015	.044
	dependencyratio	-.803	.255	-.103	-10.986	.000
	Primary	-.406	.101	-.033	-4.008	.000
	Matriculation	-.899	.136	-.056	-6.617	.000
1	Intermediate	-1.110	.194	-.048	-5.718	.000
	Gradute	-1.390	.194	-.072	-7.177	.000
	O1	-.396	.208	-.017	-1.904	.057
	O2	.511	.351	-.012	-1.456	.145
	O3	-.457	.241	-.016	-1.899	.058
	O4	-.090	.142	-.008	-.635	.525
	O5	.237	.147	-.014	-1.608	.108

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employmentstatus	-.024	.128	-.021	-1.913	.056
earningstatus	.073	.159	.051	4.616	.000
secondary	-.096	.105	-.089	-9.212	.000
sex of person	-.049	.328	-.044	-4.544	.000
marriage	-.470	.159	.029	-2.967	.003
homeownership	-.098	.124	.006	.789	.430
Urban	-.558	.094	-.050	-5.953	.000
y	-1.515E-5	.000	-.391	-28.307	.000
logysq	.109	.004	.666	45.011	.000

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