KADİR HAS UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
ECONOMICS DISCIPLINE AREA

THE IMPACT OF BORROWING ON HOUSEHOLD SAVING BEHAVIOR THE CASE OF TURKEY 2003 – 2012

SERDAR ŞENOL

SUPERVISOR: ASSOC. PROF. DR. ÖZGÜR ORHANGAZİ

PHD THESIS

ISTANBUL, OCTOBER, 2018

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PHD THESIS

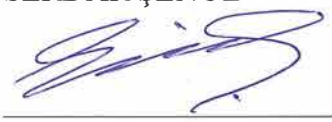
Submitted to the Graduate School of Social Sciences of Kadir Has University in partial fulfillment of the requirements for the degree of PhD in the Discipline Area of Economics under the Program of Economics.

ISTANBUL, OCTOBER, 2018

I, SERDAR ŞENOL;

Hereby declare that this PhD Thesis is my own original work and that due references have been appropriately provided on all supporting literature and resources.

SERDAR ŞENOL



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ACCEPTANCE AND APPROVAL

This work entitled **THE IMPACT OF BORROWING ON HOUSEHOLD SAVING BEHAVIOR - THE CASE OF TURKEY 2003 – 2012** prepared by **SERDAR ŞENOL** has been judged to be successful at the defense exam held on **18th OCTOBER 2018** and accepted by our jury as **PhD THESIS**.

Assoc. Prof. Dr. Özgür Orhangazi (Advisor)	Kadir Has University	.....
Prof. Dr. Osman Zaim	Kadir Has University	.....
Assoc. Prof. Dr. Hasan Tekgüç	Kadir Has University	.....
Assoc. Prof. Dr. Sezgin Polat	Galatasaray University	.....
Asst. Prof. Hanife Deniz Karaoğlan	Bahçeşehir University	.....

I certify that the above signatures belong to the faculty members named above.

Prof. Dr. Sinem Akgül Açıkmeşe
Dean
Graduate School of Social Sciences
DATE OF APPROVAL: 18/10/2018

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ABSTRACT

ŞENOL, SERDAR. *THE IMPACT OF BORROWING ON HOUSEHOLD SAVING BEHAVIOR – THE CASE OF TURKEY 2003 – 2012*, PhD Thesis, İstanbul, 2018.

The aim of this Ph.D. thesis is to contribute to the vast literature on the determinants of household saving and reassess the precautionary saving preferences of Turkish households, by introducing liquidity and debt related factors aside from the general saving contributors. The precautionary saving motive against future income uncertainties, defined as one of the leading indicators of saving preferences, is effected through liquidity effects, especially in less financialized economies with uneven income distributions. The sharp decline in Turkish households' saving ratio in the global financialization period is a good example of the changing saving dynamics with liquidity and debt concepts.

In my thesis, I use the Turkish Household Budget Surveys for the period of 2003 to 2012. In addition to the socioeconomic and demographic information in these surveys, I also utilize generated liquidity and debt indicators. Descriptive analysis confirms the predictions of the saving literature showing young and impatient households to be less inclined to save. Education level improves, while employment focuses on the service sector. Uneven income distribution is one of the major factors to limit saving and also precautionary saving opportunities for a significant portion of observations and elevates the importance of liquidity conditions.

Empirical analysis confirms the presence of precautionary saving in Turkish households, while its significance is lower after the 2008 crisis, once liquidity effects are introduced. Moreover, wealthy and entrepreneur households are observed to be natural savers. Presumably, liquidity constrained households do not demonstrate a difference in precautionary saving preferences, but confirming the predictions of the liquidity constraint households hypothesis, they dissave with easier liquidity conditions. The presence of debt is an additional saving motive. It is suggested that an improvement in income distribution and a decline in the liquidity constrained households' share would rebalance the low saving level of Turkish households.

Keywords: Saving, precautionary, liquidity constraints, debt, household budget surveys, Turkey, financialization.

ÖZET

ŞENOL, SERDAR. *THE IMPACT OF BORROWING ON HOUSEHOLD SAVING BEHAVIOR – THE CASE OF TURKEY 2003 – 2012*, Doktora Tezi, İstanbul, 2018.

Bu doktora tezinin amacı, hanehalkı tasarrufunun belirleyicilerine dair literatüre katkıda bulunmak ve genel etkenler yanında, likidite ve borçluluk faktörlerinin Türkiye'de hanehalkının ihtiyati tasarruf tercihlerine etkisini değerlendirmektir. Gelecek dönem gelir belirsizliklerine karşı oluşan ihtiyati tasarruf eğilimi, tasarruf tercihlerinde önemli rol alırken, özellikle daha az finansallaşmış ve gelir dağılımı bozuk olan ekonomilerde likidite koşullarındaki değişimlerden daha fazla etkilenmektedir. Küresel finansallaşma sürecinde Türkiye hanehalkının tasarrufundaki sert gerileme, likidite ve borçluluk algısı değişiminin tasarruf dinamikleri etkisi kapsamında uygun bir örnek olmaktadır.

Tezimde veri kaynağı olarak 2003 ile 2012 yılları arasındaki Türkiye Hanehalkı Bütçe Anketlerini kullanıyorum. Bu anketlerde bulunan sosyo-ekonomik ve demografik göstergeler yanında likidite ve borçluluğa dair türetilmiş göstergelerden de faydalanıyorum. Verinin betimsel analizi, tasarruf litaretüründeki genç ve sabırsız hanehalklarının tasarruf etme eğiliminin daha düşük kaldığı öngörüsünü desteklemektedir. Gözlem süreci boyunca örneklemin eğitim seviyesi yükselirken, istihdam hizmet sektörüne odaklanmıştır. Gelir dağılımındaki dengesizlikler, gözlemlerin önemli bir bölümünde ihtiyati tasarruf yapma eğilimini sınırlayan faktörler içinde öne çıkarken, likidite imkanlarının önemini artırmaktadır.

Ampirik analiz Türkiye hanehalkının ihtiyati tasarruf eğiliminin varlığını doğrularken, özellikle 2008 krizi sonrası likidite etkisinin eklenmesi halinde gücünü azaltmaktadır. Ek olarak, servet sahibi veya girişimci olmanın doğal tasarruf yarattığı gözlenmiştir. Likidite kısıtı altında olduğu tahmin edilen hanehalklarında, ihtiyati tasarruf eğiliminde farklılaşma gözlenmezken, likidite kısıtı altındaki hanehalkları hipotezini doğrulayan şekilde, bu gözlemlerde likiditenin rahatlaması tasarrufu düşürücü etki yaratmaktadır. Borçluluk durumu tasarrufu artırıcı bir etken olmaktadır. Gelir dağılımındaki iyileşmenin ve likidite kısıtı altındaki hanehalkı payının azaltılmasının Türkiye hanehalkının düşük tasarruf oranını dengeleyebileceği öngörülmektedir.

Anahtar Sözcükler: Saving, precautionary, liquidity constraints, debt, household budget surveys, Turkey, financialization.

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INTRODUCTION

I analyze the household saving behavior in Turkey for the period of 2003-2012. This period has been chosen as a significant increase in consumer and mortgage credit volume and household indebtedness ratio is witnessed. It has long been argued that one of the structural problems of the Turkish economy is the low level of national savings. Relying on household budget surveys, I analyze the household side of the savings issue and attempt to uncover both empirical trends in household savings and the determinants of household saving.

As such, this study relies on and contributes to the vast literature on the determinants of household saving behavior. Most of this literature follows the two major studies of the Life Cycle Hypothesis (LCH) of Modigliani (1954) and Permanent Income Hypothesis (PIH) of Friedman (1957), which took saving as a function of lifetime income fluctuations and mainly concentrated on saving for retirement purposes or for times of volatility in permanent income. Findings of excess sensitivity of the ratio of consumption to income led to the introduction of risk factors, mainly income uncertainty.

The concept of risk aversion, which was subject to studies in the earlier literature by Arrow (1964) –and Pratt (1965) was followed by Kimball's "prudence" concept (1990). Barsky, Mankiw and Zeldes (1988) argue that income uncertainty has a significant effect on the overall level of consumption. Zeldes (1989) finds that uncertainty has an important role not only on the level of but also on the slope of consumption function with respect to current wealth. Following the studies of Deaton (1991) and Carroll (1996), research began focusing on liquidity constraints as a measure of precautionary savings.

The studies of Shea (1995), Ludvingson (1996), Drakos (2002), Gross and Souleles (2002), Lee and Sawada (2005), Nirei (2006), Beznoska and Ochmann (2012), Blanc et al. (2014) are some of the examples that found clear evidence for the presence of liquidity constraints.

Dynan (2012), Baker (2013) and Mian et al. (2013), for example, not only take the risk perception of consumers into consideration but also assign an important role for the debt

effect in saving preferences. The elasticity of consumption to income changes drastically between high leveraged and low leveraged households. Baker (2014) finds that the elasticity of consumption with respect to income is significantly higher in households with high levels of debt. A recent analysis by the IMF in its Global Financial Stability Report of October 2017 indicates that high debt level is a larger concern, in terms of financial stability, when it is observed in low income households rather than high income households.

Aside from general purpose consumer debt, debt depending on the housing asset accumulation process is also another part of these studies. The rise in housing investments is not only a result of the surge in housing asset prices but also the fact that the market is more liquid than formerly perceived, or at least it was believed to be. Housing wealth was viewed as a precautionary "buffer" that can be cashed in, in the event of an income or a health downturn. (Skinner, 1993) Negative externalities of household debt may be limited when the debt is elevated through the housing channel rather than a direct expansion in consumer loans, while the post crisis consequences showed that even housing debt was not safe enough.

In the case of Turkey, Van Rijckeghem and Üçer (2009) analyze the 1998 to 2007 period and find evidence for the effects of rising liquidity and consumer confidence on low saving rates. Declining interest rates and credit availability promotes consumption, while depressing saving.

Ceritoğlu (2009) finds that precautionary saving constitutes a significant share in total household saving in Turkey. He also finds that the precautionary saving motive is higher for entrepreneurs and that the lack of health insurance generates an additional precautionary motive.

Studies on the effect of debt dynamics and mortgage debt in Turkey are limited. This thesis aims to contribute and enhance the findings of Ceritoğlu and other studies, with the introduction of new variables for the estimation of savings. An understanding of the increase in the precautionary saving motive for indebted households, indicating the elasticity of consumption to income changes between high leveraged and low leveraged households is the expected contribution of this thesis to the literature.

I use the Household Budget Surveys for the period of 2003 to 2012 prepared by the Institute of Statistics of the Republic of Turkey (TURKSTAT). Data are prepared in the

form of pseudo-panel data and lack the structure of time series data, which limits our scope to define liquidity conditions or use income variability as the risk factor. Income information is given at the individual level but consumption and disposable income data are given only at the household level. Saving rate is derived from the difference between disposable income and the consumption of the household. As the main model is on saving, data for the saving model are derived from only household data and not data at an individual level. However, individual level data is analyzed in detail in the descriptive section of the thesis.

In order to define two of the variables, permanent income and the income risk for unemployment, additional modeling structures are used. The first model is a probit model that introduces the income risk depending on the probability of unemployment. After implementing the probit model on different subsegments of the observations at an individual level, data for the subgroup of household heads are found to be more adequate, as the last model estimating the saving model was driven mainly by the household head information. The predicted unemployment risk of the probit model mostly from demographic indicators is then interacted with the square of the employment income either from labor, entrepreneur or other sources.

The second stage of the model deals with estimating the permanent income level of the households. Based on panel data analysis, the permanent income is derived from the predicted values of a model, which is also expected to overcome sample selection bias. The structure of these surveys for the income level of the household lacks different subsegments of the disposable income. Households tend to declare their income at lower levels or they give information only for some of the sources of their income. In addition to this situation, there are also unemployed individuals with income and employed individuals with no income. In order to overcome this problem, Van Rijckeghem and Üçer (2009) use the size of the house and the number of durable goods used. Ceritoğlu (2009) uses the Heckman selection model to overcome this sample-selection bias and looks for the positive income in the first stage and then the income level in the second stage of the Heckman model. I follow Ceritoğlu, and use the Heckman selection model with the introduction of new variables. In the last stage of the analysis, saving level is regressed on the permanent income, precautionary saving indicator, education, year effects, entrepreneurship, household type, household debt and

wealth indicators. Year dummies are included to define the liquidity and economic expectations' effects. Household debt is introduced as a dummy variable as there is only information for the status of debt at the house lived in, which indicates a mortgage status.

The findings in the descriptive analysis initially state that the young population of the Turkish economy and changing occupational preferences lie behind low savings. Younger individuals reduce savings in times of relieved liquidity conditions and the increasing education level also demands more jobs and also increases the expected lifetime income level for individuals. The resulting effect is higher consumption tendency and lower savings. In addition to this effect, the share of entrepreneurs or self-employed individuals is declining, resulting in lower saving preferences for these observations. These findings are in line with the results of former studies, indicating that the newly emerging economies with a higher young and impatient population are tending to consume more and save less, especially when the liquidity constraints are relieved. (Carroll (1992), Cagetti (2003), Kennickell and Lusardi (2005)).

The model results support the findings of the former studies regarding the Turkish economy and the household sector. However, the introduction of the year effects to define the rising consumer confidence and liquidity conditions is significant and reduces the momentum of the precautionary saving indicator. This result is in line with the findings of Van Rijckeghem and Üçer (2009), that the recent decline in private saving can be explained by the recent rapid increase in credit availability. In addition to this finding, the momentum of the year effects strengthens after the 2008 crisis period with more favorable global liquidity conditions. Aside from the income effects, education level clearly elevates the motivation for savings and entrepreneurship is a strong motive to save more.

Debt effects, one of the main findings of this thesis, indicate that the debt of the household increases the saving motive of the households. Debt level increases the household's risk aversion through declining future disposable income, especially in times of rising uncertainty, stimulates saving behavior and also generates an additional precautionary saving motive. In the interaction between the year and the debt effects, the significance arises starting from 2008. As far as consumer loan availability and liquidity conditions are concerned, the timing is in line with the post-crisis global

liquidity relief and Turkish households' consumer loan rising trends. The results show rising debt (mortgage) status results in additional precautionary saving behavior for the Turkish households.

The results of this thesis indicate that precautionary saving motive depending on unemployment risk is an important factor for the total saving decision of the household sector, but considerably lower than the findings of former studies. Rising confidence and declining interest rates, resulting in a relief of the liquidity conditions, could be the main reason for this variation. Introduced liquidity effect dummies for certain years suggest that the relief of liquidity conditions do reduce savings, especially after the 2008 Global Crisis period. The liquidity effect is observed more on the younger generations, who tend to be more impatient. Asset formation bias of the younger generations is declining in our observation period, which also generates an additional factor to limit the saving capability. Rising cost of living and elevation in asset prices are the probable factors to discourage the asset formation habit and promote consumption for the younger generations. Against the negative effects of the relief in liquidity conditions on saving, debt status for mortgages is found to be an important saving enhancing factor. The status of being indebted works as an additional precautionary saving motive and is mostly significant for those workers purchasing their first homes. However, the positive effects of mortgage debt on saving are limited due to the elevated asset prices, and this trend can result in continuous pressure on saving capabilities. The consequences could be elevated consumption volatility and financial instability in the long run. As also observed in most developing economies, deteriorated income distribution is another factor to limit the saving capabilities of a larger share of the population. Measures to limit ineffective borrowing due to the relief in liquidity conditions and balancing income distribution can be the main policy actions to elevate the saving level, when they are implemented in coordination.

The rest of this thesis is structured as follows: An extensive review of the saving literature and the effects of the precautionary saving motive, liquidity constraints and the wealth factors on saving behavior will be given in Chapter 1. Details of the dataset will be presented and the main determinants that effect the saving behavior of Turkish citizens will be discussed in Chapter 2. Chapter 3 presents analysis of the models generated to identify labor income risk and its effects on saving preferences, along with

income and other related demographic and economic indicators. In this chapter, the debt and saving relationship and the changing liquidity environment through year effects will also be analyzed. In Conclusion part, I will conclude with a discussion of policy implications and further research questions.

CHAPTER 1

LITERATURE REVIEW

1.1. INTERTEMPORAL ALLOCATION OF CONSUMPTION

The literature on saving motives finds its origins in the initial comments of J. Maynard Keynes in his "The General Theory of employment, interest and money" (Keynes, 1936). Here, Keynes states eight motives for saving and these are mainly the standard indications for the following saving literature. The initial motive is time preference and the intertemporal substitution effect. Then comes the improvement motive with the received joy from the gradual rise in expenditures, followed by the independence motive. The other motives are the ones which are found to be standard headlines in the literature. Foreseen changes in income lead to the life cycle hypothesis, while precaution leads to the precautionary saving motive. Bequest motive is also analyzed as an indication for saving preferences, especially for the later periods of life. Enterprise motive, which will also be analyzed in our analysis is a strong factor for risk-taking individuals. The final one is miserliness, which can be considered as a habit rather than a motive.

Lusardi (1996) adds another motive to the Keynesian motives with the new requirements of today's daily life. She defines this motive as a base for asset formation. The deposit accumulation to purchase a house or durable goods is the last motive added by Lusardi.

These motives constitute the starting points of the literature on consumption and saving theories. The motives are both complementary and at the same time the changing momentum of the motives for each individual sets a different saving decision for every person. Against the comments on the lack of microeconomic details in Keynesian theory, the path to modern consumption and saving theories starts with questions and objections to Keynes' initial steps.

The Keynesian consumption function is based on two major hypotheses. First, marginal propensity to consume lies between 0 and 1. Second, average propensity to consume falls with rising income. Early empirical studies were consistent with these hypotheses.

However, after World War II, it was observed that savings did not rise as income rose. Therefore, it was suggested that the Keynesian model fails to explain the consumption phenomenon and thus emerged the theory of intertemporal choice. Intertemporal choice had already been introduced in 1834, with John Rae's publication of "The Sociological Theory of Capital". In Rae's view, the psychological factor, the desire to accumulate, was the main factor to differ between countries and so set the ground for the level of savings and investments. The intertemporal substitution was subject to various factors, including the interest rate that determines the elasticity of intertemporal substitution (EIS). EIS mainly differs with the income and the economic situation which also sets the level of interest rates. A generalized form of the elasticity of intertemporal substitution is improved by spreading this choice over a life time in the Life Cycle Hypothesis (Modigliani, 1954) and with the introduction of expectations for future labor income by Campbell (1987) and led the way to the "saving for a rainy day" motive.

Later on, Irving Fisher (1930) elaborated on Rae's model. According to Fisher, an individual's impatience depends on four characteristics of his income stream: the size, the time shape, the composition and risk. In addition, foresight, self-control, habit, expectation of life, and the bequest motive (or concern for live of others) are the five personal factors that determine a person's impatience, which in turn estimates his time preference. Fisher's indicators for impatience are also similar to the determinants stated by Keynes.

Intertemporal choice is the study of how people make choices about what and how much to do at different points in time, when choices at one time affect the possibilities available for the following periods. So, it is a trade-off between the present and future in means of consumption subject to budget constraint, which is the life time income of the agent. The simplest intertemporal allocation function is analyzed in a two period time horizon.

In the two period time horizon, the utility function unites the utility from consumption in the first and second periods, and the household can choose to consume in the first or the second period, depending on the discount factor effective on consumption. A discount factor, lower than the unity indicate the impatience of the households to consume in the first period, rather than the second period. Monotonicity (more is preferred to less), concavity (decreasing marginal utility in consumption in both

periods), and the assumption that consumption goods are normal goods are all contained in the utility function standards. The standard household is also assumed to be risk averse and has a desire to smooth consumption over time.

Standard constant relative risk aversion (CRRA) functions can be well suited to the standards of the intertemporal allocation of consumption, which satisfies the concavity criteria for the utility function.

1.2. LIFE CYCLE HYPOTHESIS AND PERMANENT INCOME HYPOTHESIS

Consumption and its drivers have always been an important topic in economics, both at the micro and macro level. As to consumption over the life cycle, the two most important theories dealing with forward-looking consumer behavior are the Life Cycle Hypothesis of Franco Modigliani (1954) and the Permanent Income Hypothesis of Milton Friedman (1957). The predictions of the two models are similar – in the simplest version with no uncertainty, intertemporal optimization of consumption decisions leads to consumption smoothing not only for two periods but over the life cycle.

According to the Life Cycle Hypothesis (LCH), the rational agent representing the whole society aims to maximize his/her utility subject to a budget constraint. The agent aims to utilize his sole utility tool, consumption, with his budget constraint, which is life time income. The total of life time income is life time wealth and the consumer's aim is to utilize this wealth effectively during each period of his/her life time. When the agent is young with a low income, he/she can borrow for his future income, which is expected to maximize in middle age. The agent maximizes the income in middle age and begins to save for retirement. The main logic behind the LCH is the ongoing consumption smoothing behavior with changing income levels throughout the life time. The fundamentals of LCH indicate that income does change through the life time and is mostly similar within each agent, with a low level at early ages and high in middle age and falls again at older ages. The agent can borrow and lend at the same interest rate level with no liquidity constraints. The agent smooths the consumption via borrowing at early ages. In middle age, the agent firstly pays the debt back and begins to save for future consumption at older ages. So, the saving level rises substantially in middle age and additional wealth is generated for future consumption. The agent protects the

maintenance of the consumption throughout the life cycle, subject to the volatility of the income.

LCH considers that age, occupation and personal preferences can shift the consumption and income tendencies, while the representative agent still continues to be the average of the community. The outlier agents in the community do not change much of the community average. The base assumptions of the LCH are also the main points of objections to the LCH theory in general.

Since their introduction, both theories have been well studied by other authors and many times modified to incorporate rational expectations, different types of liquidity constraints, bequest motive or specific forms of utility functions and preferences. Empirical testing did not lag behind, and the hypothesis of life cycle consumption was empirically analyzed from the first, using aggregate data and more recently individual-level data.

Several objections to the simple LCH have been produced following the introduction of the theory by Modigliani and most of them have stressed the excess sensitivity of consumption to income as the main defect of the LCH. (Flavin, 1981; Dornbusch and Fischer, 1987) The shortcomings of the standard LCH mostly stem from its own doctrines. Aside from the frictions in the lending and borrowing possibilities and liquidity constraints, changes in income volatility are mostly common to all the agents in the community. On the other hand, economic volatilities and occupational differences can change the shape of the income pattern, as can easily be observed from the income pattern difference of a clerk and a worker in the agriculture sector. As agricultural income is subject to great volatility due to weather conditions, income can vary significantly between two consecutive years. So, the smoothness of the income trend of LCH is mostly violated according to economic conditions and occupational status.

This shortcoming of the LCH has been compensated by the Permanent Income Hypothesis (PIH) of Friedman, which divides yearly income into two parts; the permanent and the transitory income parts. In their work on income inequality in the United States, Friedman and Kuznets (1945) suggest that observed income at a particular point in time could be decomposed into the sum of an individual's long run income together with a transitory component, which has a zero mean in the total life time. In his subsequent work on the consumption function, Friedman (1957) proposes a

similar decomposition for current consumption: observed consumption was hypothesized to be a function of the household's permanent income and a transitory component.

PIH also considers a similar path of consumption smoothing, with regard to income volatility, and considers that the agent can borrow and lend freely in the economy. The main point of the PIH is that it considers that the agent maintains a permanent income and consumes a fraction of the permanent income, while the volatility of the transitory income is mostly transferred to the saving. Permanent income is estimated according to education, occupation, initial wealth and personal preferences. Aside from the initial wealth indicator, most of the permanent income indicators are found to be dependent on demographic indicators. On the other hand, the transitory part of the income can be highly volatile and can be sustained for a long period, which can also shift the permanent income in the long run. Friedman sets the Permanent Income Theory on the agent's specific tastes, preferences, interest rate and level of wealth, all of which constitutes the total Permanent Income level for the agent. Consumption is a fraction of this permanent income and the consumption level may vary according to the preferences of the agent. So, consumption can change for every agent and the community average can change in time. Consumption is considered to be smooth in time, consistent with the LCH, and the saving could be highly volatile due to the volatility of the transitory income. Against the simple logic of the PIH, the implementation of the Hypothesis and determination of the permanent income includes severe problems for the estimation. To counter this difficulty, Friedman argues that the weighted average of the past years could be a good indicator for the current permanent income estimation. For the weightings of the past period incomes, recent years will have a higher weighting, as they are better indicators for the current income and economic status. In his own words, Friedman says: "The most direct way to estimate the Permanent Income is to construct estimates of permanent income and permanent consumption for each consumer unit separately by adjusting the cruder receipts and expenditure data for some of their more obvious defects, and then to treat the adjusted ex post magnitudes as if they were also the desired ex ante magnitudes". (Friedman, 1957)

According to the objections to the PIH, the main problem is the usage of current and past income to present the permanent income level. Current income and consumption

are found to be imperfect proxies of permanent income which is the variable of real interest in a wide variety of policy settings. This is both because of measurement error but also because they contain a high transitory component. Recognizing these problems, a part of the literature has emerged to identify the most satisfactory indicator (often defined as the least noisy correlate) of permanent income (Deaton, 1992; Anand and Harris 1993; Chauduri and Ravallion, 1994; Blundell and Preston, 1998).

Permanent income is viewed as a function of the human and non-human capital of the household, conditioned by its composition which controls its position in the life-cycle (see Deaton, 1992).

The growth of consumption and its parallel growth trend with income in the empirical data has been the main starting point of the objections to the standard LCH/PIH hypothesis. The main approvals of the PIH are the complete certainty for future expectations and the interest rate levels. According to the LCH/PIH, consumption would follow a path, not bounded with the total income growth level, while innovations in permanent income could generate shifts in consumption behavior. The main theme here is that consumption follows a smoother trend depending on the core consumption requirements of consumers and their preferences to keep the marginal utility from consumption stable all through their life time, which is called standard of living by consumers in general.

Keynesian consumption-income relation considers the marginal propensity to consume as the parameter to link consumption expenditures and disposable income. He favored a direct linear link between consumption and disposable income, while the marginal propensity to consume also changed with the level of income and showed some inverse relation habits to income growth. What's more, consumption trend shows a less volatile trend than the income itself in the actual US consumption time series data. PIH sets consumption level to the permanent income trend and links shifts in consumption to innovations in permanent income, while transitory income changes would have little effect on long term consumption trends. However, due to the close relation between income and consumption, the LCH/PIH theory, set against the Keynesian view, was again debated with the Keynesian theory itself.

Since the 1950s, both theories, LCH/PIH, were modified to incorporate rational expectations, different types of liquidity constraints, bequest motive or specific forms of

utility functions and preferences. Some of these modifications found evidence in favor of the LCH/PIH, while some found significant diversions from these two basic hypotheses.

Lucas (1976) introduced the rational expectations motive to the LCH/PIH, considering that the agents are rational enough to take all the available information into consideration and also allows for expectations and news of future developments. Against the link set by the LCH/PIH between consumption and income, the rational expectations theory says that current consumption may differ from the current and the historic income path. So, consumption growth and income growth can diverge from one another depending on the expectations of the agent for future income and income volatility. He argues that it is naive to try to predict the effects of a change in economic policy entirely on the basis of relationships observed in historical data and his theory is known as the Lucas Critique. The Lucas Critique is significant in the history of economic thought as a representative of the paradigm shift that occurred in macroeconomic theory in the 1970s towards attempts at establishing micro-foundations.

Hall (1978) shows that a central implication of the theory is that consumption should follow a “random walk”. Hall’s thoughts were: According to the Permanent Income Hypothesis, consumers deal with shifting income and try to smooth their consumption over time. At any given moment in time, consumers select their consumption based on their current expectations of their lifetime income. Throughout their life, consumers modify their consumption because they receive new and unexpected information that makes them adjust their expectations (random walk). He argues that, to a first approximation, postwar U.S. data are consistent with this implication, in his study using the Euler equation. However, Attanasio (1993), using similar Euler consumption equations, had trouble explaining the empirical data. He finds that the evidence showed that the life cycle model cannot be easily dismissed. As another objection to standard LCH/PIH, Flavin (1981) reports that consumption is "excessively sensitive" to income, a conclusion that has been widely interpreted as evidence that liquidity constraints are important for understanding consumer spending (Dornbusch and Fischer 1987) and that the basic approval of the LCH/PIH can be rejected with liquidity constraints. Flavin's findings also define the relation between income and saving, and state that the "excess sensitivity” also generates additional volatility for the saving. However, Mankiw and

Shapiro (1985) show that Flavin's procedure for testing the PermanentIncome Hypothesis can be severely biased toward rejection if income has approximately a unit root. Nelson (1987) reevaluates the evidence on the PIH and concludes that it is favorable.

As an improvement, Campbell (1987) introduces the "saving for a rainy day" motive to the LCH/PIH model, which states that the current saving and consumption levels will also be determined by the expectations of future labor income. Expected income changes will be a good indicator of the current saving level as they will also determine the permanent part of the income. Information other than the expected income variance due to retirement age, like an economic recession or a failure of the sectors the individual is dependent on, can be the factors to determine the transitory part of the income and the volatility of the saving level.

The variations in consumption are smaller relative to the variation in income in the data. The general explanation for this fact is that consumption is determined by permanent income and permanent income is smooth relative to current income, which also contains transitory income as well. Innovations to income take place initially in the transitory income part and generate relatively small innovations to permanent income, and thus to consumption, resulting in additional saving possibilities. So, if the smoothness of consumption relative to income is taken to refer to the relative variance of variations in income, smoothness is explained by the permanent income theory. (Campbell, Deaton, 1989) This trend relation between consumption and permanent income also generates a favorable choice to use consumption as the indicator for permanent income as it gives a closer relation with the long-term expectations of consumers that also sets their permanent income expectations. Campbell and Mankiw (1990) find evidence against the implication of the PIH that changes in consumption are not forecastable. They find that if consumption is regressed on its own lagged values, the null hypothesis that all the coefficients are zero can be rejected. So, consumption in previous periods can have deterministic power on current consumption. As to the empirical testing of the Permanent Income Hypothesis, aggregated data were used at first. Analyses were performed with various modifications in the utility function form, in the development of interest rates etc. As an example of the estimation using aggregate data, Campbell & Mankiw (1991) test the Permanent Income Hypothesis using the US quarterly data for

years 1948-1985 against an alternative model, where a certain fraction of households consumes their current rather than permanent income. Using an instrumental variables approach, Campbell & Mankiw (1991) estimate this fraction to be significantly different from zero, interpreting it as a rejection of the Permanent Income Hypothesis.

Naga and Burgees (2001) find results casting doubt on the belief that current consumption is always a better proxy of permanent income than current income. This comparison is highly sensitive to how noisy elements of consumption are treated. Their results are in line with Chaudhuri and Ravallion (1994), who do not find evidence that the preference for consumption-based measures is supported in Indian longitudinal data. Also, their analysis of the data for rural China and their study on the relation between consumption with permanent income do not result in a straightforward relationship and suggest that consumption cannot be assumed to be a better indicator, or permanent income in a low income setting. The low income economy gives a direct relation to consumption with total income rather than permanent income, as the citizens of these low income economies do have to consume their total income and will later be classified as "rule of thumb" consumers by Deaton (1989), with a structural saving problem.

Here I should also mention the important paper of Campbell and Deaton (1989), which shows that the excess sensitivity of consumption to current income and excess smoothness of consumption are the same phenomenon. Campbell and Deaton find that changes in consumption are related to lagged income. However, they insist that the correlation of consumption and lagged income is not in favor of the permanent income theory as the correlation should be zero if the permanent income model were true. So, the smoothness of consumption does not depend on the accuracy of the permanent income theory, while the dataset of consumers on the expected income levels are richer than previously thought, and this gives the smoothness to the consumption levels.

Carrol and Summers (1991) argue that both PIH and, to an only slightly lesser extent LCH, as they have come to be implemented, are inconsistent with the main features of cross-country and cross-section data on consumption, income and income growth. There is clear evidence that consumption growth and income growth are much more closely linked than these theories predict. Although a single unified model may be desirable as an eventual goal, it may turn out to be more fruitful, in the mean time, to

pursue separate models to explain the consumption-income parallel and the consumption-saving divergence.

On the other hand, there are also studies favoring the standard LCH and these strudies attributes the differentiation in findings to the other control variables. Simple life cycle models assume intertemporal additive preferences, perfect capital markets and rational expectations. A consistent finding of the models of intertemporal allocation estimated on aggregate time series data is that such simple versions are rejected by the data. These rejections are mostly violations of the over-identifying restrictions implied by the model "excess sensitivity" of consumption growth to the expected income growth. In his study, Attanasio (1993) finds that labor supply and family composition are the most influencing factors on consumption decisions. He finds that the excess sensitivity of consumption growth to labor income disappears once the data are controlled for the demographic variables. That's why Attanasio cannot dismiss the life cycle model.

1.3. UNCERTAINTY

Households save and consume both for intertemporal reasons and to control exposure to risk in future income. The resulting patterns of consumption and savings at both the household and the aggregate level give information about the preferences of the individual that dominates intertemporal substitution and risk aversion. For an individual, the risk premium is the minimum amount of utility/money that the agent needs to compensate for the risk factors for the agent in terms of future risks on consumption or holding a risky asset. The individual is risk averse if the risk premium amount is positive and the certainty equivalence is the guaranteed amount of utility/money that an individual will consider it desirable to take risks on, allowing for future uncertainty. Risk aversion is the behavior of the individual to attempt to minimize the uncertainty. The papers by Arrow (1965) and Pratt (1964) about the measurement of risk aversion had a huge impact both on the theoretical literature devoted to the economics of risk. They introduce the risk factor via the risk premium indicator, π, to the utility function. They consider a decision maker with assets x and utility function u. The risk premium π is such that the individual would be indifferent

between receiving a risk *z* and receiving the non-random amount E(*z*) - π, that is, π less than the actuarial value E(z).

Arrow-Pratt introduces the π risk premium into the utility function and finds that the absolute risk aversion coefficient is the ratio of the second derivative of the utility function to the first derivative with a negative sign.

The risk factor is for sure contradictory to the standard doctrine of perfect foresight and perfect information of the consumers and generates another objection to the LCH and PIH. Following the absolute risk aversion, the comparative risk aversion concept does indicate that the risk aversion differentiates from one individual to another.

The state of the absolute risk aversion can be decreasing or increasing depending on the sign of the first order of the absolute risk aversion. If the derivative of the absolute risk aversion subject to x is negative than the relative risk aversion is decreasing, and vice versa, and this can only hold if $u^{\text{III}}(c) > 0$. The positive skewness of the utility function determines the magnitude of the negative risk aversion. Therefore, the negative skewness of the utility function sets the positive risk aversion of the individual.

A step forward concept to the risk aversion is the *prudence* which sets the precautionary saving motive of the individual. The individual is considered as prudent if he/she saves more when he/she has risks about future income. This additional saving is called *precautionary saving*. Prudence is closely related to risk aversion. The difference is that saying a consumer is risk-averse implies that he/she dislikes facing risk and shows a desire for insurance, whereas prudence implies that the consumer takes action to offset the effects of the risk by increasing saving and measures the intensity of the precautionary motive.

It has been recognized since Bernoulli (1738) that risk aversion can be associated with concavity of utility functions. But it was not until Pratt (1964) and Arrow (1965), that it was recognized that the absolute and relative risk aversion concepts were good measures of risk aversion and the precautionary saving motive. In the literature regarding precautionary saving, it has been known since Leland (1968) and Sandmo (1970) that precautionary saving in response to risk is associated with convexity of the marginal utility function, or a positive third derivative of a von Neumann-Morgenstern utility function. Leland (1968) shows in a two-period model with no risky assets, that a

positive third derivative of an additively time separable utility function leads to precautionary saving, where a negative effect of labor income uncertainty is observed on the overall level of consumption. The "prudence" concept that the individuals set towards risk were first identified by Leland's study. Later on, Sandmo (1970) also shows that capital income uncertainty has both a precautionary saving effect as found by Leland and an effect similar to the effect of reducing the rate of return.

Following the previous work on precautionary saving models; empirical analysis of the Federal Reserve Board's 1983 Survey of Consumer Finances shows that for 43 percent of the participants, the leading motive to save was preparation for emergencies. 15 percent of the participants saved with the preparation for retirement motive. These responses are outside of the predictions of the standard LCH/PIH models.

Income uncertainty has a significant effect on the overall level of the consumption function, Barsky, Mankiw and Zeldes (1988) argue that finding, detailing the effect of taxes on the habit of consumption. In addition to income uncertainty, risk aversion also plays an important role for consumption choices. Mankiw and Zeldes (1991), in their work on the consumption behavior of stockholders and non-stock holders as an indication of the risk perception, show that this difference in the asset holding type of the individuals had a significant effect on their consumption preferences. They find that the implied coefficient of relative risk aversion based on stockholder consumption is only about one-third of that based on the consumption of all families. In line with this work, Zeldes (1989) computes the consumption decision rules for the particular parameterization of uncertainty for the appealing constant relative risk aversion utility functions, and finds that uncertainty has an important role, not only on the level of consumption and saving, but also on the slope of the decision rule giving consumption as a function of current wealth. Kimball's (1990) two consecutive studies for precautionary saving and standard risk aversion, show that the decreasing absolute *prudence* of an additively time separable utility function leads to a positive effect of the labor income uncertainty on the slope of the consumption function. Kimball mainly defines the characteristics of "*prudence*" in his studies. He sets the absolute prudence determinant as the ratio of the third derivative of the utility function to the second derivative with a negative sign. And for the second period utility function, *u(c)* determines the strength of the precautionary saving motive.

The difference between the risk aversion and prudence concepts is that the term "*prudence*" is meant to suggest the propensity to prepare and forearm oneself in the face of uncertainty, in contrast to "*risk aversion*", which is how much one dislikes uncertainty and would turn away from uncertainty if one could. (Kimball, 1989) Prudence and the relative prudence concepts determine the strength and the orientation of the risk aversion motives. While risk aversion takes the concavity of the utility function as a control standard, prudence takes the convexity of the marginal utility function as a basic control standard. Kimball shows that if the precautionary saving motive is decreasing in saving, an income risk increases the marginal propensity to consume; while if saving motive is increasing in saving, then income risk decreases the marginal propensity to consume. Here we can define income risk also as labor income risk.

The optimal saving level rises with uncertainty and the sensitivity of saving to future income shocks will be lower, as the initial wealth level is higher. The saving response of the wealthier to income shocks would be lower than for the less wealthy individuals.

The magnitude of precautionary saving has been tested in many studies, and the results indicate that the level could vary according to the income level, wealth and other demographic indicators. The indicators also reshape the saving attitudes of the individuals. Dreze and Modigliani (1972) take the first effect as the wealth effect, which is the one that is generated with the decline in consumption due to future income uncertainty. The other one is the substitution effect, which is dependent on absolute risk aversion and consumption choice between the first and the second periods. Dreze and Modigliani interpret the "substitution effect" as the fact that the index of absolute prudence exceeds absolute risk aversion whenever absolute risk aversion is decreasing, and is less than the Arrow-Pratt measure of risk aversion when absolute risk aversion is increasing. So they state that decreasing absolute risk aversion leads to a precautionary saving motive stronger than risk aversion. The main logic behind this finding is that decreasing absolute risk aversion means that greater saving makes it more desirable to take on a compensated risk. But the other side of such a complementarity between saving and a compensated risk is that a compensated risk makes saving more attractive. So, risk aversion and prudence decline with wealth, as the sufficient buffer stock levels give adequate insurance against future income uncertainties. (Kimball, 1990-2)

Although the wealth effect is crucial for the saving level, the impatience of individuals do also influence saving level and impatience is also found to be the factor to keep the people poor. (Schechtman, 1976; Bewley, 1977) Skinner (1987) finds that precautionary saving comprises up to 56 percent of aggregate life cycle savings. The saving level of self-employed and sales people, who are generally found to have higher saving motives than the aggregate saving levels, was lower in Skinner's benchmark group. Skinner attributes the restrictions of the sample for this finding.

The relationship between risk aversion and prudence also depends on the level of these indicators. The greater risk aversion increases the strength of the precautionary saving motive, while greater resistance to intertemporal substitution reduces the strength of the precautionary saving motive in the typical case of decreasing absolute risk aversion. Resistance to intertemporal substitution and risk aversion mean that they work contrary to one another in setting the precautionary saving. But when there is decreasing absolute risk aversion and the risks are large, precautionary saving (prudence) is stronger than risk aversion, regardless of the elasticity of intertemporal substitution (EIS) effects. EIS is significantly high in wealthy households, and is a more important factor for precautionary savings than risk aversion because saving is more responsive to changes in EIS than changes in risk aversion. The persistence of income shocks is a determinant of the strength of the precautionary savings motive. The more persistence in income shocks leads to stronger precautionary savings. The income effect is more important than risk aversion, resulting in the fact that income level and wealth are more crucial factors than the subjective risk perception of consumers. (Oduncu, 2012)

In a later study, Kimball (1990-1) shows that in the case of income uncertainty, the rise in MPC out of wealth may well double the low MPC level determined by the PIH in absolute certainty. The size of the MPC is set by the level of the risks for future income. Kimball (1990-2) finds that since Friedman's comments in his stunning work on income dynamics, it has been known that even if the saving rate is invariant with regard to lifetime income, people with high current incomes will be observed to save more than their lower income brethren (Friedman, 1957).

Consumers react to an elevation in income risk by lowering their consumption, to generate additional precautionary saving stocks (Zeldes, 1989). However, although there are periodical risks to income, the resulting effect could be limited. In fact, many

households are found to accumulate little or no wealth over their life cycles. (Hubbard, Skinner and Zeldes, 1994) Wealth accumulation trends differ with the life time income of households, and the possible explanations are given as the bequest motive, earnings profile, social security, the rate of time preference by education group and the existence of an asset-based social insurance safety net. The high life time income households accumulate wealth in line with the LCH. On the other hand, the orthodox life cycle model is inconsistent for the wealth accumulation trend of low life time income households. The low income group does not even accumulate wealth in the period prior to retirement.

The relationship between income and saving is quite direct and this direct link does not differentiate much between income groups, but saving out of income tends to differentiate with income level, and indicates a clear rise, especially for households aged 30-59. (Dynan, Skinner and Zeldes, 2000; Becker and Tomes, 1986)

While the initial studies in the literature concentrate on income risk, the following literature introduces additional risk factors to deduce income risk, like unemployment risk, health insurance risk, longevity risk, business risk, pension uncertainty, liquidity risk, and wealth, and expand the uncertainty beyond the concept of income uncertainty. The precautionary saving concept is then transferred into the precautionary savings concept, which is contained in the buffer stock saving model of Carroll (1996) and further improved on in his following studies. The concept of precautionary saving and its share in the total saving preferences shows varying power levels for precautionary saving, depending on the shape of observations and the style of the analysis.

Unemployment risk plays a significant role in the precautionary saving motive, while it also has some shortcomings deep in the data. (Carroll and Dunn, 1997). Risk aversion and the job choices of the risk averted households can be misleading when a risk avert individual chooses a safer job with a low income to satisfy his or her risk aversion preferences.

The relationship between becoming unemployed and the timing of durable goods purchase decisions (mainly home purchasing decisions), gives clear evidence for this relationship. (Dunn, 1998). Consumers primarily behave as standard "buffer stock" savers, maintaining a target stock of assets (or cash on hand) to use as a buffer against unexpected unemployment risks. However, when they decide to buy a new home, they

do some additional saving, to finance the required down payment. In addition to the unemployment risk and the home purchase decision relationship, the perception of unemployment risk is also sensitive to the age of the consumer. The probability that a consumer will purchase a durable good is more sensitive to the unemployment risk early in life and less sensitive in the later stages of a life time. Aside from the wealth, income and risk indicators, age and other demographics determine the effect and level of these indicators over saving decisions. Households are found to display high degrees of impatience and low risk aversion, and this combination leads to low amounts of precautionary accumulation, particularly for low educated and young households. (Carroll, 1992; Cagetti, 2003) Although the impatience of the younger individuals is well observed, the saving preferences of the older households may be changing depending on their education, income and wealth status. The importance of the older segment is that they have higher asset accumulation than the younger households and have higher saving abilities. Not only older households, but business owners are also significantly important in precautionary saving analysis, as these two groups present a significant variation in their saving preferences. Kennickel and Lusardi (2005) base their study on a question in the 1995-1998 period in the US Survey of Consumer Finances (SCF), which directly asks for the desired precautionary saving level of households. They find that about 8 to 20 percent of the total financial wealth in the economy is desired precautionary wealth. The importance of older and business owner households is stated in their work as significant, as they constitute the majority (65 percent) of those holding desired precautionary wealth. The value increases even higher for high educated households and ones over the age of 50. The precautionary saving motive does not increase to high amounts of wealth, at least for the group of households who are of working age and who do not own a business. Unemployment risk, which is considered to be the main risk factor in the majority of papers on precautionary savings, does not account for the high amounts of precautionary accumulation in the total sample.

Demographic effects not only play an important role within the single economy, but also determine the differentiations between countries as well. Aside from the age factor, the structures formed in different economies are effective on their saving decisions. Deaton (1990) makes a stunning contribution to the saving literature on developing

countries in his World Bank Paper. He states that, due to the larger household size in developing countries, there is a large tendency for several generations to live together. The older are looked after by the younger ones, and in time the duties shift up leaving less potential for a hump shape or retirement saving for consumption at older ages of the bequest motive. The result can also be observed in the divergence of saving level from a standard LCH for the older households in most developing countries. As the size of the household gets larger, insurance activities can be internalized by these households. This situation can be observed mostly in less developed and highly populated communities. As these economies and communities develop, their fertility rates and dependency ratios decline. The dependency ratio has two secondary effects. Old dependency level may generate additional health expenditures for the household, while it also generates a buffer income in means of retirement payments. (Spivak, 1981) The longevity effect is positive, and the dependency effect is negative in growth and savings. The demographic variables across countries may well explain the differences in aggregate saving rates and long term growth trends. (Li, Zhang and Zhang, 2007)

On the other hand, high young dependency ratios relate mostly to only higher consumption expenditures. So as the fertility rates and the young dependency ratios decline, the saving rate is affected positively, resulting in a lower interest rate for less developed and emerging markets. The effects of the demographic structure are well defined by Deaton (1994). In his study for the Taiwan economy, he states that the cohort effects are significant for the younger cohorts, as fertility rates decline and life expectancy rises in the Taiwanese context. He attributes at least part of Taiwan's high saving ratio to farsighted young consumers preparing for a "modern" age of an ageing population, in which they will be reliant on their own resources rather than the insurance effects of bigger sized households. On the other hand, the low dependency ratios and declining fertility rates also reduces the portion of the young cohorts in the economy and results in disturbances in the social security systems as can be observed in European countries in recent years.

In his study for the household saving behavior in Mexico, Sandoval-Hernandez (2011) finds that the U-shaped age saving profiles suggest that demographic characteristics and family composition capture some of the households' motivations for saving more at the early and last stages of the life cycle, while access to financial resources and saving

rates are negatively correlated. This study gave a clear example for developing economies, where the demographics are significantly effective for saving behavior.

Government choices also affect the precautionary saving level. Following Barsky, Mankiw and Zeldes (1986), Ziegelmeyer (2009) also states that there is a link between precautionary savings and the impact of government debt. Considering the uncertainty of expected future income, a tax cut performed by the government today, which is offset by an increase in future taxes, reduces uncertainty about expected future wealth, as the tax cut generates wealth which is certain today. The decline in the uncertainty today, leads to lower precautionary saving and to higher consumption tomorrow.

Many authors have given varying importance to factors regarding the uncertainty of expected future income, unemployment risk and various other factors that define variations in saving preferences. They also state the level of the precautionary saving in their work. The papers depending on micro data result in mixed findings for the level of precautionary saving. We can group the related studies in their findings for the level of precautionary savings into three sub groups. In line with the results of the undermentioned papers, we can say that the level of precautionary savings tends to be lower if a subjective measure of uncertainty about next year income is employed. Studies using an 'objective' method for income uncertainty tend to find a greater impact of precautionary savings. There may be several reasons for this kind of bias, like the lower announcement of income and savings than the real level for consumers completing the questionnaire, or the wrong declaration of the level of precautionary motive.

The first group of papers, which find estimates in the lowest range, includes Dynan (1993). He found that the level of prudence is too low to generate precautionary savings. The second group of papers, including Guiso, Jappelli and Terlizzese (1992), Lusardi (1998), Arrondel (2002), Kennickell and Lusardi (2005), Bertola et al. (2005) and Kimball, Sahm, and Shapiro (2005) use subjective measures of income risk and find average levels for precautionary wealth in the 2 to 8 percent range of total household wealth. While Guiso, Jappelli and Terlizzese find the level of the precautionary savings at 2 percent level, Lusardi finds the level at 20 percent. Kimball, Sahm, and Shapiro set the precautionary saving level at 8.2 percent of total savings.

The third group of papers includes Skinner (1998), Dardanoni (1991), Caballero (1991), Hubbard, Skinner and Zeldes (1995), Carroll and Samwick (1997, 1998), Kazarosian (1997), Engen and Gruber (2001), Gourinchas and Parker (2002), Cagetti (2003), Ventura and Eisenhauer (2006) and Christelis, Georgarakos, Jappelli and Rooij (2015). They find that precautionary savings can explain a significant portion of wealth. In addition to Skinner (1988), Carroll and Samwick (1998) also set the level as high as 50 percent of the wealth of the median household. Ventura and Eisenhauer (2006) find that precautionary savings constitute most of total savings.

Mastrogiacomo and Alessie (2012) unify the subjective (question based) and objective methods for the precautionary saving prediction. Although their results variy significantly in the initial analysis for the two methods, when they introduce uncertainty and the second income earner to the analysis, the two methods tend to deliver similar results, leading to the presence of precautionary savings.

1.4. BUFFER-STOCK MODEL

Campbell (1989) is one of the first studies that link the risks to income to the risk of unemployment. Campbell argues that the level of current savings should be equal to the present discounted value of expected declines in income. If future income growth expectation is low, consumers tend to save more, named as "*saving for a rainy day*". Campbell also argues that, even after controlling for income expectations, unemployment risks and economic and sector expectations have an important role on saving decisions and this opened the way for studies depending on the risks of unemployment.

The buffer-tock model (Carroll, 1992) is mainly a revision of the PIH, and considers income to be certain in the short run but not in the long run, while changes in income generate shifts in the wealth to permanent income level. The buffer-stock model introduces uncertainty to the theory via unemployment risk and assigns significance to the impatience of consumers, while the LCH/PIH gives no direct role to unemployment risk but to the expected income risk. Deaton (1991), Zeldes (1989) and Carroll (1996) give more detailed models of the "*buffer-stock*" saving model.

Consumers hold assets to protect themselves and their consumption from unpredictable income volatility; unemployment as a major source of income volatility is one of the

reasons for an individual to face drastic income volatility. Not only the status of unemployment but expectations of unemployment are the main factors to motivate precautionary savings and buffer stocks. Buffer stock savers have a target wealth to income ratio, according to their demographic conditions like education, occupation status and the sector they work in. In this respect, buffer stock saving indicates a similar attitude to the permanent income hypothesis, as a means of determining a target level. While the PIH indicates a permanent income level that is generated by the demographic conditions of the individual, the buffer-stock model converge this target to a wealth to income ratio. If their wealth is below their target level, the individuals will try to save more and increase their wealth to attain the target wealth to income level. On the other hand, if they are above the target wealth to income level, impatience will dominate the prudence and consumers will dissave.

In the buffer-stock model, the individuals are considered to be sufficiently impatient to move around the target buffer stock level. The buffer-stock model takes the effective stock of wealth models for the individual, determined by their income and their expectations regarding the risks to income via unemployment and other factors to keep the target buffer stock wealth to permanent income. This level is set with the preferences through their risk aversion, demographics and walks in parallel with the precautionary saving motives. The buffer-stock model deals with the changes in average consumption through the changing average income and wealth situations. Aggregate consumption / income parallels do not depend on the high frequency tracking of consumption to income at the household level. Consumption responds to changes in permanent income (unemployment risk) rather than to changes in transitory income shocks, because assets are used to buffer consumption against shocks.

The consumption / income parallel growth shows inconsistency with the LCH/PIH (Carroll and Summers, 1991; Carroll, 1994). This tendency can be described as the consumer's impatience and unwillingness to borrow. The income/consumption divergence documented in microeconomic consumer surveys is proof that consumption does not respond to volatility in transitory income, as assets are used to compensate/buffer such shocks. Carroll describes total family noncapital income as a function of yearly permanent income and transitory shock factor on permanent income.

In his basic model, Carroll stresses that the growth rate of income should be greater than the growth rate of consumption for the consumer to exhibit impatience. Although the impatient individual wants to consume today rather than tomorrow, the introduction of the uncertainty factor would induce the consumer to become more risk averse and start to make savings.

Here the expected variance of consumption growth will be negatively related to the wealth factor, as Kimball (1990) shows that the precautionary saving motive will be negatively correlated with wealth. Consumers with low levels of wealth will have less ability to buffer consumption against income volatility and have a higher expected variance of consumption growth and faster consumption growth. At low levels of wealth, precautionary saving does depress consumption, and as precautionary savings increase, consumption will become less depressed, resulting in extra growth in consumption when the expected variance in consumption growth is high.

The condition that the growth rate of income is greater than the growth rate of consumption is crucial for setting the impatience status for the individuals. Impatient consumers would like to borrow for their consumption today rather than tomorrow. On the other hand, their consumption level should exceed their income level as they borrow.

Impatient consumers below a certain, x^*, wealth level would spend less to achieve the x^* target level, while the consumers above the target, x^*, wealth level would prefer to spend more in order to lower the gross wealth to the target x^* level. However, the x* target level may be at lower levels for individuals at early ages and performing with high impatience. At the target x* level, the consumers' income and consumption growth would be approximately equal to one another. If we introduce income uncertainty to the model, income uncertainty would elevate the expected variance in consumption growth and also raise an additional compensation demand against new risks and shift the target wealth level, x^*, upwards. This additional compensation demand for risk would promote the precautionary saving motive. Conversely, a positive shock to income would shift the expected variance in consumption downwards and lower the target wealth level, leading to elevated consumption.

As a result of the buffer-stock model; the consumer is impatient, especially in the earlier periods of his/her working life and tries to consume out of his/her future income if there

are no borrowing constraints. So, a higher level of consumption would bring a lower consumption growth level than income growth. The consumer would begin to save more in the later periods of his/her work life, when consumption and income growth rates converge, as there is a target net wealth to income ratio. Personal saving rate depends on unemployment rate and future unemployment expectations. When consumers are more pessimistic about unemployment prospects, they will adjust their consumption lower.

However, the buffer-stock model is not applicable to all the groups in the economy. The buffer-stock model is a well-defined model for those consumers having average income-wealth level, while low income consumers may not carry the characteristics sufficient for the buffer-stock model. Their consumption depends on their current income and they do not have the luxury to save in case their expected income level tends to decline. Carroll differentiates the coefficient of time preference, impatience and income growths on the buffer stock levels, where impatient consumers behave differently than patient consumers. Aside from the individual view, the buffer-stock model also gives a clear identification of the comparisons in countrywise levels. Households living in a more impatient country, having a bigger share of young population, will have a lower value of household wealth and a higher consumption variance and have a closer relation in consumption income growth parallel. What's more, as they have lower wealth to income preferences, the total asset accumulation for such an economy will also be low. Here, the high birth rates leading to a higher share of young population can be a factor to stimulate impatience, which can be observed in less developed countries. The patience level of economies also indicates their level of economic development and strength. That is why those low income countries with a younger population are mostly dependent on foreign capital and have lower saving levels. The growth rate of the economy may also be effective on income growth expectations and relatedly the consumption growth pattern in a less patient economy.

In the early stages of life, the wealth to income ratio is low, as can be expected. Aside from the considerably low income level at this stage of life, the impatience factor also takes control of consumption trends. The impatience effects, also well determined in the LCH, keeps consumption level high, as the individuals have a lower tendency to save, as their responsibilities are less in comparison with the later stages of their lives. For the

middle two decades, wealth level grows slightly and in the last period before retirement the ratio grows rapidly. So, the buffer-stock level also increases with age and declining impatience. The buffer-stock model is less capable of determining the behavior of pre-retirement age consumption and saving preferences. Wealth does accumulate gradually in buffer stock, in contrast with the actual data showing significant volatilities. The buffer- stock model is more employable for moderate individuals rather than the wealthy and life cycle retirement savers.

Unemployment expectations impose an important factor on Carroll's model, because when consumers become pessimistic about employment possibilities, their uncertainty about future income rises with their target buffer-stock, and they increase their saving to increase their wealth level to the new target. The model takes unemployment risk as the ultimate risk factor for the individual, reducing consumption level. The growth rate of consumption and wealth is conversely related and is higher when the wealth level is low, as precautionary saving depresses the level of consumption. In time, precautionary savings are added to wealth, and consumption becomes less depressed. Lowering precautionary savings due to wealth increases results in the extra growth of consumption. The buffer-stock model is well defined in periods of recessions, where consumers tend to elevate their savings in order to lower their debt level, while in a basic PIH model, the consumers should be borrowing instead of lowering their debt to cover their consumption in times of low expected income. In this comparison, liquidity constraints could be a factor to be imposed in the buffer-stock model. Loosening the liquidity constraints in a buffer-stock model, results in an identical effect, to increase the expected and guaranteed income level. The model also gives significant credit to the "*excess sensitivity*" of consumption growth to income growth. As there is a target wealth to permanent income ratio, consumption growth and income growth should converge in the long term, where wealth would explode up or down otherwise.

Later on, Carroll (1999) finds that the risks of unemployment do not affect all consumers, but could be attributable to a certain segment of the population. This result is also in line with the general objections against the buffer-stock model, that it is not applicable to all the individuals in a community. In his study, Carroll estimates the probability of becoming unemployed as the uncertainty factor for those who are currently employed. He finds that the rising unemployment risk did not cause low

permanent income households to significantly increase their net worth, but that a statistically significant precautionary effect emerges for households at moderate and mid to high levels of income. As we have mentioned earlier, Carroll's own study does indicate that the model is applicable to mid to high income consumers. The income level is crucially important for the efficiency of the buffer-stock model.

The failure of the buffer-stock model is documented in the study of Japelli, Pistaferri and Padula (2008), where they used the Italian Surveys of Household Income and Wealth from the 2002 and 2004 for working age individuals. The data contain the level of wealth held for precautionary savings, interpreted as the buffer-stock level for these households. Their results do not support buffer stock behavior, even in the population groups that are more likely to show buffer-stock behavior.

The MPC out of permanent shocks is found to be strictly lower than 1 and is in the range of 0.75-0.92. The findings indicate that the aggregate MPC is lower than 1, while Deaton later shows that the level of MPC out of permanent income is strictly 1 for the low income and zero wealth, impatient consumers.

1.5. LIQUIDITY CONSTRAINTS

The literature written against the standard LCH/PIH theories initially evolved from the "*excess sensitivity*" of consumption to income concept, as mentioned earlier. The main theme of the excess sensitivity was mostly dealing with the relationship between consumption and current income, while further studies also found a strong excess sensitivity relation between consumption and the predictable changes in income. So as the consumption and income dynamics were further analyzed, researchers began to introduce predictions and expectations into the consumption and income relations. Initial findings indicate that predicted changes in income have an influence over current consumption. For the United States, using both macroeconomic data, Flavin (1981) and microeconomic data from the PSID, Hall and Mishkin (1982), Zeldes (1984) and Zeldes (1989), find evidence that changes in consumption are positively related to predictable changes in income. In his model, Flavin cannot reject the hypothesis that either the consumption of nondurables or consumption of nondurables/services exhibits no excess sensitivity to current income. Hall and Mishkin reject the strong hypothesis that all consumption is governed by the LCH/PIH. They find that a majority of consumers

adjust their consumption when reacting to the source of a change in income and to the signals for changing economic wellbeing. They also find that the negative relation between lagged income and the change in current consumption is consistent with the constrained consumption behavior. One of their findings was that these consumers also faced high interest rates. Their studies mostly depended on the consumption of food and nondurables, while they do not rule out the possibility that the effect and the share of constraint consumers could be higher once the consumption composition is widened. Consumption function shows signs of differentiation from the certainty equivalence status of the standard LCH/PIH model, and this effect is more obvious when life time resources of wealth is low. (Zeldes, 1984) However, the level of precautionary savings is significantly high for these kinds of consumers in the US data. The presence of liquidity constraints can also induce an additional precautionary saving effect. Being a non-liquidity constraint individual enables the consumer to smooth consumption in times of economic shocks leading to income volatility, through replacing the income loss with future income using credit market facilities. On the other hand, when the consumer is liquidity constrained, the effects of shocks cannot be spread out over time, and this gives less flexibility to the consumer to respond to the shocks. Consequently, the shocks to general economic structure or income level have a higher negative effect on constraint consumers. Aside from the other factors, liquidity constraints generate an additional precautionary saving motive. Precautionary savings and liquidity constraints can be perceived as close substitutes. (Carroll, Kimball; 2001) Since a constraint results in the concavity of consumption around the point where the constraint binds, an additional constraint necessarily boosts prudence around that point. Precautionary motives interact with liquidity constraints, also because both abilities provide an additional motive for accumulating assets. In the presence of borrowing restrictions, the saving and asset accumulation motive is sensitive to what consumers believe about the stochastic process generating their incomes. In the simplest case, when incomes are stationary and independently and identically distributed over time, as in the case of a poor farmer in a less developed economy, assets are counted as buffer stock, and the consumer saves and dissaves in order to smooth consumption in the face of income uncertainty.

Some of the studies searching for the presence of liquidity constraints split the observations into two segments depending on the viable criteria of being liquidity constraints. Hayashi (1985) splits the sample according to their saving levels, while Zeldes (1989) splits the observations according to their non-human wealth, assets. Hayashi finds strong evidence that the correlation structure between the consumption and income of the two groups differs significantly. Zeldes, introduces the wealth effect into his analysis and also finds that the coefficient of lagged income is negative and significant for low wealth families but not for the rest. Zeldes states that the Euler Equation should be violated for the constraint group but not for the non-constraint group in means of LCH/PIH and the marginal utility of consumption for the constraint group should be higher.

In line with the study of Carroll and Deaton (1991), the following studies focus on liquidity constraints as a measure of precautionary saving and buffer stock motive. Precautionary motives interact with liquidity constraints because the inability to borrow when times are bad provides an additional motive for accumulating assets when times are good, even for impatient consumers.

Assets can be named as tools to protect consumption against bad times of income, while buffer-stock (Deaton, 1991) and liquidity constraint can be seen as other measures of the precautionary saving motive. The behavior of the consumer is relatively impatient, while the uncertainty of income and the prudence of the individual are also standard assumptions. When the income is in a random walk pattern, where incomes are stationary and independently and identically distributed over time, the individual is in a mood for borrowing. But in times of liquidity constraints, the individual cannot do anything other than consuming the income. The liquidity constraints issue can also be observed from a countrywise perspective. Japelli and Pagano (1989) analyse the issue of liquidity constraints from the imperfection of capital markets and use the data for seven countries: namely Sweden, The United States, The United Kingdom, Japan, Italy, Spain, and Greece. They find that the excess sensitivity parameter is significantly different from zero for all countries except Sweden, and that its magnitude varies widely from country to country, attaining the highest values for Italy, Spain and Greece, the lowest for Sweden and the United States, and intermediate ones for Japan and the U.K. They conclude that the low levels of consumer debt observed in countries where the excess

sensitivity of consumption is high can be interpreted as evidence that liquidity constraints are at the root of the empirical failures of the LCH-PIH in time-series tests.

Consumption and its "price" can provide another relation for the analysis of uncertainty on saving decisions. A decrease in consumption causes the "price" of consumption to rise by more than an increase in consumption reduces the price of it, so that increased uncertainty (and Jensen's inequality) raises the expected price of future consumption relative to that of current consumption. This is when the consumer is impatient and time preference is higher than the interest rate, although the standard life cycle hypothesis considers the equivalence of time preference and the interest rate. In the impatient consumer case, the consumer would use the assets as a buffer for the uncertainties like liquidity constraints and would be forced to make precautionary saving for cases of liquidity constraints. The impatient and liquidity constraint individuals are named as "*rule of thumb*" or *"hand to mouth"* consumers, who consume their current income. In reality, consumption does fluctuate with income and consumers do not respond to liquidity constraints by accumulating large quantities of assets. When consumers are patient, they accumulate assets indefinitely and in time as wealth rises, consumption becomes a function of total assets rather than income level. These consumers would most probably not be bound by liquidity constraints at any time of their wealthy life. (Deaton, 1991)

Deaton (1991), one of the main contributors to the saving literature depending on liquidity constraints, stresses that utilization of the assets is dependent on the "cash on hand" function, where the cash on hand is the total of assets and income level. It is also the maximum amount that can be spent on consumption. By introducing liquidity constraint as an uncertainty factor to limit consumption abilities in the future, Deaton sets the marginal utility of the period subject to the constraint of the cash on hand to be higher than in the current period. And this limitation forces the consumers to save for tomorrow.

In a later study, Deaton and Laroque (1989) determine the equivalence of the marginal utility of consumption to the marginal utility of cash on hand. In this equivalence, precautionary saving is performed depending on the convexity of the marginal utility of both the consumption and so the cash on hand. The inherited convexity means that the

same arguments for prudence and precautionary savings go through when borrowing is prohibited.

On the other hand, even if the consumer is not liquidity constrained, the compensation and consumption smoothing effect that can be received through the financial system would be dependent on time. Households can use the credit markets of their buffer stocks for the uncertainties in high frequencies, while these alternatives are limited in low frequencies. (Deaton, 1995) There is no market for unsecured consumption credits for their life time, and income and consumption should be closely tied to one another. So there is high frequency consumption smoothing for households, while the smoothing disappears in the long run.

Aside from the time horizon differentiation, the response of the liquidity constraint consumers to income volatility is also binding. As they are constrained by their current income for their consumption requirements, they are not able to give an adequate response to decreases in income. However, the response can be quite high in the case of an increase in income, as they have still more consumption to realize. (Shea, 1995) This effect was observed in the Greece data, and a significantly positive elasticity of consumption to positive predictable changes in income and an insignificant sensitivity to predictable negative changes in income was found, providing evidence for the presence of liquidity constraints. (Drakos, 2002)

1.5.1. Credit as a Liquidity Constraint

In the modern world, consumption financed by income is also a function of credit usage, as most consumers use credit cards or consumer credits. So aside from liquidity constraints, the level of debt or the changes in the available credit limit are also determinants of consumption or changes in consumption. The effect is mostly effective for indebted consumers, who take their credit limit as a part of their income, while the effect can also be observed in consumers at lower levels of credit usage. Predictable growth in consumer credit is significantly related to consumption growth, a finding that is inconsistent with existing models of consumer behavior. (Ludvingson, 1996) The effects of fixed borrowing limits were the main subject of liquidity constraints, while the real life situation is generally different. Credit availability, especially credit lines, is subject to changes according to the changing income level of the consumers. This trend

is mostly consistent with the lending behavior of the banks. So the credit limit is not only a function of the individual based indicators and income, but also a function of economy wide indicators as well. The credit limit is induced with different shocks.

When all the resources are taken into consideration, the optimal consumption level is characterized by a function of the growth rate of the income and the shocks to the credit limit. , which is a function of income only and consumption is determined by the income growth and shocks to the credit limit. $C = f(\eta, \xi)$

Changes in consumption should be more dependent on unpredictable changes in the total sources, the effect of unexpected positive shocks in income as well as unpredictable changes in the credit limit. So, in the consumption setting, pertaining to modern conditions, income volatility is not the only determinant any more, but should include all sources including the available credit limit. The higher the limit of the available credit ceiling, the lower will be the sensitivity of change in consumption to changes in income. The available credit limit and income could be perceived as close substitutes for consumption. What's more, access to the credit market may diminish the excess sensitivity, if the credit market is used efficiently.

Excess sensitivity of consumption to income growth is found to be one of the main indicators for the observation of liquidity constraints. However, the coefficient of the previous term income and current consumption relation is negative, implying that consumption increases at a slower rate than income increase in the previous period, because anticipated income changes have been proxied by observed income. Liquidity constrained groups react more strongly to anticipated income changes, while unconstrained groups react at a lesser level, with a greater standard error and this supports the excess sensitivity hypothesis. (Beznoska and Ochmann, 2012) The effect could even be stronger when the income distribution is more skewed, like in the case of a less developed economy. The study of Lee and Sawada (2005) on Pakistan gives direct results for the presence of liquidity constraints, with a negative coefficient on income, as expected. They find that the precautionary saving motive becomes stronger under liquidity constraints. The trend and the importance of the income distribution or the share of liquidity constraint consumers within an economy are clearly effective for the analysis of the saving preferences of different countries. A comparison of the more developed economies with the less developed ones does give clear evidence for the

relation of having liquidity constraint and the ability to save. Blanc et al. (2014) perform their study on Euro Area countries for the household saving behavior and credit constraints. They find evidence of some unique motives with respect to saving preferences across Eurozone countries. In addition, they find that credit constraints differ across geographic regions and are perceived to be binding for specific groups of respondents. Households living in Southern European countries report more binding constraints than households living in Continental Europe. Demographic factors and institutional macroeconomic variables are economically important determinants of household saving preferences and credit constraints. Against the findings of Ludvigson (1999), which indicate that the rising debt level generates additional liquidity constraints, Blanc et al. (2014) find that saving to provide protection for unexpected events is associated negatively compared to saving for home purchase and to saving to build up one's own business, indicating that these motives for saving are substitutes. They also find that a positive effect is nevertheless observed between saving for unexpected events and saving for old-age provision, and that the bequest motive has a positive effect on precautionary saving.

In modern life, liquidity constraints turn into a problem of debt availability and not the available debt for times of income volatility, but the debt that is used in daily life by most individuals via credit cards or consumer loans. One of the most important studies on liquidity constraints is performed by Gross and Souleles (2002) using a detailed credit card information dataset to search for the effects of liquidity constraints and interest rates on consumer behavior. The unique dataset contains records of individual credit limits and credit balances, allowing credit supply and demand to be distinguished, as well as account-specific interest rates. They categorize the consumers according to their credit card limit utilization and take the card owners with over 90% of utilization rate as liquidity constrained. Increases in credit limits generate a significant rise in debt, counter to the Permanent-Income Hypothesis. The "MPC out of liquidity" is the highest for people starting near their limit, consistent with binding liquidity constraints. However, the MPC is significant even for people starting well below their limit, consistent with precautionary models.

The level of debt is often found to be an additional motive for precautionary saving in the literature, especially for times of credit crisis of macroeconomic volatility. As

borrowing capacity diminishes with the credit crisis, constrained consumers are forced to repay their debts and unconstrained consumers increase their precautionary savings. (Guerrieri and Lorenzoni, 2015) The decline in consumption is found to be larger for consumers with lower wealth and does not only affect constrained consumers. So, with the significant effect of debt on consumer behavior, financial frictions and the response of the household sector are powerful determinants of economic activity. (Hall, 2011)

Standard economic intuition also suggests that a relaxation of liquidity constraints should allow consumers to smooth consumption more than they could previously. However, the results are surprisingly on the opposite side. Studies indicate that the reduction in down payment level had instead elevated the response of consumers to fluctuations in income uncertainty. (Carroll, Dunn, 1997b) Low down payments resulting in low home equity to use in times of shocks to income or employment, is found to be one of the reasons for this result. The second one is the larger monthly or quarterly mortgage payments due to the low down payment. Once the mortgage loan is received, the only adjustment the consumer can practice will be on the consumption side and mainly the nondurables side. So, lowering the down payment level can also result in additional precautionary saving motives. This effect can be more easily observed in times of recession or financial turbulence. We can see the same result in the aftermath of the 2008 crisis in the US data. The stimulus given to consumers resulted in additional balance sheet adjustments and debt payments instead of stimulating consumption preferences. The new stimulus elevates the negative perceptions of consumers for the future, and so they decide to keep their consumption level low to overcome the coming negative income shocks. With the relief of borrowing constraints, the elevation in debt results in additional liquidity constraints for consumers. The problem is that debtors become liquidity-constrained, forced to pay down debt and their spending depends at the margin on current income, not expected future income, making them one of the "rule of thumb" consumers of Deaton. (Eggertson and Krugman, 2010)

In the connection between debt and savings lies the issue of asset prices. Rising asset prices can lead to elevation in liquidity conditions and lower savings for the liquidity constraint consumers, but the effect might be clearly the opposite, as was observed in the post 2008 crisis period. The result is a vicious cycle between asset prices and savings. The relation between these indicators works through the interest rate indicator.

The rising saving motive for both debt payments and the precautionary motives depress interest rates, especially in the short run, and generate an output drop, even with flexible prices. In line with declining asset prices and the effects of this trend to elevate saving preferences, it can also be stressed that the reduction in housing sector asset prices also generated a reduction in the buffer stock of the consumers. (Mian and Sufi, 2011)

Kim (2013) looks at the debt-economic performance relation not only for the post 2008 crisis period, but also considers the situation in the financialization period, starting from the early 1980s. She splits the sample into two periods, taking the pre-1982 period to be a less debt driven period and post -1982 as a rising debt driven period for economic activity. In the regression analysis for pre-1982, she found no evidence that household debt variables had any negative effect on output. However, she found evidence for household debt variables to have negative effects on output.

The buffer stock and liquidity constraints are mostly relevant to the impatient consumer case, where the consumer prefers to consume today rather than tomorrow as $\delta > r$. This case is mostly related with the low to middle income consumers and the youth to middle aged years. On the other hand, the elder consumers also do save to prevent their consumption affecting retirement income and possible income volatilities as well. Here what we do not consider is the saving behavior of consumers with no liquidity constraints and having a wealth level over the standard buffer stock model's hypothetic target wealth to permanent income level. So here we will be looking at the motivations of these above-named rich people.

1.5.2. Wealth and Liquidity Constraints

The relation between wealth and income level are also an important indicator of liquidity constraints, whereas it is also an indicator for the buffer- stock model. Formerly, Zeldes formulated the threshold wealth level for constrained and unconstrained consumers at two months of income. He observes that the consumption growth rate of the constrained group is higher than that of the unconstrained group. Nirei (2006) analyzes the effects of unemployment risk on savings, depending on liquidity constraints. He finds that aggregate savings are affected considerably by the riskiness of the labor endowment process. A persistent change in labor market fluctuations affects the aggregate consumption propensity significantly.

As we are concentrating on liquidity constraints, it is absolutely crucial to stress the importance of wealth effects on savings and liquidity perception. Wealth is a dominant buffer for declining income in times of crisis. Aggregate saving is mostly determined by wealthy people who have high EIS, and aggregate consumption is mostly determined by non-wealthy people who have low EIS. As the aggregate saving level of the community is mostly set by the savings of the wealthy, the effect of EIS is more important in the aggregate savings level of the community in general. (Güvenen, 2006) There are different views about the effectiveness of wealth on consumption. According to Lettau and Ludvingson (2003), the variation in aggregate consumption is dominated by permanent income shocks. They report that the wealth effect on consumption is greatly overstated and advice Central Banks to ignore the effects of rising asset values on inflation, as wealth has a minor effect on aggregate demand.

So, the wealth effect is crucial for the total savings of the community, and the saving habit of these wealthy households dominates the total savings of an economy. However, rising income and wealth inequality does not affirm all the saving behavior of the economy. The highly populated, less wealthy households set the standard consumption preferences in an economy, and as long as they are incapable of saving, the economy will be influenced by consumption rather than the rising saving and investment opportunities.

1.6. DYNASTY AND THE CAPITALIST SPIRIT

In the details of the wealth effect on saving decisions, aside from the standard precautionary or liquidity related saving motives, another type of saving motive arises, the dynasty or capitalist spirit motive,. Although the standard saving models are mostly applicable for the mid to slightly higher income individuals to households, this motive could be applicable for the high income individuals. In most of the studies about precautionary saving, the motive of Dynasty is also included in the model, by setting the model on an infinite lifetime expectation. The remaining wealth after that of the individual is assumed to be the wealth kept for the dynasty motive. The Dynasty-Bequest motive is inspected in detail initially by Barro (1974), where he analyzes the effect of finite lives within the context of an overlapping-generations model of the economy. Bequest received from former generations and the bequest to be left for future

generations are introduced into the utility function and the budget constraints. The utility function of the analyzed individual will also consider the utility function of the following descendants. A rise in income would be left for the bequest motive, and the elasticity of consumption to income changes would be lower for these individuals. Aside from the variation in transitory income, variations in permanent income may also be less effective on consumption.

The bequest motive is hard to define in the aggregate data. So, the studies based on microeconomic data often investigate how wealth varies with age and try to find clues for the dynasty motive. The relationship between wealth and age that is found in cross sectional analysis is implausible according to the LCH. The empirical finding that the elderly seem not to dissave has probably had the greatest effect in convincing economists that the strict LCH is not valid.

Against the general findings in the literature, Hurd (1986) finds that elderly consumers in the post retirement period dissave and their wealth declines by up to a 27 percent level. On the other hand, he also stresses that even though no bequest motive was detected by the methods of his study, desired bequests could still be an important part of capital transfers. Bequests could be a superior good to such an extent that only the very wealthy respond to the bequest motive. In that, the distribution of wealth is highly skewed, a few large desired bequests could account for most desired bequests.

Studies for elderly individuals indicate a possible precautionary motive, which could also include the dynasty motive as well. (Kazarosian, 1999; Lusardi, 2000; Carroll and Samwick, 1997; Lusardi, Kennickell and Torralba, 2005)

The dynasty motive attracted some attention, while there were also been severe objections to the model, as it takes the utility of the bequest in terms of the consumption of the family. The Dynastic model implies that the size of the bequest is a function of the parents' and the children's life time income, and that the childless wealthy should leave no bequest, which in turn does not match the empirical evidence. The Dynastic model's focus on the bequest motive rather than the other indicators is found to be the weakest point of the model. So the Dynastic model is accepted as a poor model to describe the behavior of the wealthy.

On the other hand, aside from the wealth effect on consumption, we are much more interested in the saving choices of different wealth groups. Buffer-stock and liquidity

constraints models all state that the wealth level is a strong indicator of consumption and saving decisions, as it directly effects the MPC and precautionary saving preferences. Carroll (2000) gives an additional contribution to the savings motives related to wealth effects and argues that a direct wealth accumulation motive is indispensable in explaining at least some of the observed behavior of the very wealthy. This motive has been formerly named as the "*Capitalist Spirit*" by Max Weber (1905) and aside from the bequest motive determines that the rise in assets also gives an additional utility to these kinds of consumers, which is different than the dynastic model. He states that the saving motive of wealthy people does not decline even after the age of 65 and that this motive cannot be explained with the bequest (dynastic) model, as wealthy consumers without children do not dissave more than people with older children. He insists that wealth should enter the utility function as a luxury good or yields to stream of services that enter the utility function. The behavior of these consumers diverges from the standard LCH consumers.

Francis (2007) constructs a model where some individuals accumulate wealth for its own sake and observed a skewness of wealth consistent with the real data observed in the US. He states that the capitalist spirit generates a decreasing risk aversion and results in a mechanism whereby wealthy consumers save more than the sufficient level for retirement purposes and other precautionary requirements. He can explain the absence of post retirement dissaving and increasing risk tolerance with rising wealth through his model.

The *Capitalist Spirit* model takes capital accumulation as a direct factor to enter the utility function. In this model, the individual decides how to allocate lifetime resources between consumption and wealth generation. Following Carroll (1998), the consumer has the standard CRRA utility function and the utility from wealth is generated only for households above a certain wealth threshold and with a demand for wealth. In this model, the consumer not only satisfies his utility function but also maximizes the utility from the capitalist spirit motive. The relationship of the p, the coefficient of relative risk aversion for consumption and the α , which is the demand for wealth are the control indicators for this utility preference. The assumption that $\alpha < p$ implies that as the marginal utility of wealth approaches zero, the share of income going to wealth approaches one. The constant relative risk aversion preference structure exhibits

prudence (the marginal utility curve is convex) inducing precautionary behavior in the presence of uncertainty. According to Francis (2007), under these parameter restrictions, a large portion of individuals will make precautionary savings, while a smaller portion of the population will have a capitalist spirit motive for saving.

1.7. FINANCIALIZATION, SAVING AND DEBT EFFECTS IN THE GLOBAL PERSPECTIVE

Financialization has been an important factor to stimulate globalization and has had significant effects on the dynamics of households and the general economy. It was observed that rising financialization had relieved the liquidity constraints and resulted in an elevation in household debt levels. The consequences of the financialization process have diminished interest rate levels. The relation of interest rates and the saving motives were also subject to analyses. In the initial phases of financialization, households (including working class households) in developed economies have experienced rising debt levels. In Anglo-Saxon countries debt-driven consumption turned into the main demand growth engine, usually in conjunction with real estate bubbles. However, financialization increased the size and the fragility of the financial sector (much like Keynes and Minsky would have predicted) and also elevated households' access to credit, the most important form of which has been mortgage loans. In combination with real estate booms, this has often led to credit-financed consumption booms. The falling saving rates were first explained by a wealth effect due to the rise in the value of financial assets because of the stock market boom by Stockhammer (2012).

Although the financialization process started in the early 1980s in developed economies, developing economies began to implement the financialization process in the early 1990s. Starting from the 1990s, many developing countries have implemented financial liberalization policies with the aim of improving the effectiveness of monetary policy through a greater reliance on market forces. The main liberalization policies were aimed at liberalizing interest rates, reducing controls on credit, enhancing competition and efficiency in the financial system, strengthening the supervisory framework, and promoting the growth and deepening of financial markets.

Contrary to the positive effects, financialization has always been subject to severe criticism from less liberal researchers, due to a rising dependence on the financial sector

and the rising fragility of the financial sector. Due to ineffective regulations, the implementation of financialization policies resulted in a severe crisis in the EM world in the 1990s.

One of the main objections to the improper implementation of the financialization policies was the McKinnon and Shaw (1973) thesis of "financial repression". McKinnon and Shaw were the first to challenge the financial liberalization process. In their separate works, they argued that the implementation of financial liberalization policies through low and administered interest rates, selective credit control and promotion to develop the financial system, regardless of the negative consequences, have led to financial repression in developing countries. The repression of the financial system resulted in discouraged savings, and disturbance of the efficient resource allocation, and generated loss of credibility for the banking system. The main theme of McKinnon-Shaw's thesis is that a low or negative real rate of interest discourages savings and hence reduces the availability of loanable funds, constrains saving and investment, and in turn lowers the rate of economic growth. Although the interest rate and investment relation suggested by the McKinnon-Shaw thesis is contrary to general economic thought, it found evidence in the developing market financialization process due to mistakes in its implementation.

Several studies have been performed on the accuracy of the McKinnon-Shaw model. A much-quoted empirical study by Fry (1978) of ten Asian countries finds little evidence to support McKinnon's complementarity hypothesis. Fry found a positive effect of the real interest rate on domestic saving and economic growth. Watson (1992) obtained results confirming the McKinnon-Shaw financial liberalization hypothesis, but could not fully substantiate McKinnon's complementarity hypothesis for Trinidad and Tobago. In their study of Latin American countries for the 1960-1985 period, Roubini and Sala-i-Martin (1991) expand the growth model of Barro (1991) and show that financial repression and inflation had negative effects for growth. Khan and Hassan (1998) find support for the McKinnon-Shaw Hypothesis in the Pakistani economy. Kendall (2000) provides empirical support for the McKinnon-Shaw hypothesis and underscores the inappropriateness of the policy of financial repression.

Here we must also give clear evidence for the relations between interest rate-saving and economic performance. The effects of changes in interest rates on savings are

determined by the relative strengths of substitution and income effects. (Balassa, 1989) A decline in the interest rates increases the price of future consumption, resulting in lower savings for the current period, while the income effect reduces savings with lower interest income. Therefore, higher MPC and the impatience of the consumers, as mostly observed in emerging economies, results in lower savings, which is also the main case observed in the Turkish economy following the 2001 crisis period. Saving rates and interest rates were found to be positively related in the literature in various analyses of emerging economies. (Balassa, 1989) In his study, Balassa finds evidence from several countries, including Portugal and Turkey that negative or low real interest rates bring a shift to gold, real estate and consumer durables, which latter are not included in savings as measured in the national income accounts.

Financialization and saving are negatively correlated. Sandoval-Hernandez (2011) The low level of interest rates due to financial liberalization is a benefit for mortgage and credit payers, while it generates losses for private savers, above all pensioners. Individuals will either be discouraged by low interest rates and reduce their savings or will save more to still meet their target consumption levels or smooth their consumption. As the yield curve tends to stay at elevated levels and steeper for the long term, in comparison with the short term due to maturity and risk effects, the saving horizon extends to longer terms. What's more, middle-aged workers are forced to work well beyond their originally intended retirement periods. However, the savings response to interest rate changes is probably very small for developed economies like Germany in micro data. (Belke, 2013)

Analysis of the macroeconomic consequences of the saving and debt level began with analysis of the determinants of the crisis in terms of government debt. The main findings are in favor of debt in the short term and at limited levels, but are also fully negative for the long run and higher levels. The negative effects of debt were defined by many analyses, including a BIS study by Cecchetti, Mohanty and Zampolli (2011), suggesting that the low levels of debt could be growth enhancing, while the higher levels of debt could damage growth potential. They have identified the threshold level for government debt at 85 percent, for corporate debt at a 90 percent level and for household debt at 85 percent of GDP, where the debt becomes a drag on growth. Countries with high debt must remedy their fiscal deficit problems, while firms and

households should find the cure in forcing their expenses down, which may in turn all result in economic weakness. However, these levels can differentiate significantly from a developed economy to a developing economy. The rising level of debt and the resulting fragility effects found evidence in the EM crisis experienced in the 90s. Mexico (1994), Asia, (1997/1998), Russia (1998) and Turkey (2001) demonstrated the degree to which a rapid market liberalization and high debt level can lead to financial market crisis and a drag on economic growth. The rising leverage level also generates shifts in the economic choices of not only governments, but also firms and the households. Rising debt level forces governments, firms and households to make more short-sighted decisions about their investment plans and not only limit the growth potential in the long run, but it also has additional effects on other macroeconomic aggregates like productivity. The rising debt level, lower savings and the growth of the financial sector through this debt, crowd out real economic growth. (Cecchetti and Kharroubi, 2015) The financial sector competes with the real sector in times of financial booms and uses a bigger share of economic resources, which may otherwise be canalized to more productive real sector firms. Financial firms focus on their shareholders' profit in the short run and choose to invest in short-term projects, which are not the long-term productivity enhancing real sector projects. Periods of financial boom may even harm the more R&D intensive projects, those which we normally think to be the engines for growth. The difference in results of debt generation in low and high productive sectors can easily be observed in the results of the debt channeled to real sector firms or households. In line with the former findings for more effective usage of sources in the real sector rather than the household sector, Bahadır and Krause (2006) state that an increase in household credit raises the demand for consumption goods, whereas firm credit growth raises demand for investment goods. Debt channeled to service sector firms and the production sector also differentiates with the same structural dynamics. Debt generated to finance consumption does not add to productive capacity. On the other hand, credit reserved for the firms has at least the potential to increase investment, generate competitive advantage, promotes export potential and also growth in the longer term.

The literature appertaining to corporate and household sector dynamics also indicates similar results. Expectations for the future are found to be significantly effective for

firms and households, elevating the importance of the precautionary saving motive. General assumptions regarding precautionary savings indicate that those countries with elevated macroeconomic risks and volatility should have higher risks. In line with these expectations, Gurio (2012) and Nakamuro et al.(2013) find that the increased future income risk and persistence of negative income shocks led to higher savings and preference to save in safer asset types. Higher macroeconomic risks result in lower savings for the private agents. (Aizenman and Marion, 1999; Aizenman, Cavallo and Noy, 2015) However, as the income level is considerably lower for most developing economies, they mostly show only the safe asset type preference whenever it is possible, and promote the housing sector in these economies. Although the term volatility is used for both risk and uncertainty, these two terms indicate different phenomena. "Volatility" refers to the tendency of a variable to fluctuate, while "uncertainty" is present only when those fluctuations are unpredictable.

Another important factor for less developed economies is the development level of their financial system. Common features of developing countries are the under-development and low regulations of the financial system, weaker institutional frameworks, and the absence or shallowness of safety nets mitigating households' exposure to risk.

The financialization concept not only elevates the risks in the financial markets but also increases the potential risk factors for households via the consumer debt channel. The negative effects of household debt can also be observed in the labor sector data. Risk preferences of the indebted consumers also shift their job and work preferences. (Donaldson et al., 2016) Like levered firms that shift risk to choose inefficiently risky projects in corporate finance, households shift risk by searching for jobs with high wages, even if the associated probability of becoming employed is low. A general rise in the debt level of household results in a search for higher wage jobs and, as a response, the firms begin to offer higher wages but reduce the number of jobs they offer to maintain profit levels. This leads to a reduction in the general employment level in the society and as the household debt level is maintained at high levels for a long time, the high unemployment level may even become persistent for the economy. Although the efficiency rises in the economy, both the labor market and monetary policy fail to perform. Bernstein (2015) also documents that an increase in household leverage causes a decrease in labor supply. He estimates a large effect of such "household debt

overhang" after the crisis, and suggests that it may have accounted for over twenty percent of the decline in employment between 2008 and 2010.

Low levels of debt could be perceived as beneficial for social welfare, as it allows governments, firms and households, which will be the main focus in our analysis, to smooth expenses and consumption. In the Permanent Income Hypothesis (PIH), saving play its role to smooth consumption. When current income is below the permanent income level, households choose to borrow and spend it on consumption. The consumption smoothing effect of the debt plays its constructive role as long as it is temporary. Long-term borrowing or persistence of negative savings, however, can constrain consumption smoothing by increasing the debt servicing burden and even generate larger fluctuations in private consumption. (Chung, 2009)

In the standard process of financialization, elevation in the desire to generate more profit results in taking additional, but "supposedly" more accountable risks for both the financial sector and households. However, the low income segment has little benefit from the equity market and other financial market revenues, resulting in additional inequality. The rising level of the "hand to mouth" households with no savings are initially outside the financialization process, which is soon recognized by the financial sector, and consumer loans become the main type of instruments that introduce these households to the financial system. According to FED statistics, the total consumer loans of households in the US hiked from USD 1.4 trillion in 1980 to USD 3.6 trillion in 1990 and to USD 7.2 trillion in 2000 before a sudden hike in the first 8 years of the 2000s to USD 14.0 trillion USD (95.4 percent of USD GDP) at the very beginning of 2008 (the share of mortgage debt is mostly at 75 percent). Following the Great Recession, the pre-crisis nominal consumer loan debt level in the US could not be attained until 2011, and 2008 levels can still not be reached in real terms. Even after a decade of ongoing deleveraging, more time is required to recover the confidence to turn back to the pre-crisis economic environment, indicating that the resulting effect of debt on saving and consumption is not short-lived and they may take longer periods to recover.

Following the 2008-2009 global crisis, household debt and tcorporate sector debt have been subject to severe criticism and detailed analyses were performed in the developed economies, due to the deleveraging effect of these indebted corporations and

households. The unexpected response of the household sector to accommodative monetary policies was the main subject of the rising curiosity towards the household sector. The initial response of monetary policy to the negative effects of debt deleveraging was the huge liquidity injections coming from the Central Banks of the developed economies. Although the expectations were in favor of rising consumption and a limitation to the weakening growth outlook, results were dependent on the negative expectations of the corporate and household sectors. Households and the corporate sector decided to pay back their debt with rising liquidity, instead of an expected rise in consumption. That's why the literature following the global crisis focused on the debt level of the firms and the households and their preferences to stimulate GDP growth, consumption, saving behaviors and the effectiveness of the monetary policy responses. The main results for the positive effects of rising debt are expected to be short-lived, while the longer term effects are more negative for both GDP growth and consumption trends in general.

The effects of rising housing debt on the micro economic level and household consumption have been newly subject to analysis. Initial attempts were mostly related to the debt deleveraging of highly indebted consumers, household balance sheets and the resulting effects on consumption. These analyses mostly take the wealth effect as the main criterion to manage household balance sheets, and the decline in house prices as the main reason for the sharp fall in consumption. However, some also hypothesized that accumulation of debt balances in the household sector was also significantly effective for economic downturns. The vicious debt and wealth cycles were the factors to lead the economic preferences of households. The main actors are the debtors (demand side), lenders (supply side) and asset prices. The uptrend of the economic cycles generates additional demand and additional supply for the debt with rising asset prices, while the downtrend of the cycles results in falling prices, lower supply for debt (liquidity shortage) and lower demand for debt and consumption as well. Irving Fisher (1933) argued that the Great Depression was caused by such a vicious cycle, in which falling prices increased the real burden of debt, which led in turn to further deflation. In a similar manner, Hyman Minsky (1986), whose work is back in vogue thanks to the after effects of the Global Recession of 2008, argued for a recurring cycle of instability, in which calm periods of the economy lead to complacency about debt and hence to

rising leverage, which in turn paves the way for crisis. More recently, Richard Koo (2008) argues that both Japan's "lost decade" and the Great Depression were essentially caused by balance-sheet distress, with large parts of the economy unable to spend thanks to excessive debt. [1]

The focus of the financial sector over the household sector was on consumer loans, but the decreasing regulations on housing sector related loans also promoted and generated an additional source to promote for the financial sector. The housing sector, with highly eligible collateral possibilities, became the main focus of the financial sector for profitability on the supply side to invest in, especially in times of financial booms with rising asset prices.

The housing sector, perceived as the main risk factor to generate the Global Crisis, has been transformed by global financial actors and the global saving glut (Bernanke, 2007), in some countries resulting in tremendous capital flows towards the housing sector firstly in the US and UK, and then in all countries but mostly in big cities. Financialization of housing during the late 1980-2007 period resulted in a new view of the housing sector. Housing is valued as a commodity and a financial instrument to secure and accumulate wealth, and is no longer valued as a social good. Financialization of housing also elevated house prices and attracted the attention of the corporate finance sector, which tries to benefit from the rise in house prices like any other commodity category. Housing prices have increased to levels that most residents can no longer afford, while the wealth of property and real estate owners have elevated significantly.

According to research by the international real estate adviser Savills, the value of global real estate reached USD 217 trillion by 2015, nearly 60 percent of the value of all global assets, 2.7 times the World GDP, with residential real estate comprising 75 percent of the total.

1.8. DETERMINANTS OF HOUSEHOLD DEBT

Age, education, income and wealth are found to be significant factors for the level of household debt, while these factors are also the main indicators of the consumption

[1] Eggertsson and Krugman (2011), Guerrieri and Lorenzoni (2011), Hall (2011), Midrigan and Philippon (2011)). Mishkin (1977) argues that the fears of excessive debt-service burden induced deleveraging that contributed to the 1973-1975 recession.

preferences. So, there will be a direct link between household debt and consumption behavior.

The main introduction of the debt effects on consumption is through the uncertainty channel, as it is the main case in precautionary saving behavior. In the initial phase, the rising debt level of the household sector is reflected on consumption, and has positive effects on both consumption trend and economic growth. However, the secondary effects may dampen and even reverse the positivity of the debt usage itself. Using panel data for 21 OECD countries within the 1980 to 2013 period, Estrada et al.(2014) find that the debt growth effect was positive and significant on the consumption equation in the sudden response, while the effect became negative and significant with a time lag of two years. After controlling for net wealth and other traditional determinants, an increase in the level of debt elevated current consumption growth, whereas it had a negative effect on future consumption. The introduction of labor uncertainty to the equation also reduced consumption as a result of precautionary behavior.

Household debt is not always in the form of housing debt. The usage of consumer loans and credit cards is common to most consumers in today's world. However, household debt is also not risk free. Reasons and determinants for generating household debt are the key factors to identify the level and the risk of household debt. Demographics, income and wealth levels are the main determinants to influence the debt. A study by Wasberg et al. (1992) in the United States finds a negative relation between the age of the household and the financial commitment in debt servicing. As a result, a higher share of young households in the country will lead to a higher debt accumulation (Pearce, 1985). The effect of population growth on household debt is found to be positive but at low levels. (Meng et al. 2013) The impatience of the young population may be one of the factors to promote household debt, while the rising cost of living also forces the young population to borrow more in the modern world. And so household borrowing to finance living expenditures is also an emerging determinant of household debt. (Kim et al., 2014; Dynan and Kohn, 2007; Weller, 2007; Boushey and Weller, 2008) Ahmad Khan et al. (2016) study the rising cost of living and debt dynamics in Malaysia and indicate that the rising cost of living led to higher consumption and encouraged the households to use the debt as a substitute for their wages, especially in the form of credit cards. Increase in income level, interest rate, cost of living and

working age population has a positive influence on debt level while housing prices show a negative impact. Here we should also divide the structure of household debt into mortgages and consumer loans. For mortgage loans, income level and wealth factors are effective. Household debt in the form of credit cards or consumer loans may indicate a lack of income and in this case, income and debt can be reversely related. However, if the debt is in the form of housing debt, income and debt relation can even be positive, as the debt is generated to form additional assets and should require a certain level of income above the required standard living conditions. Chien and DeVaney (2001) claim that income is negatively related to debt, in the form of credit card debt. So, as we observe the debt as dissaving in the household base, the income and the saving are also negatively related. In her study of Italian households, Magri (2002) finds a positive relation between net wealth and mortgages, while the relation relating to consumer loans is again negative. For consumer loans, we can state that liquidity conditions do play an important role. Many households have limited access to the credit market, which impairs their ability to transfer resources inter-temporally and smooth consumption over time. That's why the newly financialized countries face a sudden elevation in consumer loans especially in low to mid income level households, which in turn increases consumption volatility during the boom and bust periods of economic cycles. Rising liquidity conditions give the households a chance to smooth consumption over the longer term, which is also not sustainable. Liquid assets can be easy to use for consumption smoothing in times of need, while the illiquid assets like housing investments may not be that easy to use, especially in times of high volatility. However, housing investment is mostly perceived as a type of long term and easy to manage investment instrument, as individuals find it hard to manage their liquid asset portfolios. Housing wealth does even constitute, at least in part, wealth for precautionary purposes. (Cagetti, 2003) The rising eligibility of housing investment as collateral for all kinds of consumer loans and its emergency liquidity providing structure has also raised interest in the housing sector. Households may view housing wealth more as a buffer stock of wealth to be used in an emergency or to finance a specific expenditure. (Lehnert, 2004) If housing wealth relaxes borrowing constraints, it could be expected that its effects appear first in households' precautionary saving. On the contrary, a reduction in housing wealth may result in tighter borrowing constraints and rising precautionary

savings. Precautionary savings are higher among households with higher labor income risk, but most of this increase is in the form of housing wealth. (Carroll, Dynan, and Krane, 1999) One explanation for this is that housing wealth is perceived as an easier instrument to tap into in the event of an emergency situation in the household sector, like a factor to reduce liquidity constraints. But this effect is applicable to the upside trend of the economic cycle, while the effect is even reversed for the bust period of economic cycles.

Formerly we have mentioned that consumer loans were being used as substitutes for inadequate income to realize consumption requirements. Within this scope, income, consumption and debt levels are all in close relations with one another. The relation of consumption with debt level indicates more insights into consumption behavior, taking uncertainty effects, elasticity of consumption and wealth effects into consideration. As consumers tend to rely on more optimistic financial expectations in good times, further consumer loan usage can be triggered, while on the contrary any negative perception for the economy or the financial markets may result in a sharp contraction of consumer loan demand. A larger share of highly leveraged households shows a reduction in risk tolerance relative to their counterparts with less leverage. Leveraged households not only show a greater drop in risk tolerance, in comparison with less leveraged households, but also a more pronounced jump in concerns about their ability to sustain their spending in the face of adverse economic developments. (Dynan, Edelberg, 2013) Results from the 2007-2009 Survey of Consumer Finances for The US show us that even after controlling for income and wealth effects, highly leveraged consumers were more likely to report spending cutbacks. The contraction effect of high leverage on consumption arises from several channels. The first channel is for sure income uncertainty and the precautionary motive related to cuts in consumption, in order to generate room for debt payments in case the income level tends to fall sharply. The second channel works through liquidity, in which case the existing debt level would reduce the total loan limit of the consumer. In times of financial volatility, total access to further liquidity has been observed to shrink. In both of these channels, the consumer tends to elevate precautionary worries about the effects of leverage on future access to credit. The positive effects of rising consumer debt for the economy in good times may be reversed sharply in times of rising concerns, and the resulting effect could be

additional contraction forces for the economy in the long run. From a periodical analysis, following the global financial volatility in the late 1970s, market sentiment was more optimistic about the future. The sudden globalization process and the rising liquidity conditions led consumers to benefit from this highly liquid period. Godwin (1997) analyzes the dynamics of consumer credit usage during this period and attitudes toward credit, using the U.S. Survey of Consumer Finances. The findings indicate considerable mobility in debt status during the 1980s, with the majority of households in a different debt quintile in 1989 relative to 1983. Dynan (2009) finds that excessive leverage contributes to the weakness in consumption, even when the wealth effect has been controlled for. However, Dynan also stresses that US households made limited progress in reducing their debt burden. Income, home ownership and family size are all positively associated with the level of household debt.

The elasticity of consumption to income changes drastically between highly leveraged and low leveraged households. Elasticity of consumption with respect to income is significantly higher in households with high levels of debt. (Baker, 2014) So the volatility of income or just the expectation of income change may result in higher consumption volatility for highly indebted consumers. The elasticity of consumption is also more sensitive to liquid wealth and debt levels than to illiquid wealth, such as housing assets. Household spending is more sensitivity to the debt level of consumers, while the wealth effect is in a secondary place. However, the existence of liquid assets may give some comfort to the indebted households, serving as a liquidity buffer for these consumers. At the household level, the consumption of households with low liquid assets and high debt-service burdens is more sensitive to changes in income than the consumption of households with low liquid assets alone. (Kathleen Johnson and Geng Li, 2007) The income / Wealth level of consumers is significantly important, as this determines whether the consumers are getting their debt for investment purposes or to substitute for their low income. In the first case, where the income level is higher, precautionary saving and risk perception can be well analyzed. On the other hand, households in the low income levels may not be engaging in precautionary saving behavior. These “hand to mouth” consumers may use the debt for income substitution, while their risk perception should be different than for consumers with higher income levels. The availability of making precautionary savings should also be subject to

analysis. Not only in terms of the consumer base, but looking at the economic environment as a whole, gives a clearer view of the importance of the availability of precautionary saving. A higher number of “hand to mouth” households would be associated with greater consumption volatility. In addition to “hand to mouth” households of low income level, the “wealthy hand to mouth” households also give similar responses in terms of consumption to low income consumers. The post Global Crisis experiment, using highly indebted consumers in developed economies gives a clear example of this situation. The rise in housing investments in the pre-crisis period was not only a result of the surge in housing asset prices, but the housing market was perceived to be more liquid. In this period, housing wealth can be viewed as a precautionary “buffer” that can be cashed in, in the event of an income or a health downturn. (Skinner, 1993) However, the situation may not and in fact did not hold for times of economic downturn. The "wealthy hand to mouth" consumers also behaved as if they had higher concerns than their liquid peers. These consumers possessed high levels of net assets but as they lacked liquid assets to smooth consumption, so their response to income shocks is similar to the indebted low income consumers with higher consumption volatility. So, when analyzing for consumption volatility, not only income and wealth levels but the liquidity situation of wealth should also be considered.

The negative externalities of household debt may be limited when the debt is elevated through the housing channel rather than as a direct expansion in consumer loans. Household and business credit shocks lead to an increase in output, consumption, investment, labor and house prices, with business credit generating a larger expansion in the economy. (Bahadır and Gümüş, 2017) A positive household credit shock does not generate an expansion when the transmission that works through housing is missing. Without housing, a business credit expansion leads to an increase in output and a household credit expansion leads to a decline. Housing as a common asset held by both agents generates spillover effects between the agents.

Using US auto sales data for the period of 1998-2011, and consumer expenditure data for the period of 2005-2009, Mian, Rao and Sufi (2013) show that the reduction in consumption is stronger in highly leveraged countries with large house price declines. Cross-country variation in household debt to income is found to be responsible for a 14 percent decline in non-auto retail sales in the 2007 to 2009 period, while the absence of

the highly indebted country effects would suggest a 2 percent growth in retail sales. They show that the sharp fall in house prices and consumption were more effective for the households with higher debt. US households were the main point of interest for these studies, and the result was that the pre-crisis refinancing of housing assets through rising debt level had the opposite effects when house prices declined. The sharp fall in house prices left many households with high levels of debt compared to the value of their assets. Namely the "debt overhang" created a need for households to deleverage, and depressed consumption.

Aside from the determinants of household debt, the level of household debt is also subject to analysis. This threshold level depends on the volatility level of the economic structure, where higher levels could be acceptable as the volatility diminishes and economic stability is maintained. The comparison can be suitable and well observable between developed and developing economies. This threshold level is set at 60 percent for household debt to GDP. (Lombardi, Mohanty and Shim, 2017) Debt boosts consumption and GDP growth in the short run, with the bulk of the impact of increased indebtedness passing through the real economy in the space of one year. However, the long-run negative effects of debt eventually outweigh their short-term positive effects, with household debt accumulation ultimately proving to be a drag on growth. A 1 percentage point increase in the household debt-to-GDP ratio tends to lower output growth in the long run by 0.1 percentage point, suggesting that policy makers face non-trivial, real costs in stimulating the economy through credit expansion.

CHAPTER 2

DESCRIPTIVE ANALYSIS OF THE HOUSEHOLD BUDGET SURVEYS

2.1. MOTIVATION

Various determinants of household saving and consumption were documented in the related literature and the main determinants are demographic indicators, income and wealth level. Starting from the early LCH/PIH, the age factor was first set to the top level of importance for saving behavior preferences, with the concept of impatience especially for the younger individuals and saving for retirement expenses. On the other hand, the permanent income of households was based on the main demographic determinants of individuals like education, occupation and other determinants of income. These determinants were also found to be effective on the risk aversion and consumption behaviors of the individuals. When we come to the saving preferences of households, not the only the factors effecting individual consumption but factors to determine the family consumption level are also becoming important. The young and old dependency ratios set the compulsory consumption requirements and give an additional motivation to save or consume for the households as well.

Aside from these factors, the following literature also introduced the interaction of wealth and income with the buffer-stock model and liquidity requirements. So not only the demographics and related determinants, but also the wealth effect is introduced into the saving preferences of households.

As we are approaching saving effects, the main indicator for the availability of saving, income effects will also be analyzed. The demographics to determine saving level to be used in the permanent income determination process will also be analyzed in this chapter.

Turkey as a developing economy is subject to variations in demographic status compared with developed economies, and performs with similar behavior to suit its general developing economy status, having a younger population, higher dependency ratios, considerably lower education levels and an uneven wealth distribution within the

population. These factors all promote a higher impatience pattern for the households to consume more and the problems due to wealth distribution also elevate the importance of the liquidity constraints within the economic agents. The determinants of saving observed in the literature indicate a lower level of saving for the Turkish economy and in line with the decline in household saving for the economy.

However, the Turkish economy is in a transition period, not only in means of economic developments and institutions, but demographic factors are also being reevaluated in recent years. Declining birth rates and the rising educational level of the population are all in favor of a rising saving level for future periods. On the other hand, the rising education level of the Turkish citizens does not always interact with the occupational status of these educated individuals. As this education level increases, the participation rate of these individuals in the labor force also increases, while the level of job creation in the economy may not cope with this increase. The resulting effect could be an elevated unemployment rate or an inadequate job to education match for the individuals, resulting in educated workers with lower incomes and saving possibilities. The structure and the development of the economy are important for the effectiveness of the rising educational level of the citizens as well.

When we look at the distribution of wealth or income, the deterioration in distribution does not improve, and the share of liquidity constraint consumers is still at high levels. The demographic improvement of the economy does not seem to be coping with the structural developments of the Turkish economy, resulting in additional income improvement for the new generation but a rising problem of income distribution.

In order to determine the consequences and the evolution of these determinants, analysis of these effects in the Household Budget Survey should be crucial before integrating all these factors into the saving models for the following part of the thesis.

It is expected that age and other demographic indicators will be in favor of lower saving levels and be the reason for some of the decline in Turkish household saving. The wealth effect is also expected to shed light on the high liquidity constraints of the households in general. Relief in the liquidity constraints for these households is also expected to be another and important factor in changing the household saving behavior of the Turkish citizens. The descriptive analysis of these developments is expected to

show that these factors are crucial in declining saving levels but also indicate the future of the saving level for the coming periods.

The debt level of Turkish households increased significantly in the last decade. The indicator for the debt status is solely given for housing debt for households in the Turkish Statistical Institutes Household Budget Survey. So, the changing housing investment dynamics of the households due to the improved mortgage availability in the banking sector and the usage of housing as a buffer-stock and asset accumulation, all lead to the rising importance of the effects of housing debt. Here the data are limited to housing debt, but in order to give more clues for liquidity constraints, consumer credits should also be integrated into the analysis for further studies.

In the descriptive part of the thesis, demographic determinants of saving, their present state and evolution will be subject to analysis. Aside from these factors, wealth and debt issues will also be analyzed and a more detailed review of Turkish households and their debt status evolution will be given.

2.2. DATA

In my thesis I will use the Household Budget Survey (HBS) conducted by the Turkish Statistical Institute (TURKSTAT). HBSs are one of the most important data sources used to provide information on the socio-economic structures, life levels and consumption patterns of households and to test the validity of the socioeconomic policies and the needs of a society.

The basic of the HBS survey is the household. The definition for a household is: a community of one or more people who live in the same house or part of the same house with or without kinship, meeting basic needs together, participating in household service and management. Individuals are defined as the persons that are taking part in the household.

TURKSTAT implemented the first of these studies in 1954 under the name "Household Income and Consumption Expenditures Survey", applied only to cover the civil servants in Ankara. Then, the Household Income and Consumption Spending Survey was applied between 1964-70, in 1973-74 and 1978-79 and was applied with a certain scope, and Consumer Price Indexes were established based on these years. The first Survey to

include the whole country was realized in 1987. Starting from this survey, the scope of this study was separated into two surveys as consumption and income related issues.

The Turkish Statistical Institute has implemented the HBS regularly every year since 2002. Starting from 2002, the survey has been conducted with a smaller sample on a yearly basis. The sample size has changed from year to year and the sample size stood in the range of 8,640 to 25,920 households on a yearly basis, with an average of 11,332 household observations in the 2002 to 2012 period.

TURKSTAT's HBSs are repeated cross sectional surveys and do not have a panel dimension. The surveys do not contain the same households from one month to another or from one year to another. New and different households are included and interviewed each month to enlarge the coverage of the sample. The purpose of this approach is to reach all geographical regions of the country and all income and consumption groups of the society. This purpose also generates a limitation for the analysis of the data and results in the absence of a time series dimension. The yearly results show the changing income and consumption trends in the economy as a whole, but cannot track these developments for the analysis of time series data. On the other hand, as some of the consumption, like the purchase of durable goods or non-separable goods for the personal use is not observable on an individual basis, the nature of the consumption data also limits the scope for the analysis of individual based indicators and consumption or saving trends. The only relation between the demographic indicators of the individual and consumption or saving can be set for the head of household. (Turkish Statistical Institute; General Definition of the Household Budget Surveys, 2017)

All settlements located in the Republic of Turkey are covered in these surveys. All individuals of households living in Turkey have been covered in the surveys, except for the ones living in institutions like prisons, military bases, hospitals, hotels and nursing homes, and also foreign nationals (not immigrants). The national address database has been used to select the observations. The survey is prepared through face to face interviews with the individuals in the household, for their income and personal information like demographics. On the other hand, for the consumption data, households note and record their consumption on a daily basis for a month. The pollster visits the household repeated times in the survey month and tries to complete all the questions in the survey.

The HBS is collected from the household surveys on individual and household basis. The results are also shared through a micro dataset for these two different groups. Individual results include firstly demographic indicators such as age, education, marital status, employment status, occupation, sector and social security. The second group of information is about the income status of the individual. Income includes labor income, entrepreneur income, agricultural income, capital income, social security income and all other transfer incomes of the individual on a monthly basis and annually. The income level compiled from the individual base income for all household members is consolidated as the total income for the household.

For the household level data, the main variables are: the household type depending mainly on the size of the household from a nuclear family to a patriarchal family, dwelling type, details indicating the status of the dwelling like the size and the number of rooms, other residences, durable goods, other assets such as other houses or land and income related to this asset. The data received from the individual base income is consolidated for the household, and the income from other sources is also included to attain the final income. Then non-consumption expenditures like mortgage payments or financial expenditures and regular aid given to other households are deducted from this income to find the final disposable income. However, the status of these non-consumption expenditures is not given in the survey, which limits our scope for financial and other types of non-consumption expenditures of the household. The third part of the dataset contains the consumption of the household data on a per item basis for all consumption goods. However, as all the consumption is given for the whole household, we cannot figure out the individual consumption level or the details. The consumption data are present as household level data, and although the total income data is present on an individual basis, disposable income, and as a result of these, saving data is only available as whole household data. The absence of individual based disposable income and saving data generates a significant limitation for the analysis of the relation of the individual based data to aspects like demographics and consumption or consumption items.

The HBS is conducted for many purposes, but the main focus is to monitor the changes in consumption patterns of households over time, and to compile data for the estimation of consumption expenditures for national income calculations. The survey results are

also used to determine the poverty line and for minimum wage studies. Another basic well used result of the data is certainly to select the items and their weightings for the consumer price indices,

Variables investigated in the survey can be consolidated under three main groups.

1. Household socioeconomic status variables: type of residence, ownership status, heating system, housing facilities, possessed goods and transportation vehicles, etc.

2. Consumption expenditure variables; Consumption goods and services: definition, form of acquisition, quantity, market unit price, total value, where it is taken etc.

3. Variables related to household composition, employment and income status: Variables related to the age, gender, educational status, employment status of household members (occupation, economic activity, occupational status etc.), all available income obtained in the last twelve months from occupational and non-operational income.

Both cash and in-kind income are included, but separately given in the HBS survey. Income includes available income information for the last twelve months. Consumption expenditures include: all consumption related goods bought in the survey month. Aside from basic consumer goods, these goods also include consumption from the own production of the household, consumption goods brought from their working places, household goods and services bought by the household for the purpose of gift / help, and automobiles, durable goods, furniture, private school payments for the survey month or on a monthly average base for the last year. The consumption of the household through consumption goods and services is compiled for the survey month. Data for the items consumed in the survey month include the items, their amount, cost and where the goods are purchased or taken from.

I use the HBSs for the 2003-2012 period. This period is especially important for an effective analysis of liquidity developments and the changing employment risk factor for the Turkish economy. As stated in the descriptive analysis part, the Global Recession which took place in the middle of the observation period gives a crucial dataset for the pre and post period analysis of the global recession's effects on Turkish household dynamics. The liquidity injections of the developed country central banks in the aftermath of the Global Recession have generated a huge liquidity for the Global Economy, and Turkey has benefited from this liquidity at a significant level. The relief

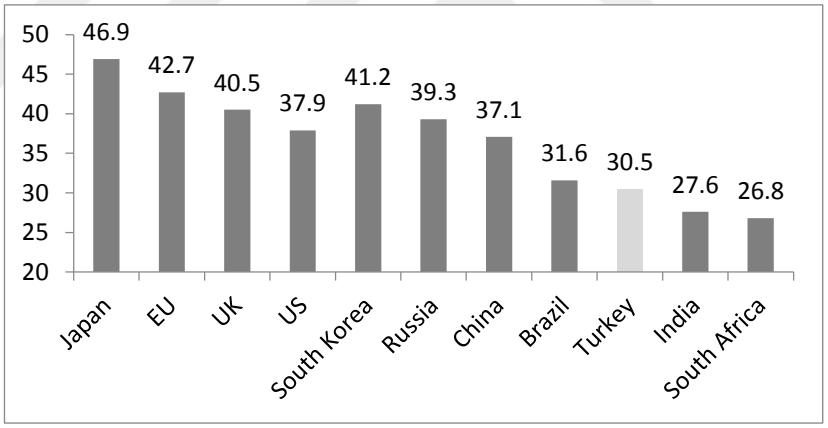
of the liquidity constraints should be highly effective for the Turkish households during this period. I presume that the relief of the liquidity conditions could be one of the main reasons for the declining saving level all through the observation period. What's more, the economic restructuring of the Turkish economy and the financial sector after the 2001 crisis has also enabled a more consumer-dependent economic structure for the Turkish economy. I also expect to see both advantages and disadvantages for the Turkish economy during the observation period.

2.3. DETERMINANTS OF SAVING AND INCOME

2.3.1. Age Indicator

Turkey has a young population and is the 110th country out of 230 countries in median age ranking of 2016 with 30.5 years (Graph 2.1).

Chart 2.1 Median Age by countries - 2016



Age profile has been observed to be an important factor to influence the saving motive in the saving literature. Younger households' impatient profiles, expectations for higher income levels for the future and the desire to keep marginal utility levels constant for their life time are the main motives according to the literature. (Modigliani, 1954; Carroll, 1992; Cagetti, 2003; Sandoval-Hernandez, 2011) First of all, the LCH model gives a clear definition by declaring that individuals are more likely to dissave as they are impatient and expect higher incomes in the late periods of their lives. As was observed in the LCH, the dissaving of the younger generation is in line with the other evidence in the literature. On the other hand, it must be kept in mind that the younger generations tend to have higher increases in their wages. So, in addition to the rise in

wages, the younger consumers are more biased towards elevating their consumption level. The PIH states that individuals set their permanent income according to their demographic, educational and occupational status and preferences. These indicators determine permanent income, while the low transitory income in the early stages of life is compensated with borrowings in order to keep the marginal utility constant all through life. The LCH and PIH consider the market interest rate to be unique for borrowing and lending and market frictions to be ignorable. On the other hand, one of the main shortfalls of the LCH/PIH is that market frictions, especially in terms of liquidity constraints, are significant for young people. As was stated in Carroll's buffer-stock model, younger individuals are less patient and have a higher desire to consume out of their current income. Gourinchas and Parker (2002) show that households generally act like bufferstock consumers until around age 40, when they begin to act more like traditional life-cycle consumers. The level of unemployment risk is higher in the younger generation, while this effect is minimized for the older generations. The buffer-stock as the wealth of the individual is built up in time with the compiling precautionary savings of the individual, and generates the buffer for potential risks in the future. Although the motive to compile wealth at a low asset level for those at young ages is high, impatience is the factor to hinder young people from generating assets.

What's more, Deaton's liquidity constraints model also gives importance to the age profile of the community, by stating that younger individuals are more likely to be liquidity constraint than older individuals due to their lower income level and lower amount of assets. The lower level of income in the initial stages of the work life can limit the credit one can get from the credit market. A higher unemployment risk and low level of wealth that can be considered as collateral are also low for the younger generation, which all limits the credit availability for the individual. The availability of credit and the low level of liquidity constraints give the opportunity to smooth consumption in a longer period of life time, rather than a requirement to smooth consumption in a shorter period, which can cause fluctuation of the level of consumption at higher levels. So, a relief of the liquidity constraints gives the highest stimulus to the younger and more impatient generations.

In the case of the HBS, we have analyzed the age profile at both individual and household levels. The individual data indicate that the median age of the population has

been increasing since 2003. The median age of the individual data has increased from 26 years to 30 years level in 2012. Here we must mention that the distribution of age in the individual sample and the household sample are differentiated. So, an analysis regarding the individual sample would be a better indicator, while disposable income, expenditure and consequently saving data are only available only for the household scope. However, the saving decision can be observed when the individual has an income and our sample contains the household heads in the age range of 20-60 years old. The shortcoming of our analysis could be the absence of individual level data for the saving decisions, which are not available in the HBS.

Table 2.1 Average Saving Ratio* by Age Segments and Years For Household Heads

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AGE 20-24	7.2	3.2	4.4	-7.0	-1.3	-2.4	-10.8	-12.3	-5.8	-1.6
AGE 25-29	15.8	15.9	6.5	12.3	7.3	1.3	3.0	1.2	-3.1	-3.5
AGE 30-34	15.0	16.7	12.4	8.9	15.6	0.7	10.6	8.8	4.9	3.8
AGE 35-39	16.0	17.9	15.4	9.7	14.0	8.0	5.1	6.8	5.4	3.1
AGE 40-44	15.5	15.6	13.9	9.9	11.1	7.8	3.8	5.2	4.9	5.5
AGE 45-49	17.4	16.8	8.4	13.2	13.5	9.0	13.7	6.0	9.7	4.2
AGE 50-54	17.8	12.4	14.9	10.3	11.1	11.3	11.3	7.5	8.8	8.6
AGE 55-59	19.8	13.3	10.8	8.3	10.2	11.2	9.6	12.6	9.7	11.4
AGE 60-64	21.4	20.0	4.9	11.0	10.2	11.0	11.0	8.5	13.4	10.7

** Average Saving Ratio is the ratio of the average saving of all the households in the age segment and the year to the average of the disposable income of the same group.*

The main observations in the HBS data of income, consumption and saving according to age profiles are mostly in line with the expectations of the literature review. The younger age profile for the households performs the highest disposable income rise in the 2003 - 2012 period and also the highest level of rise in consumption. The 20-35 years old sub segment performs a disposable income rise averaging at a 64 percent level, while the rise in the 35-65 years old age averages at a 46 percent level. The same path can be observed more significantly on the consumption side. The consumption of the 20-35 age sample averages at 89 percent, while the observed rise in the 35-65 years old sample is at 67 percent level. The disposable income and consumption realizations lead to significant differentiation in the saving of sub age groups. The income change

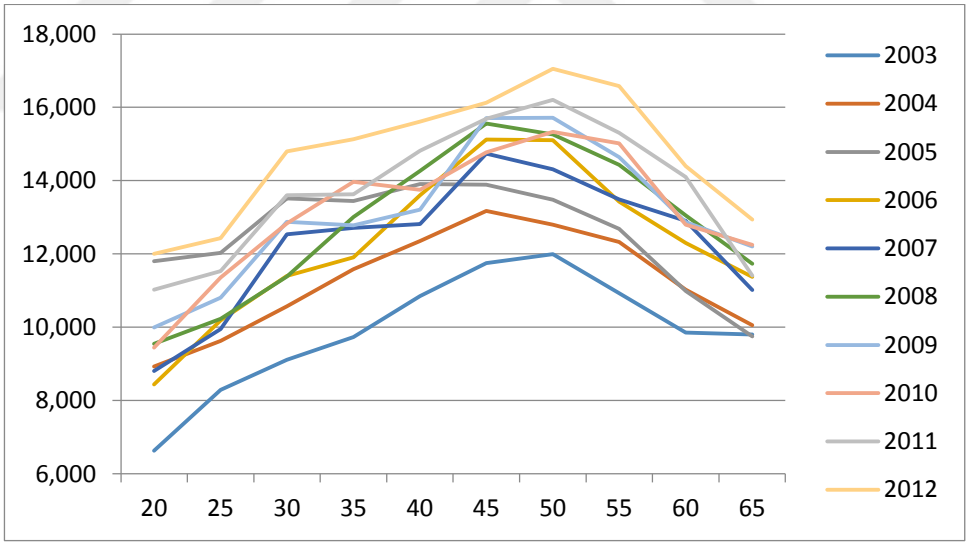
during the 2003-2012 period is smaller in the over 40 years old sub group. While the same trend can also be observed in the consumption of these sub age groups. On the consumption side, it can easily be observed that consumption shows a lower level of rise with age in a gradual manner, while the income profile does not show such a significant gradual trend performance. I have also looked at the age - income change in the 2003-2012 period for individuals. The growth of income is mostly in line with the household head perspective in the 40-65 years old segment, while the income hike on an individual basis is significantly higher than for the household head analysis. The average rise in the 20-39 years old segment of the household head analysis for income is 62 percent, while the level is 91 percent for the individual analysis. So, for the younger and more impatient households, the data are biased to report lower income increases for household heads than for individuals. The age profiles are segmented into 5 year periods, and the results of the income and saving data indicate that the sharp fall in savings data between 2003 and 2012 is not mainly due to slower income hikes, but the subsequent result is that the rise in consumption has been higher than the rise in income in all the sub age segments. The main difference in the income-consumption parallel has been distorted in all but 25-39 years old household heads at most. The household head saving was positive in all the sub age segments prior to 2006. (Table 2.1) Starting from 2006, first the 20-24 years old segment and then the 25-29 years old segment from 2011 became net dissavers. In the 20-24 years old segment, the dissaving trend was the result of a sharp downwards shift in income after 2006, while the 25-29 year old segment's income stagnated starting from 2011. In both of these segments, we observed that, against the income stagnations or shifts in the income level, consumption tended to perform a smoother path than income volatility. The sharp volatility of income in 2006 could be a good example of the comparison, as the volatility of consumption was 4 to 8 percent lower than the volatility in the income in the aggregate data for the age profiles.

The savings level at household head level showed the highest declines in those of 25-29 years old, the decline in savings level has been gradual as the head of household age got bigger.

The age income profile does not indicate a strict LCH trend, as individuals at older ages do not tend to dissave. What's more, even graphical analysis indicates that consumption tends to decline with income in later periods of life, especially after the age of 50. The

older segment does not follow LCH and PIH strictly, as consumption tends to indicate “excess sensitivity" to changes in income. Turkey is a good example of the trends in developing countries, with a higher disturbance in income distribution and a higher share of "rule of thumb" consumers who consume all of their current income and show signs of strong "excess sensitivity". On the other hand, disposable income level tends to mature in the 45-50 year old period and begins to diminish afterwards. The excess sensitivity of consumption could be observed in the panel data. However, the changes for different age levels do have more fluctuations in their income and consumption trends in our cross-sectional data. When we compare the differences in the average of the five year periods of 2003-2007 and 2008-2012 for disposable income and consumption, we see the trend that the difference between income and consumption tends to decline as the subject gets older. Although the data are significantly volatile, they do not show signs of decline till age 45.

Chart 2.2 Disposable Income by Age of the Household Heads



** Disposable income is total annual household income excluding non-consumption expenditures and the annual aid given to others. The graph includes the household heads only. Income levels are discounted with the yearly CPI levels to generate real income in relation to 2003 prices.*

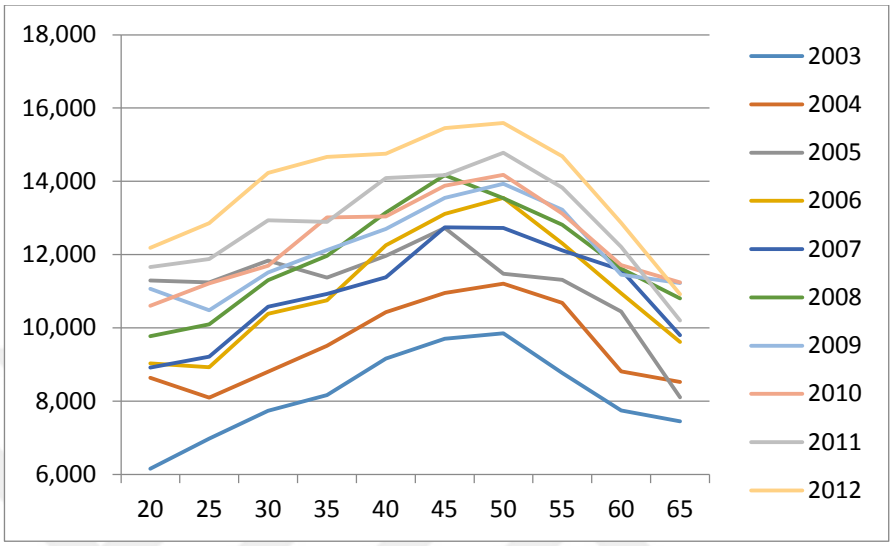
This trend begins at the age of 45 and becomes more significant from 50 years of age. The rise in income level observed in Graph 2.2 is accompanied by a similar increasing

trend of consumption in Graph 2.3. This observation can be an indication of excess sensitivity. The trend analysis is certainly not adequate for a formal analysis, but can be considered as an observation. Household saving performed drastic and structural downward breaks mainly in two of the years in my observation period, 2005 and 2008. The rising income in 2004 and 2005 was effective for nearly all age segments, while the rise in yearly income was highest for the age groups within the ages of 20 to 35. However, the income level for these age groups in a yearly comparison fell significantly for the 20 to 35 year old age observations in the 2006-2007 period. (Graph 2.2) On the other hand, consumption level also rose the most for these two consecutive years for the above-mentioned age segments. However, the consumption trend surged in 2005, and the main reason for the sharp fall in saving level of the households was not a fall in income level but the sharper rise in consumption. (Graph 2.3) 2006 was a year of financial volatility for the Turkish economy, and the income level fell sharply for all age segments. Consumption also fell in line with income level, but the contraction in consumption was not strong enough to elevate the saving of the households. The declining income effect was again observed for the income levels of the 20 to 40 years old household heads. The year of Global financial crisis, 2008, was a huge break in income levels globally, while the effect on Turkish household income was considerably lower. However, consumption level did not cope with the income trends, and continued to increase for 2008 and then for 2009, as well. As a result, the saving level of the Turkish households performed another downward move in 2008. The household saving level for Turkish households declined to single digit figures for the first time. However, the consumption trend did not respond to these income fluctuations and continued to increase again. The rise in consumption was again observed in 2011 and 2012. One of my basic observations is that the years of significant downward moves in saving were mostly observed in the years of rising consumption.

A rise in income generates positive economic expectations and also promotes consumption. However, when the income level declines unexpectedly, consumption cannot respond to this change instantly and saving level declines. This result indicates that households were not successful in giving expected consumption responses to changes in their income levels. One of the reasons for this trend could be the high level

of dissavers or "hand to mouth" consumers in the Turkish example. This finding does not suit the standard "excess sensitivity" rule of consumption to changes in income.

Chart 2.3 Consumption by Age Profile of the Household Heads by Years*

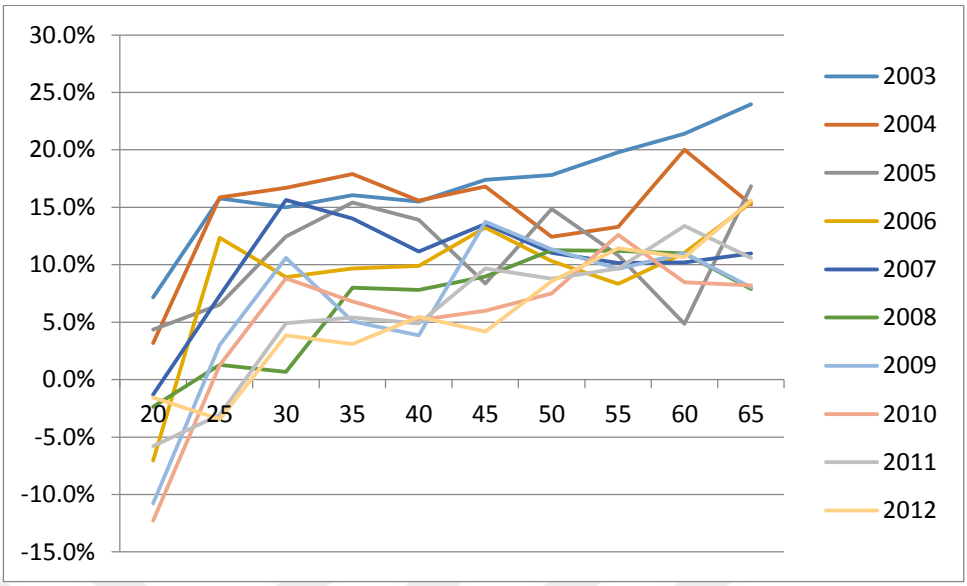


* *Consumption includes the annualized total purchases of durable goods, other consumption goods, consumption from own production, goods in-kind from employer, gifts and aids. Graph includes household heads only. Consumption levels are discounted with the yearly CPI levels to generate real income in relation to 2003 prices.*

However, they may not have been able to smooth down their consumption due to their already low income levels. Another probable reason observed in the observation period is the relief in liquidity constraints, which enables consumers to use additional sources for their consumption requirements. The rising usage of consumer loans could be another reason for the presumably reckless consumption behavior of the households, even in a case of declining or stagnant income trends. These results show the importance of the differentiation between low and high income households in the observations and, probably, the effects of the changing liquidity conditions.

Although savings tend to fluctuate all through the life time, 2004, 2006, 2007 and 2009 are the years in which consumers began to lower their saving levels after they were 45-49 years old. On the other hand, in 2010, 2011 and 2012, consumers began to lower their savings after they were 55-59 years old. In the years 2003, 2005 and 2008, the older age group did not show a trend of lowering savings. (Graph 2.4)

Chart 2.4 Saving Rate by Age Profile of the Household Heads by Years*



** Saving rate is the ratio of not consumed annual disposable income to the annual disposable income level. Graph includes household heads only.*

On the other hand, having a younger population on median terms, Turkey also suffers from the additional impatience effect of younger households. Here we have observed that the sharpest declines in the savings rate of the heads of households were observed in the 20-24 and 25-29 years old populations. The average saving of these age levels declined by 15 percent and 19 percent to minus 12 percent and 1 percent, respectively. The data indicates that the 20-24 years olds were always low level savers, while the 25-29 years olds were mostly at average saving levels until 2007, when a structural break took place in this age segment towards a lower saving performance. In the post 2006 period, the 25-29 years olds began to perform the highest average consumption hikes in all the age categories, while their income did not change any more than the average income increase in the sample. The structural break seems to take place in consumption preferences, while we think that declining interest rates and the rising effects of financialization to relieve liquidity constraints were the biggest themes to stimulate the consumption of this generation, the very same period when consumer credits began to hike at a stronger rate. Turkish Banking Association (TBA) data do not indicate that the hike in consumer loans was the highest in this age segment, while they indicate that the rise in consumer loans of the 26-35 years olds was at its highest in the 2006-2012 period

with a hike of 227 percent. The segment contains nearly two age segments of our sample, but the hike is even stronger than the 215 percent rise in consumer loans of the 36-55 years older age segment. The additional hike in this segment can also be observed from the share of the population of households in our sample. Those who were 26-35 years old constitute 22 percent of our total household head sample, while the 36-55 years old household heads constitute 62 percent of our sample. So, the significant rise in consumer loan usage of the 26-35 year old segment resulted in a structural break in the consumption habits of these consumers, resulting in permanent low level of savings for this group. Most of the other age groups maintained their ranking in the saving scale, while their share in total observations is low and less representative.

2.3.2. Household Type Indicator

My analysis depending on age and its effects on income, consumption and saving does not give a full picture of the relationship. The age of the household also has interaction with other demographic indicators, and the relationship cannot be decomposed directly from the other demographic indicators. The saving preferences of a household and household head at a certain age should differentiate depending on family size and family structure as well. Saving preferences of a household head with no children should differentiate from a household head with three or more children. In order to analyze the effects of the household type and age interaction, I analyzed the saving levels of the households through their age categories depending on the household types. TURKSTAT's HBS gives the household type categories in seven different categories. The first three household types include nuclear households with one child in Type 1, 2 children in Type 2 and three or more children in Type 3. Type 4 contains couples with no children, and Type 5 contains patriarchal families (extended family including nuclear family and relatives like grandmother, grandfather, aunts and uncles). Type 6 and Type 7 contain the one adult household and persons living together, respectively. For a demographic analysis, although I was expecting a highly patriarchal dominated household style, this type of household only constituted a 16 percent share in the observation sample. As I am working with households with heads in the 20 to 65 years range, I have also checked if the low level of patriarchal households was a result of my

restrictions. Results show that the share of this type of families increased only 1 percent to 17 percent level in the total observations. (Table 2.2) The share of the last two categories with single adult households and people living together constitute only a mere 8 percent of the total observation. However, the share of families with no children to 3 or more children constituted up to 75 percent of the total observation. The age profile of the household heads and the household types are for sure effective over the saving decisions of the households. My first expectation was a declining saving level as the number of children in the family increases. What's more, the considerably higher level of the young and old dependency ratios in the patriarchal family should also promote higher consumption requirements, leading to lower saving possibilities.

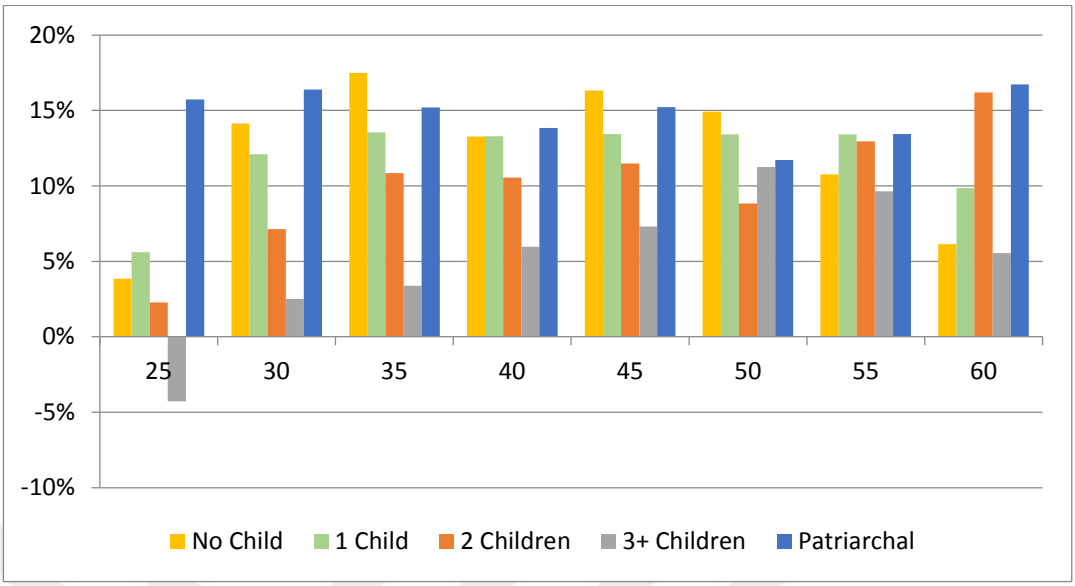
Table 2.2 Share of the Household Types* by the Age of the Household Head

AGE	1 Child	2 Children	3+ Children	No Child	Patriarchal	One Adult	Living Together	Total
20	21%	11%	6%	14%	19%	15%	13%	100%
25	36%	18%	6%	14%	15%	8%	3%	100%
30	25%	33%	16%	6%	13%	6%	1%	100%
35	13%	36%	29%	3%	12%	6%	1%	100%
40	12%	32%	33%	3%	12%	6%	1%	100%
45	19%	27%	24%	7%	16%	7%	1%	100%
50	22%	19%	15%	14%	21%	8%	1%	100%
55	21%	12%	8%	23%	24%	9%	1%	100%
60	17%	9%	7%	27%	27%	11%	1%	100%
Total	**20%**	**26%**	**20%**	**10%**	**16%**	**7%**	**1%**	**100%**

** Type 1 contains nuclear families with one child, where Type 2 contains families with 2 children and Type 3 addresses families with 3 or more children. Type 4 contains couples with no children and Type 5 contains patriarchal families. Type 6 and Type 7 contain one adult households and persons living together. Data are for the pooled observations of the total observation period. Pooled data for the 2003-2012 period.*

As a result of the initial graphical analysis, declining saving rates with rising number of children was also suggested. Families with no children (Type 4) have the highest level of savings on average and the saving level declines as the number of children rises. The sample gives the same results until the age of 50, and the trend deteriorates after the age of 50. (Graph 2.5)

Chart 2.5 Average Saving Rate of Households by Age and Household Type



** Average Saving Ratio is the ratio of the average saving of all households in that age group and household type segment to the average of disposable income of the same group. Household types 6 and 7 are excluded due to their low share in total observations.*

However, families in the patriarchal segment behave significantly differently than my initial expectations, and show consistently high levels of saving in all age categories. This trend can be a result of the considerably high level of average number of people living in the family (6 people) and the economies of scale for the use of consumption goods. On the other hand, the size of the households also generates a need for additional saving for precautionary motives depending on dependency ratios. What's more, the patriarchal families could be benefiting from their multi income earner status resulting in higher income, such as from the pension payments of the elderly members, resulting in a higher income than a standard family with four children.

Although the graphical analysis indicates some relation with the life cycle hypothesis outlook, I fail to comment on the graphical data for the emergence of an LCH profile.

2.3.3. Wealth Indicator

Here we should also mention the age and wealth relationship and how it evolved in the 2003-2012 period. I calculate the number of assets in means of flats, summer houses, fields, plantation area or any kind of land the household owns as the wealth indicator. As the value of these assets is not given in the HBS, we cannot know the monetary value of these assets. Aside from that, wealth can have other issues as being collateral for a loan, or the worth of the asset can vary with the location of the asset. The value of the asset may vary not only within provinces but also in the central and rural parts of provinces as well. So as the TURKSTAT HBS data lack this value information for the assets, I simply count the number of assets for each household. The resulting view is mostly in line with the general literature review findings. The number of assets (wealth) increases with age in all of the years in the 2003-2012 period. (Table 2.3) The number of assets is lower at younger ages, while the number of assets consistently tends to hike at older ages. This trend is in line with our former findings that the households at younger ages tended to consume more and their lower savings resulted in lower asset accumulation for these age groups. For a periodic finding during the observation period, we have seen that all the age groups tended to reduce their savings in the 2003-2012 period. On the other hand, the wealth effect seems to differentiate from this trend. The asset amount of older age groups increases in the abovementioned period, while their saving level declines. This is interesting because the rise of assets in the ages over 50 is significant, while the effect is muted for the 40-50 years old range. On the other hand, the structural break in the savings of the 20-34 years old household heads is also observed in their wealth. Here aside from the impatience effect on these age categories, the down payment and capitalist spirit effects could be of importance. The mortgage market began to develop in our observation period, as did the value of houses, and so the down payment levels all surged in the abovementioned period. This trend might have limited the asset formation possibilities of the younger households. Even the most patient young household might have found it hard to cope with the rising asset values and got discouraged to accrue any assets. The rising cost of asset formation might also be considered as the structural break down of the consumption habits of the younger households. The same motive can be considered as the rising cost of the down payment possibilities. Another important development in the descriptive data can be the

significant rise in the asset formation of the households for older households. The rise in this category of over 50 years old can be considered as the rising bequest motive, depending on the literature review. The bequest motive mostly contributes to higher income households and due to this effect I eliminate the top three income deciles out of ten. However, regardless of this elimination, results continue to indicate the same divergence in the wealth level trends for the age groups, indicating that the down payment motive could be a good candidate for this divergence as well. The rising value of the assets and mainly that of real estate in the 2003-2012 period seems to have discouraged the younger generations from purchasing assets and from saving, thus the down payment motive. Later marriages and the changing composition of young married couples is probably the culprit. The analysis containing the status of the household head, as being an entrepreneur or a worker has little effect on the wealth formation divergence observation. The effect seems to be smaller for the workers, while the effect is stronger for entrepreneurs in the over 50 category. On the other hand, it must be mentioned that the divergence is also much more significant for the entrepreneur category at younger ages, as their asset formation level shows a declining performance higher than the households with worker status.

Table 2.3 Average Number of Assets Households Own by Age Categories

AGE	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
20-24	0.48	0.55	0.90	0.49	0.44	0.40	0.34	0.28	0.31	0.23	**0.57**
25-29	0.49	0.54	0.74	0.49	0.46	0.47	0.42	0.41	0.36	0.35	**0.48**
30-34	0.61	0.57	0.76	0.59	0.61	0.57	0.55	0.54	0.54	0.49	**0.58**
35-39	0.76	0.75	0.92	0.73	0.74	0.73	0.70	0.74	0.68	0.65	**0.73**
40-44	0.95	0.93	1.05	0.95	0.89	0.98	0.96	0.90	0.95	0.89	**0.94**
45-49	1.07	1.08	1.21	1.15	1.10	1.18	1.30	1.17	1.12	1.13	**1.14**
50-54	1.25	1.20	1.23	1.34	1.20	1.28	1.39	1.44	1.30	1.31	**1.29**
55-59	1.31	1.38	1.34	1.28	1.28	1.44	1.61	1.50	1.49	1.53	**1.42**
60-64	1.38	1.22	1.41	1.38	1.41	1.40	1.65	1.50	1.46	1.53	**1.43**
Total	**0.93**	**0.93**	**1.00**	**0.95**	**0.92**	**0.97**	**1.02**	**0.99**	**0.95**	**0.95**	**0.95**

* *The number of assets in terms of flats, summer houses, fields, plantation area or any kind of land household owns as a wealth indicator.*

2.3.4. Education Indicator

Prior to the analysis of the income and wealth effects, I will consider educational status and its effects on income, consumption and saving dynamics. First of all, I should shed light on the educational status of the population in the HBS as a general introduction to the Turkish example.

According to the United Nations Human Development Report for 2012, the mean years of schooling for adults aged 25 and older are 7.6 years, and Turkey ranks 108th out of 187 countries in the analysis. The schooling level is significantly low in the comparisons of the HDR analysis. The trend indicates that a higher average number of years of schooling could be achieved in the following period, while the existing level is partly a result of the inappropriate education policies of earlier periods. The low level of graduation may be considered as a reason for Turkey's low value added production structure. This situation is not the only reason for lower savings, but the fact of low education levels influences income level, which in turn results in higher impatience and low wealth accumulations.

In the HBS data, the biggest portion of the education category in the total sample is primary school graduates. The no schooling segment is the second most populated sub segment of the subjects for our observations in the individual base. The share of high school graduates is mostly the same as the uneducated category. The lowest share in the graduation level of the individuals is secondary school graduates, which is just a little lower than the share of university graduates. In our analysis, we will be using the household head data for our saving analysis, and the differentiation in the distribution of education levels is especially significant for the individuals in general and for the household heads alone. The education level of the household heads is higher than the individual base analysis. However, as we only have the saving data for households, we will use the household head data for the saving model. (Table.2.4.)

On the other hand, it must be stressed that in the 2003-2012 period, the graduation level has shifted significantly in favor of university graduation from all other categories other than high school graduation for both the individual and household basis. The total of illiterate and primary school graduation share in the total sample was as high as 68 percent in 2003, while the level declined to 64 percent in 2012.

Table 2.4 Share of Education Segments* of Individuals and Household Heads

Individual Base

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	14%	14%	14%	13%	15%	13%	14%	14%	14%	13%
2	49%	48%	49%	49%	48%	44%	44%	43%	41%	38%
3	10%	9%	9%	10%	9%	11%	11%	12%	12%	13%
4	20%	21%	19%	20%	20%	21%	19%	20%	20%	21%
5	8%	8%	8%	9%	8%	11%	11%	11%	13%	15%

Household Head Base

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	7%	8%	8%	7%	8%	7%	8%	7%	7%	6%
2	51%	50%	52%	52%	51%	47%	48%	48%	46%	43%
3	12%	11%	11%	12%	11%	12%	12%	12%	12%	13%
4	19%	20%	18%	19%	20%	21%	19%	20%	20%	21%
5	10%	11%	10%	11%	10%	13%	13%	14%	16%	18%

** Education levels are; 1: no schooling, 2: primary school, 3: secondary school, 4: high school, 5: university or higher level of education. Compulsory 8 years education is included in the secondary school category.*

This share declined to 50 percent from 58 percent for the household heads. The level is high for the total population and our findings are mostly in line with the results of the analysis. The 2012 results for the population over the age of 15 indicate that the illiterate and primary school graduation ratio was at 60 percent by 2012. On the other hand, the same picture of the shifting graduation levels from lower level of graduation to higher levels during the observation period is significant in both our and TURKSTAT's results. What's more, the share of the low level of graduation and the share of university and higher level of graduation in our data for the individual level is consistent with the TURKSTAT data for 2012.

As the consumption data is for households only, we will not be able to give a detailed analysis of the education and saving relationship for individuals, but we can have a better understanding of income and education relations on the individual basis. On the analysis of the individual side, there are two different income definitions, which contain wage or entrepreneur income only, and income that contain capital income and other sources of income in addition to wage income. Our first finding is that income level increases with the level of education. This result is consistent with the literature review

and is observed in both the wages and the total income data for individuals, as well as the disposable income for the households. The significant difference between the income generation capabilities of graduation levels indicates the importance of education and saving possibilities as well. Here we should mention that the difference in the total income level of illiterate and primary school graduation versus university graduation and higher levels of education results in significantly higher income levels in the latter. However, the multiplier effect diverges between the two education levels in the total income and disposable income levels. The usual suspect here is the changing number of household members. Even after correction for the number of household members, the divergence is significant. For 2012, the university and higher level graduates received incomes as high as 3.3 times that of primary school graduates, and 2.1 times that of secondary and high school graduates. On the other hand, when disposable income is adjusted for the number of household members, university and higher level graduates received incomes as high as 2.8 times that of the primary school ones, 2.5 times that of the secondary and 1.8 times that of the high school graduates. The correction for the number of household members seems to have some averaging effect. The income effect of higher levels of education is seen as a smaller one, when we compare it with the individual level. Although education level generates a higher income gap between low and high education levels, the gap for income from other sources can be at lower levels. The average income from sources other than wage or entrepreneur income is just 1.9 times higher for university graduates than primary school graduates. The low education profile could be perceived as a structural problem, as it results in lower income and lower income results in lower asset accumulation, which in turn results in elevated liquidity constraints. This trend can link education level with possible liquidity constraints as well. Within all education categories, the income level of the uneducated and primary school graduates rose by the lowest rate. On educational level comparison, the biggest benefits of income were realized in university graduates and secondary school graduates in the individual basis. The picture is mostly the same for the household basis. The rise in income for the 2003-2012 period is highest in the uneducated segment, while the university graduates received the lowest level of hikes in their income. Aside from the differences on the education side, average consumption levels should also be changing with education levels. Here we must stress

that as we are looking at the education of the household head, the results should differentiate from the analysis with the individual level segmentation.

Table 2.5 Average Saving Rate* by Education Segments for Household Heads

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
No Schooling	8.4	4.3	4.8	0.1	2.4	-2.8	-2.5	-2.8	-5.8	5.8
Primary School	14.5	12.5	10.2	8.5	9.3	5.3	4.7	2.4	6.0	0.7
Secondary School	15.1	16.3	11.1	10.5	11.2	5.3	3.8	2.1	3.9	2.2
High School	17.0	17.4	6.9	11.8	14.2	6.8	9.6	5.3	3.2	5.4
University	23.7	21.1	16.4	14.9	19.1	16.2	17.9	19.3	12.6	12.1

** Average Saving Ratio is the ratio of the average saving of all household heads in the education segment and the year to the average disposable income of the same group.*

The consumption level is observed to have increased at the highest rate for upper graduation levels, while the increase in consumption level is parallel to the increase in income levels. The most important effect in this analysis is that the share of the low educated household heads is more effective in the total sample. And the declining saving level of this segment becomes more deterministic on the aggregate saving formation. We have noticed that negative saving was observed in the least educated segments. The saving ratio of all education levels declined by around 10 to 12 percent, but maintained their positive levels. However, the saving rate of the uneducated segment declined to negative saving levels and stood in this territory for most of the post 2007 crisis period. The relief of liquidity constraints via a relief of the loan conditions can be judged the usual suspect for the negative savings in this category.

We can easily observe that the saving preferences of the highly educated household heads indicate a higher saving level, (Table 2.5). The main reason is observed to be the high income level of these people, while the saving level should be observed after controlling for income effects.

Education affects the income level positively, while it also affects the unemployment risk negatively. The level of education is effective over employment status, so we give more information about the relationship between employment and education. The share of observations for the low education levels in the sample was higher, as we have already mentioned. Depending on this skewed distribution of education, we initially

expected education level to be less effective than its relation with unemployment status. However, unemployment and education status were mostly in line with the generally accepted situation, and illiterate and primary school graduates had the highest share in the unemployed category. The third place in the unemployed category was high school graduates, while secondary school graduation had a lower unemployment share. The number of secondary school graduates has the lowest level of observations in the sample, so it could have given some misleading indications of the unemployment risk. On the other hand, the relationship between unemployment and university graduation was at a lowest level than expected. However, when we correct the data for labor force participation and eliminate housewives, retirees and other individuals that are not considered in the workforce, we observe that the average unemployment level was higher for high school and university graduates. (Table 2.6) This result could be considered as a reflection of the higher level of admittance of high school and university graduates to the labor force than the lower levels of education segments.

Table 2.6 Average Unemployment Rate for Education Categories For Individuals

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
No Schooling	5.1	4.7	6.4	7.5	11.0	10.9	14.6	14.2	13.1	13.6
Primary School	7.1	6.8	7.3	7.0	7.8	10.6	12.8	13.2	11.2	9.6
Secondary School	10.8	10.6	9.0	9.6	9.1	11.2	15.5	14.6	9.5	11.5
High School	16.6	14.9	11.2	12.1	12.0	16.3	18.3	18.8	15.3	13.9
University	10.7	13.1	10.6	12.2	11.8	13.3	13.2	12.6	10.8	10.8

** The ratio of unemployed individuals to the total labor force in the selected year and education segment. The labor force participation is determined in line with TURKSTAT's standard classification; for individuals who are over 15 years old, actively searching for a job in the last 4 weeks or to be starting a job in the next 2 weeks.*

Aside from employment status, the effect of education on occupational choices is also very crucial, not only for analysis of the existing situation but for analysis of future economic preferences. When we look at the relationship between graduation level and occupational status by years, the first development is observed for illiterate individuals, who had been working in the agriculture sector at a 70 percent density in 2003. Individuals in this category have moved from the agriculture sector to unskilled labor

jobs during the study period. The share of uneducated individuals working in the agriculture sector declined to 55 percent in 2012, while the ones employed in unskilled jobs hiked to 23 percent from 15 percent in the same period. Nearly the same observation is valid for primary and secondary school graduates, who also moved into service and sales jobs aside from unskilled labor jobs. So, the low educated labor force tended to move from the agriculture sector to low skilled sales related jobs. As the mean schooling years of the average individual has increased to higher levels in recent years, the occupational choices of high school graduates have also changed. They also shifted to the service and sales sector, while the possibility of higher ranking jobs in the legislation and as senior officials falls sharply for high school graduates. The service and sales sector also seems to achieve the biggest level of attraction for university graduates. University graduates were largely attracted to the professional sectors like engineering, medicine or law in 2003. These still have the highest occupational preference, while the second best choice became the service and sales sectors. The higher amount of university graduates with inadequate working opportunities for their education levels might have resulted in a higher preference for qualified jobs in the sales and service sector. Educational and occupational developments indicate that lowly educated individuals have moved from agriculture to service and sales related jobs, while service and sales is also perceived to be the most available occupation for all educational levels, even for university graduates.

On employment choices, the main shift is from the self-employed and entrepreneur category to the employee category. The biggest shift from the entrepreneur and self-employed category to employee status took place in the lowest educational groups. Here we must mention that self-employed individuals and entrepreneurs are more likely to make higher savings as their income is more volatile and dependent on economic developments than is the case with wage earners. The changing profile of the individuals in their preferences for job status, for being an employee or self-employed or an entrepreneur should have significant effects on income and more importantly on their saving behavior. And vice versa, the income level of this different employment status should also influence the preferences of these individuals. The gap between the income levels of the entrepreneurs and employees gets lower and lower each year. Even in a short period of ten years, between 2003 and 2012, the income gap declined from 23

percent to 10 percent, which resulted in the declining preference to become an entrepreneur instead of being an employee. The share of employers in the total households declined to 25 percent from 31 percent. Here I observe that, although the rise in income is considerably lower for entrepreneurs, the saving habit is significantly higher than for the workers and that the status of being an entrepreneur or worker should also be analyzed and considered in the saving model for households. The important factor here is not a shift between employee and employer status, but rather that this trend takes place more strongly in lower educational groups. The aforementioned developments indicate that the low educational groups have a higher share in the total sample not only in our study period but in general as well. So, a move from a more saving biased employment status to a lower saving status with a lower education level and a significant share in the total observations should also have effects on Turkey's and our sample's saving preferences. Also, savings are probably moving into the corporate sector, where they will be invisible to a household survey. As employment status changes for all the educational groups in the individual base, we also looked at the household head level that will be included in our final saving model. The shift from employer to employee status is well observed also in the household head analysis, while the effect is significantly lower for the lowest two educational categories than for the individual comparison. As the lowest educational categories are significant in the total population, the effect of this shift in employment status will be underestimated in our analysis for the household level.

2.3.5. Household Size and Dependency Effects

Aside from age and education, household size and the number of children are also important demographic factors to influence the consumption habits of the household. These factors are effective on young and old dependency ratios.

On household size and the number of children, the first significant result is that the household and the number of children in the house are mostly the same both in the urban and rural areas of the country. So, the old picture of Turkey, with a higher number of household members and higher number of children below the age of 18 in rural areas is mostly in the past. The rural and urban areas of Turkey do not show any difference in terms of household size by average members or the average number of children. On the

other hand, both of these indicators do change over time and by education level. The sample gives clear evidence that household size and the number of children in the household is decreasing. During the 2003-2012 period, the average number of members in the household declined to 3.9 from 4.4 members, while the average number of children declined to 1.4 from 1.7. This trend is in line with the lowering birth rate statistics. The educational divergence in household size and the number of children are more significant. The household size in the least educated household head category stood at 5.5 members in 2003 and declined to 5.0 members in 2012. On the other hand, the household size declined to 3.1 from 3.5 in the 2003-2012 period for the highest education level. (Table.2.7)

The same path is also observable in the number of children in the household data. The average number of household members below the age 18 was at 2.45 in 2003 and declined to 2.09 in 2012 in the least educated household head category. The number of children in the household falls to 1.45 in those with primary school graduation and to 1.37 and 1.23 in those with secondary and high school graduation levels, respectively.

Table 2.7 Average Number of Household Members* for Education Categories

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
No Schooling	5.5	5.6	4.7	5.4	5.4	5.0	5.0	4.7	5.1	5.0
Primary School	4.6	4.5	3.9	4.4	4.4	4.3	4.3	4.2	4.2	4.1
Secondary School	4.2	4.2	3.8	4.1	4.1	4.0	4.1	4.0	4.0	3.9
High School	3.9	3.9	3.5	3.9	3.8	3.8	3.6	3.7	3.6	3.6
University	3.5	3.5	3.1	3.6	3.5	3.5	3.2	3.2	3.2	3.1
Total	4.4	4.3	3.8	4.3	4.2	4.1	4.0	4.0	4.0	3.9

** The average household size for the selected year and education segment.*

In households with university and higher levels of graduation, the number of children declines to 1.02, which is in line with the 3.1 household members in the house for this education category in the year 2012. The household size and number of children leading to old and young dependency ratios are important indicators for the consumption preferences of the household. The number of children gives additional consumption requirements for the household in terms of food, clothing and education, while old age dependency results in additional health expenditures and mostly lower saving

possibilities. The highly populated household is far in the past, and this trend reduces both old age dependency and young dependency ratios for university graduates. However, the ratios are still high in the lower education levels and they still generate additional consumption requirements. As the lower education levels constitute a higher portion of the population and our sample, the lower levels of household size and number of children are only a small portion of the total sample. The low dependency levels in the upper education levels are not an indicator for the whole sample and according to the World Bank (WB) data, Turkey still ranks in the middle income countries. WB data rank Turkey in 77th place out of the analyzed 240 countries in 2015, with a total dependency ratio of 49.7 percent, where the ratio is calculated as the rate of young and old dependent citizens out of the total working age population in the 15-64 age range. The old age dependency ratio was 11.3 percent and the young dependency ratio was 38.4 percent in 2015, both of which are in the upper middle income segment of the World Bank categorization. Both household size and the number of children are factors to induce consumption and could be considered as factors to reduce saving level.

Here, we will also look at the urbanization level of our sample. The sample does not show any important variation within the 2003-2012 period, when the urbanization level stands at 71 percent for the whole period. So, the change in urbanization does not show variation in the sample, resulting in less noticeable effects of urbanization. What's more, there seems to be little difference in the urban and rural areas of Turkey in terms of saving level. On average, in the 2003-2012 period, the savings of city dwellers are only 1 percent higher than the individuals living in the rural areas of Turkey. Urban and rural preference does not seem to make a difference in terms of resulting saving motives. The slightly higher level of income in the urban areas is also accompanied with slightly higher consumption, which leaves saving level no room to diverge.

2.4. EVOLUTION OF DEMOGRAPHICS IN THE OBSERVATION PERIOD

2.4.1. Evolution of Education Status

Here I provide some more information about the evolution of the educational, occupational and sector choices of individuals during the 2003-2012 period. The educational status of individuals as the share in the total yearly observations for individuals shifted from primary and secondary school graduation to university and

higher levels of education. The share of primary and secondary school graduation declined to 38 percent and 13 percent from 49 percent and 10 percent, respectively. The university or higher levels of graduation share increased to 15 percent from 8 percent. Interestingly, the share of illiterate individuals and high school graduates remained stable at the 13 and 21 percent levels throughout nearly all the observation period. The educational development to higher levels of schooling has a very strong effect to raise income levels, and the tendency to improve the value added production in the economy. However, rising educational status should be accompanied by labor demand.

Occupational status shifted strongly away from the agriculture sector to service / sales and unskilled labor sectors and there was only a slight increase in professional job preferences. Declining agricultural labor requirements resulted in a significant shift away from the agriculture sector and the workers with this level of education tended to move to the occupations of unskilled workers. Nearly the same picture was also observed in primary school graduates. Starting with secondary school graduates and higher levels, the main status of graduates shifted towards the service and sales worker categories. Declining occupational possibilities for senior officials and craftsmen positions were replaced by rising occupational choices in the service and sales worker categories. For high school graduates the declining preferences for work as senior officials, office workers and in the agriculture sector have all moved to the service and sales sectors. The shift to the service and sales sectors is also viable for university graduates, while the preference as senior officials or professionals has declined significantly. So as a result, the lower educational levels have tended to move from agriculture to the unskilled labor sector, while the mid to high education level graduates have preferred to move to the service sector. These changes in occupational status are also the result of supply and demand in the labor market.

2.4.2. Evolution of Industrial and Occupational Status

Aside from occupational choices, the industrial preferences of these individuals also shed light on the changing industrial structure of the Turkish economy. Again, starting from the illiterate or uneducated segment, the shift to unskilled jobs was realized in the mining, education and finance sectors. The same move from agriculture to unskilled worker status found job opportunities in the mining, utilities and finance sectors. For

higher levels of graduation, the shift was towards service and sales related jobs. The shift in secondary school graduates was from the mining, construction and real estate related industries to mainly finance and then to utilities and the wholesale/retail business sectors. High school graduates moved from agriculture and construction to the finance sector. When we come to university graduates, there is a significant move away from the public sector to real estate, retail /wholesale business activities and to the communication and transportation sectors. So, the shift in industrial preferences is from agriculture in low education levels to mining, while those with mid to high education prefer finance to the construction and real estate and business sectors. University graduates shifted their sector choices to real estate and business from the public administration sector, which is considerably low value added. (Table.2.8) Rising university graduation potential was not used in the main industrial areas to generate extra value added to the economy.

Table 2.8 Evolution of Occupational Preferences by Share in Total Observations for Individuals

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Senior Officials	8%	9%	9%	9%	9%	11%	9%	9%	9%	6%
Professionals	6%	6%	5%	6%	5%	6%	6%	6%	8%	8%
Ass.Professionals	4%	5%	4%	5%	6%	6%	5%	6%	6%	5%
Office Workers	5%	5%	5%	5%	5%	6%	5%	6%	6%	5%
Service And Sales	10%	10%	11%	11%	10%	12%	11%	11%	12%	17%
Agriculture	34%	30%	29%	27%	27%	24%	28%	24%	22%	22%
Craftsmen	15%	15%	15%	16%	14%	14%	13%	14%	13%	13%
Operators	8%	8%	9%	10%	10%	9%	9%	10%	9%	9%
Unskilled Labor	10%	12%	12%	12%	13%	12%	14%	15%	16%	13%

** The share of individuals for the selected occupation group and year to the total number of individual observations in the same year.*

2.5. INCOME, WEALTH AND DEBT EFFECTS ON SAVING

2. 5.1. Income on Saving

Income and wealth levels are the main indicators in terms of determining household saving in an economy. The bequest motive, social security, earnings profile and rate of time preference are considered to be the main factors resulting in changing wealth accumulation patterns. Consumption and saving levels of different income levels can give some clues to the preferences. Our first analysis will be on the individual base and the income will be total income instead of disposable income for the household. The individual based income analysis, although incapable of defining consumption and saving habits due to the restrictions of the data, is crucial in terms of a general outlook for age, education, industry and occupation relations in the individual base. As household level data focus on the household head and related preferences, it would be insufficient to drive the aforementioned relations in the household data structure, as the demographic variables will have to rely only on the household head. Our sample for individuals consists of individuals over the age of 15 and there are 310,494 observations in the 2003-2012 period with 140,082 of them reporting no income. The individuals with no income were first considered to be children, women and elderly individuals, while the results indicated that they were from all age categories. Only 21 percent of these individuals are under the age of 25. The concentration is on the positive income reporting individuals as their preferences will be effective and generate saving if possible, so for income distribution, I considered only the positive income earners. The income distribution is significantly disturbed and shows a great skewness to the left with lower income. (Table 2.9) The main observation is that the income share of the lowest three deciles was declining in the observation period, while the income of the highest deciles was mostly stable. The income share of the 6th to 9th decile was increasing. The highest two deciles got approximately 50 percent of the total yearly income, while the lowest two deciles received only 2 percent of the total yearly income. The ratio of total income of the richest decile to poorest decile was 36 times, and the ratio continued to rise until 2009 to a 107 level. However, due to the rise in capital income for wealthier people and the negative crisis effects on the low income segment the ratio surged to 1301 in the year 2008. The ratio declined to 83 by 2012. Although

the income share of the 6th to 9th deciles continuously rose in my observation period, the income of the low income receiver in 50 percent of observations declined.

Table 2.9 Income Share in Income Distribution* by Individuals

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1. 10%-Lowest	0.9	0.8	0.6	0.5	0.3	0.1	0.3	0.4	0.4	0.4
2. 10%	2.8	2.7	2.3	2.0	1.9	0.3	1.4	1.4	1.5	1.6
3. 10%	4.4	4.4	4.2	4.1	4.0	0.8	3.1	3.2	3.4	3.6
4. 10%	5.6	5.7	5.8	5.7	5.8	1.2	5.1	5.2	5.4	5.5
5. 10%	6.6	6.8	6.9	6.9	7.0	1.5	6.6	6.9	6.8	6.8
6. 10%	7.9	8.1	8.2	8.3	8.3	1.8	8.0	8.2	8.1	8.0
7. 10%	9.5	9.7	9.9	10.1	10.1	2.2	9.9	10.1	9.8	9.9
8. 10%	11.9	12.1	12.5	12.6	12.7	2.8	12.6	12.8	12.6	12.7
9. 10%	15.7	15.9	16.6	16.6	16.8	4.0	17.2	17.2	17.1	17.0
10. 10%-Highest	34.6	33.8	33.0	33.1	33.0	85.4	35.8	34.6	35.0	34.4

** Total yearly number of individuals is divided into 10 bins and total income of each bin is divided into the total income of the yearly observations.*

In order to find the income distribution in the household data, yearly disposable income level per household member is found through equivalent size of household by modified OECD scale and again categorized according to the yearly observations in ten deciles. Each decile is then observed for the mean saving level. Results indicate that approximately 60 percent of the households observed were not saving. All the disposable income deciles saved at lower amounts in the study period. (Table 2.10)

Table 2.10 Average Saving Rate by Disposable Income Deciles

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1. 10%-Lowest	-35.9	-44.7	-43.5	-37.5	-33.6	-49.4	-61.1	-47.0	-50.7	-42.4
2. 10%	-10.2	-10.7	-13.2	-17.5	-11.3	-22.1	-24.0	-24.3	-19.8	-17.9
3. 10%	-4.0	-5.7	-11.3	-4.4	-6.6	-15.2	-14.7	-15.6	-13.1	-13.1
4. 10%	0.4	-0.2	0.6	-1.5	1.0	-12.9	-9.8	-7.4	-6.7	-8.9
5. 10%	6.5	3.2	2.9	2.5	0.9	-8.2	-3.2	-5.2	-5.8	-2.0
6. 10%	9.5	7.9	6.3	5.0	6.6	-2.2	2.2	-2.4	0.3	-4.2
7. 10%	10.3	10.3	8.8	5.3	9.1	3.9	5.3	4.2	1.5	4.1
8. 10%	16.8	14.1	10.6	9.1	11.8	8.2	8.2	9.3	7.2	7.5
9. 10%	21.4	22.0	14.8	17.3	16.2	16.1	12.8	13.6	13.6	12.2
10. 10%-Highest	37.0	37.1	29.0	28.8	32.3	31.9	33.8	29.8	27.6	24.3

** Average Saving Rate is the ratio of the saving of all the households in the income quintile for the selected year to the disposable income of the same group.*

First when we look at the age factor, only the lowest income segment out of ten has an average age of 40, while the rest of the segments all average out at age 43 in the comparison of mean ages. On the education side, the mean graduation level of the lowest three income segments averages out at primary school level, while the highest three segments average out at high school level. The occupation of the individuals is certainly effective on their income and their situation in the income distribution. The occupational choices of the lowest five income segments are focused in the agriculture, sales, machine operation and unskilled labor categories. The focus shifts to professionals, legislators and office workers for the higher income segments. The focus shifts more to professionals in the higher income segments, as expected. On the status of employment, the lowest nine income segments prefer employee status, only the highest segment out of ten consists mostly of employers and self-employed individuals. The lowest income segment has a preference for being an employee at 74 percent level and the level declines to 62 percent only in the highest income decile. The highest segment has a preference for being an employer or self-employed at 38 percent. The resulting analysis indicates that the lower income segments have a bias to be employees, while the probability of being an employer rises for the highest income decile. What's more, the occupations of the lower income segments are focused on agriculture and jobs with less skill requirement, while the occupation choices of those with high income focus on legislation, professional jobs and office jobs with considerably higher job skills and experience. Both the income and saving rate of the employers are significantly higher than those of both the employees and the self-employed individuals. (Table 2.11, Table 2.12)

Table 2.11 Average Saving Rate* by Employment Status

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Employer + Self Employed	29.3%	29.1%	20.7%	21.8%	23.7%	19.2%	15.6%	15.2%	17.4%	10.6%
Employer	37.3%	40.3%	29.6%	26.8%	32.4%	31.2%	28.5%	25.5%	26.1%	18.3%
Employee	17.5%	15.8%	10.5%	10.4%	11.9%	8.0%	8.7%	7.1%	7.1%	6.1%

** Average Saving Rate is the ratio of the saving of all the households in the employment category for the selected year to the disposable income of the same group.*

Choice of occupation also plays an important role in income level. People with the lowest incomes have a high probabililty of working in the agriculture sector, while the probability of working in the agriculture sector declines to 9 percent in the highest income segment. People preferring to work in the mining sector have a probability of 5 percent in all income segments. The probably unskilled workers in the construction sector have a probability of being in the lowest income segment at 13 percent. On the other hand, people working in the construction sector have a probability of having high income at 29 percent. The occupation category elevates by skill level from low to highest income for the construction sector. Financial brokerage and related services is highly preferred in the high income segment, with a 9 percent of all industry wide choices in the richest income segment.

Table 2.12 Average Income* by Employment Status at 2003 Rates

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Regular Empl.	6,612	7,413	7,585	7,933	7,794	4,522	8,648	8,590	8,771	9,488
Casual Empl.	2,601	2,729	2,930	3,329	3,373	1,724	3,296	3,411	3,634	3,617
Employer	17,689	20,066	20,307	19,895	20,275	13,110	23,114	22,761	25,167	25,450
Self-employed	6,524	7,522	7,439	7,570	7,747	3,998	7,421	7,848	8,508	8,519
Unpaid work.	1,405	1,463	1,774	1,449	1,473	335	1,957	1,954	1,905	1,872

** Average Income of the selected employment status for the selected year at 2003 prices, deflated with the yearly CPI figures released by TURKSTAT.*

Aside from income, income level is also important in the analysis for age, education, occupational and industrial choices. The income level of the individuals increases gradually and peaks at the age of 49, before starting to decline. The income level declines faster after the age of 60, in line with the LCH suggestions. Educational statistics give a clear and expected result in favor of higher educated segments receiving higher income. The income variation between uneducated or illiterate individuals and university and higher levels of graduation is about 3.6 to 4.3 times and shows an increasing trend in the period of 2003 to 2012. University graduates receive an income that is 1.7 times higher than high school graduates.

When we move to the household aspect, aside from income, savings and consumption preferences are also included in the analysis. We have seen that although their income has also increased significantly, the surge in consumption of the younger aged

individuals resulted in lower and lower saving for households with their household head in the 20 to 34 years old segments. Education was also effective on saving preferences and all the education groups showed a significant decline in saving rates, while the decline in saving level was more limited in the university and higher levels of education segments. The preference towards the service industry and sales in the occupational status found its result in the income of this occupation segment, as their income rose by 77 percent between 2003 and 2012, the highest in all occupations. The highest level of income rise was followed by that for senior officials and unskilled laborers at 60 percent and 56 percent. So, the varying occupational preferences were the result of the income rise in these sectors. On the consumption side, the rise in the 2003-2012 period was mostly even within the sectors, at between 60 to 75 percent levels, while the rise in senior officials' consumption was at 99 percent, significantly higher than for other occupation categories. The resulting picture indicates that two kinds of occupation out of ten resulted in dissaving by 2012 due to their higher consumption trends. (Table 2.13) First one was that of craftsmen due to lower income increases, while the rise in consumption of unskilled workers was the main reason for their dissaving results. Within the occupational segmentation, nearly 30 percent of the occupational observations are in these two categories. In the occupational comparison the highest income is for senior officials and professionals.

Table 2.13 Average Saving Rate* by Occupation Categories

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Legislators and officials	32.2	32.7	25.1	25.6	27.3	21.4	20.1	20.8	19.0	15.0
Professionals	23.5	20.8	15.5	16.3	21.5	16.6	18.9	15.5	13.3	10.4
Associate professionals	14.9	18.2	14.3	15.1	15.1	6.6	12.7	7.0	2.2	7.7
Office/customer service	12.0	11.4	10.4	5.5	14.0	3.8	8.2	9.4	5.1	8.1
Service and sales workers	6.9	6.5	5.8	6.1	8.7	0.6	1.9	1.7	2.0	7.0
Agricultural workers	24.6	15.0	20.7	9.9	11.4	9.4	5.0	8.4	13.8	10.3
Craft and trades workers	10.8	12.2	7.4	4.2	6.9	-0.8	-0.2	-1.2	-1.8	-3.9
Machine operators	14.9	11.8	8.2	9.7	9.1	2.4	3.2	1.3	1.8	1.1
Unskilled labor	2.8	4.5	6.0	1.1	0.1	-2.8	-2.4	-0.9	-2.3	-3.5

** Average Saving Rate is the ratio of the saving of all the households for the selected occupational status and the year to the disposable income of the same group.*

Comparison between occupations also gives more details about the income and consumption tendencies of different household heads working in varying occupations. Those that benefited the most in the 2003 to 2012 period were wholesale and retail businesses, real estate and business activities and the education sector.

People employed in these areas received 73 to 77 percent income rises in the abovementioned period. On the other hand, some of the sectors were subject to significant underperformance in comparison with the others. The fishery and manufacturing sectors were the ones with stagnant incomes in the 2003-2012 period. The income increase in the financial services sector was however as low as 6 percent in the same period. I must here mention that the income rise in the financial services sector was as high as 38 percent in the 2003-2005 period and showed a significant declining trend in the years to follow, for the 2006 to 2012 period. The financial services sector's attractiveness seems to result in over supply of labor for this sector, which in turn results in lower incomes. Here I will also give some more information about the income levels of the industrial average. The income level was highest in the transportation and communications sectors, followed by the education and real estate / business activities sectors. Consumption trends, according to the job choices of the household heads indicates that the highest consumption increase was in the real estate / business activities sector with 90 percent in the 2003-2012 period. Wholesale and retail business sector workers were the highest level consumers. Utilities sector workers and the ones in the health service also increased their consumption by 83 percent in the same period. The consumption increase for those in financial services was as low as 23 percent in this period; due to their low income growth they were not well off as a result. All the household heads working in different industries were subject to declining saving levels, except for people working in real estate and business owners. Contrary to the other sectors, business owners maintained their saving at constant levels during this period, which is also an indicator of the elevated precautionary saving motive of this segment.

What's more, households working in the education sector also kept their saving motive strong in this period. Although the income of business owners is higher in the individual base than the education sector, multiple earner status in the education sector is at one of the highest levels in all industrial comparisons. A total of 48 percent of the households of those in the education sector are multiple earners, while the rate is only 39 percent for

business owners. As a result, household level income was higher than for business owners at mean comparisons, especially in the 2008 to 2012 period. Considerable income strength at the household level for those in the education sector could also be an effect of the higher level of educational status for this segment's individuals. Households with members working in the education sector had 46 percent of workers who were university graduates, while the same rate is at 30 percent in the business activities sector. The education effect here shows us that educational status aside from the multiple earner status generates higher saving possibilities and also could be effective on the income level. Education status is more effective on consumption trend. The education sector worker households saw a lower consumption increase by 70 percent in the abovementioned period, while business owners elevated their consumption by 90 percent. The educational status here sets the ground for consumption preferences, resulting in a higher level of savings or at least a slightly minor declining trend in saving. We should also consider educational status, especially university education, as a positive factor to limit the consumption motive and result in higher saving preferences.

The highest income level is observed in the communication and transportation sectors, where income is higher than the other sectors in all sub-occupation segments, from sales to professionals, senior officials and to unskilled laborers. Although the income of this sector's workers is high, they did not increase their consumption to the same degree, and so they are the highest saving category in nominal terms in all the industrial groups.

2.5.2. Wealth Effects on Saving

HBS considers only the number of assets the household owns, while the nominal value of the assets is not available. On the other hand, the buffer-stock model of Carroll and Deaton's liquidity constraints model gives significant importance to the assets of the households, as a buffer for income volatility and an available source for times of liquidity constraints. We will consider assets as the number of assets declared by the households in the form of flats, summer houses, fields, land, plantation areas, shops and hotels. The number of assets owned could be a weak indicator for wealth, but as it is the only one available, we will be using that information to determine the wealth of the households. In our observation, 30 percent of the households have no assets, while 70

percent of the households have at least one or more assets. A total of 51.5 percent of households have one and 12.2 percent of households own two assets in the total household observation. Home ownership level is significantly high among Turkish households. TURKSTAT announces yearly home ownership levels in the Survey of Income and Living Conditions (SILC). However, the results of SILC and our results do not coincide with one another. Home ownership level stands at 59 to 60 percent levels in the ILC, while our data results in a declining trend of household ownership from 72 percent to 59 percent level in the 2003 to 2012 period. On the other hand, the shift from home owners to ones that live in a family owned flat for free or low payments is significant. Our data may have confusion between these two segments of home ownership status. The level of tenants and the ones that are lodging are mostly in line in the two analyses, and the only confusion seems to take place within the set of homeowners and the ones living in family-owned flats. Here, as our data diverge from TURKSTAT's SILC analysis, we will consider our data to be biased to higher level of homeownership. The saving level of homeowners is significantly higher than for ones living in family houses, so for our analysis the total saving level is stimulated upwards by the observations.

Wealth level is determined by the number of assets, regardless of the value of the assets, and treated as the number of available collaterals. The number of assets, although an unclear indicator for the total wealth of the household, works well for indicating the differences in income and saving preferences. In the descriptive analysis for the wealth level, we have observed that the mean disposable income level of the zero and only one asset owners are close to each other. There seem to be thresholds for income changes according to the number of assets, which is understandable in terms of collateral standards. Their only one asset is the home that the household lives in, and this cannot be used as collateral for additional liquidity or additional consumption requirements. However, as the number of assets rises above the threshold of one asset, the household has assets accumulated as buffer stock or liquidity requirements and the accumulated assets also generate a higher income level in terms of capital income and saving capabilities. (Table 2.14)

Table 2.14 Average Saving Rate* by Wealth Level (Number of Assets)

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Wealth = 0	9.5%	6.9%	3.8%	4.8%	6.2%	-6.1%	0.9%	-0.2%	0.1%	-0.1%
Wealth = 1	16.2%	15.1%	9.5%	9.7%	10.4%	7.3%	5.8%	5.5%	6.2%	6.7%
Wealth ≥ 2	26.2%	24.2%	17.6%	16.4%	20.9%	19.4%	18.6%	15.0%	15.0%	11.3%

** Average Saving Rate is the ratio of the saving of all the households for the selected wealth level and year to the disposable income of the same group.*

Income from rent is also an important income item for these households, and also plays a role in their elevated income profile. The income level continues to increase with the number of assets owned. There is a clear differentiation in the observation in the 2003 to 2012 period, indicating that the distribution of asset ownership shows a clear deterioration. The share of one asset owners declines to 44 percent from 58 percent level, while the share of no asset owners has increased to 36 percent from a 26 percent level. So it can be said that owning an asset became harder during the observation period, in line with our former findings. This may be due to rising asset prices, especially in the housing market, and the related increase in down payment requirements. Here, I must also mention the changing income level for owners of different numbers of assets. There is clearly a stronger performance in the low asset owning segments. While the no asset owners' disposable income rose by 49 percent in the 2003 to 2012 period, one asset owners' disposable income rose by 65 percent. However, as the number of assets rises, disposable income level tends to stagnate. Although owning an asset gets harder in time, the additional income generation potential of the assets gets lower. Differentiation between rent and asset price levels and declining interest rates in the Turkish economy could be the reasons behind this observation. I also observe that consumption trends are also in line with income changes in the 2003 to 2012 period, rather than the number of assets. The consumption of the no asset owners and only one asset owners (81.5 percent of the total observations) rose by 65 and 84 percent, respectively. However, the consumption increase in the higher asset owning statuses varies between the 35 to 55 percent levels. The rise in the consumption of the low asset owners is regardless of the asset size status, and shows a clear

dependency on the rise of income, signing a clear "excess sensitivity". Aside from the excess sensitivity of consumption, we can also see that asset owning status does not generate a major difference in consumption preferences. This can be considered as an indication of the general relief in liquidity conditions, which results in extra consumption possibilities also for low level asset owning households. Considerably lower income increases in the upper assets owning households is one of the main observations, indicating declining capital income for wealthy Turkish households. However, these respondents may also be more likely to underreport their income. On the other hand, only one asset owner group constitutes a major part of the observations and they save at low levels. The other important observation in the data is that asset owners do not dissave and dissaving takes place in the no-asset owner category at the mean comparisons. This shows a clear indication for declining liquidity constraints and that the no asset owners have a belief in future income increases and use liquidity relief conditions for consuming today rather than tomorrow with the motive of impatience. The dissaving of the no asset owners is also a development in line with age status. When we look at the age profiles of the asset owners, we can see that the number of assets rises with the age on average, which is the general case. For example, the mean age of the no asset owners stands at the age of 39 years, while the one asset owner averages 49 years of age, and the three or more asset owning age averages 52 years of age. As we have mentioned earlier, impatience in younger age profiles is a direct observation in our dataset and the no asset owning category also includes lower age segments with impatient profiles. As the wealth criteria is also a function of other indicators like age and income, saving level should be regressed controlling for each of these indicators.

2.5.3. Debt Effects on Saving

HBS data do not give a clear debt observation, while data is provided as to whether the household repaid a loan or bank credit for the dwelling they resided in, in the reference month. The presence of the debt situation and its evaluation in time gives clear evidence of the indebtedness of the household. As we have mentioned earlier, the home ownership ratio of the population was at 60 percent level for the 2003 to 2012 period in the HBS data. However our data from the HBS diverged from the SILC and we decided

not to use home ownership as an indicator of the saving function. However, the elevation in the debt level of homeowners is significant for our observation period of 2003 to 2012. The debt owed on a residential house is a considerably weak indicator for the total debt level of households. The relief in liquidity conditions, at least with declining interest rates, should be more effective on consumption through consumer loans, rather than mortgages. However, the survey lacks data for consumer loans and even debt owed on residential houses also gives clear evidence of the rising debt of the households. When we put it in figures, the share of households declaring that they repaid a loan or credit on their houses rose from 2 percent to 9 percent of the total yearly household observations in our study. The ratio rose from 3 percent to 17 percent for households declaring that they are homeowners. Both of the ratios showed a significant hike in the post 2007 period, presumably rising with the available global liquidity facilities. The indebtedness of the households will be important in our analysis, as it will show who has benefited the most from the relief in liquidity conditions. We have seen that the age profiles of the indebted household heads demonstrated only a little change in the 2003 to 2012 period. The mean age of the debtors was 44 years old, which is in line with the average household head mean. However, in the details of the age profiles of the indebted household heads, we observe that, while the share of those from 25 to 35 years of age was in decline, the share of those aged in the 55 to 65 segment was increasing slightly. This could be the rising bequest motive for these segments in an economy where capital income is decreasing and additional income sources in terms of rent are declining. The education profile of the debtors also shows a clear shift from low education segments to higher segments. The share of secondary and lower education segments in the total debtor profile declined from 70 percent to 46 percent level in the 2003 to 2012 period. In the same period, the share of high school and university graduates increased to 23 percent and 31 percent levels from 19 percent and 11 percent levels. The main beneficiary seems to be university graduates, as they moved from the lowest share in debtor status to the highest one. The rising share of university graduates in debtor status is also another reflection of the general shift in educational status of the total population as well. On the other hand, the rise in the share of university graduates in indebted households is far more significant than the rise in university graduates for the total population, resulting in a rising tendency towards debt especially within

university graduates in the abovementioned period. The rise in indebted households in the university graduates segment should also be considered, taking income status into consideration. When we distribute the income of the total observations into ten different segments, surprisingly, the indebted households were mostly concentrated in the mid to lower income segments in 2003. However, as time passed the mean of indebted households moved to the to high income levels. This shift indicates that, mid to high income households have begun to perceive housing investment as a buffer-stock investment, or have tried to benefit from the high capital income potential of the rising housing market. As our data for debt status are for the mortgage debt only, the debtors do have a higher income level and their saving level is also high in comparison with unindebted households. However, the effect is biased towards higher income earners, and debt status also indicates a higher income level. (Table 2.15)

Table 2.15 Average Saving Rate* by Debt Category of Households

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Debt	19.8	17.2	19.5	19.4	19.1	20.4	17.8	19.8	18.7	16.3
No Debt	17.4	15.7	10.2	9.9	11.7	7.0	7.9	5.9	5.7	4.6

** Average Saving Rate is the ratio of the saving of all the households for the selected debt category and year to the disposable income of the same group.*

However, the real results are observed when we look at the share of indebted households in the related income distribution segment. There is a rise in all of the segments, while the upper segments are subject to a sharper rise for the debt indicator. The share of indebted households in the lowest income distribution decile rose from 1 percent to 3 percent in the 2003 to 2012 period. The share of indebted households rose from 3 percent to 12 percent in the sixth richest decile, while in the seventh to ninth highest income categories the share of indebted households rose from 3 percent to 20 percent. So, as we can clearly observe, the housing debt of the mid to high income segments performed a huge increase and the ratio rose to 20 percent levels in the highest four income segments. The debt level of the higher income levels is increasing significantly. Although we do not know the exact amount of the debt, we can easily say that as income level and education level increased, the share of households to become

indebted also rose, and these segments' debt levels all surged in the 2003 to 2012 period. The relief in liquidity constraints resulted in higher debt preference especially in housing debt for households in the high education and income segments. On the occupational comparison, there is a clear increase in indebtedness in associate professionals and sales/service sector workers. We have already observed that the share of sales and service sector workers increased and the income of this segment also elevated. The households in these occupations also increased their preference to have debts. On the other hand, the occupation categories to stay away from the debt option were the crafts and related trades workers, which were also the occupations to have the highest losses in income evolution in the 2003 to 2012 period. The rising income generation potential of the selected occupations results in higher debt usage. Here we see that the income effect has generated additional expectations for further income possibilities and resulted in debt usage for these households. In terms of choice of occupation, the debt effects are also in line with the income generation trends. The highest rise in the share of indebted households in all the occupations was in the retail and wholesale businesses and other business activities. These were also the industries to generate the highest income rises. The share of indebted households all showed increases, while the surge in the education and public management sectors were the most significant ones, which rose to 17 percent and 16 percent, respectively, from the 2 percent level in the 2003 to 2012 period. The sectors which had the highest disposable income for households, the transportation and communication sectors were not the sectors to have a high increase in indebtedness indicators. The resulting industrial review indicates that education and income levels are also significant in the decision for taking on debt. The rise in mean disposable income resulted in higher demand for debt realizations. HBS data is in cross-sectional data form, not in panel data form, and the historical developments may be misleading to interpret. However, as we are taking the mean levels in the determined period, we think that the interpretations would be applicable. We have observed that higher income and education levels were the main factors to result in rising debt in the residential houses of the households. When we look at entrepreneurship and the indebtedness status, we observe that entrepreneurs are less likely to be indebted. At the very beginning of the observation period in 2003, the share of indebted households was at 2 percent level both fore employees and entrepreneurs.

However, the ratio increased to above 10 percent level in 2012 for employees/workers, while the share in entrepreneurs rose to 8.4 percent in 2012. The share of indebted households in entrepreneurs was always lower than the ones in the worker category all through the 2003 to 2012 period. Another reason could be the change in the income of these segments. The rise in yearly disposable income of the workers is higher than the rise of the entrepreneur incomes. So, taking the potential income evolution possibilities, we see that a considerably slower rise in the income of the entrepreneurs results in lower preference to go into debt. We again see that the income generation capability of the households leads to debt generation possibilities as well. The higher the income potential rises, the higher the debt preference gets. However, our data consist of the debt on the households' residential asset and the household may have other kinds of commercial or corporate debt realizations. It would be naive to pronounce the whole debt story lies in debt on the residential asset of the households. So, we would rather consider these findings as the desire to set up housing loan, instead of as a general debt preference guide for households.

2.5.4. Liquidity Effects on Saving

The presence of liquidity constraints could be well analyzed in the time series data. However, the studies with cross-sectional data for the determination of liquidity constraints have mostly depended on subjective criteria, like the responses of the households on their credibility status. As HBS data do not contain such information, classical criteria like debt status and wealth could be considered as alternative candidates to differentiate the status of liquidity constraints. The income data could be considered as an alternative and more basic indicator for this differentiation, while the problems for setting the threshold income level for this differentiation would be misleading due to the variety of other sub determinants of the liquidity situation. In our observation, housing loan is the criterion to determine the ability of the household to find liquidity. Receiving a housing loan indicates that the household is capable of receiving loans and is not financially constrained. In the literature, the wealth to income ratio or subjective responses from households about their credit availability is used to determine their liquidity constraints. HBS micro data give no details about the liquidity constraint status of households. However, when we use the debt status of the house and

their wealth levels for the liquidity constraint groups, we might be able to observe some of the unique liquidity constraint household behaviors. We do not consider the indebted households as liquidity constraint, and this segment constitutes about 4.8 percent of our total household observations. When we compare the disposable income levels of the indebted and unindebted households, we can easily observe the variation in income, and the results in saving levels. The mean disposable income of the indebted household is on average 35 to 40 percent higher than the unindebted households. They managed to increase their income at double the rate of the unindebted ones in the 2003 to 2012 period and their savings stood at around 19 percent in the 2003-2011 period and fell to 15 percent only in 2012. In contrast to the indebted households, the majority of our sample was subject to a sharp decline in saving rates due to the low income growth potential. Their mean income increased by 44 percent in the 2003 to 2012 period, and saving rate declined to 4 percent from 17 percent in the same period. We can observe that the debt variable correlates with the income and saving patterns of the selected group. Although the purchase of a house through a debt mostly results in a decline in disposable income and saving, debtors in the HBS survey do not seem to give up on saving, although they are subject to the repayment of their loans. Aside from the housing debt criteria, the wealth variable can also be used as a factor to determine the liquidity constraint group. We already know that the wealth indicator could be used as collateral for loans and could be used to overcome liquidity constraints. As we observe the wealth relation with disposable income and saving preferences, it is clear that households having more than one asset generate significant gaps in relation to the lower level of asset owners. When we look at the situation in another way, the households could use their extra assets as collateral, while their only asset, mostly their residence, was not subject to collateralization. So, by taking both indebted households and households that own more than one asset, we investigate the households that are in the loan market or could be in the loan market to find liquidity. Our liquidity unconstrained group also has a high income level, as was already mentioned, so being indebted should be analyzed after controlling for income levels. This group constitutes 20.9 percent of the total household observations in our data set and gives as credible results as the rest of the observations. The liquidity constrained group has the lowest saving level, and their saving level declined down to 2 percent level in the second half of the 2003 to

2012 period. Here we should also mention that 32.3 percent of our household observations do not have a house and are tenants. This segment has been subject to the maximum usage of relief in liquidity constraints, as their mean saving levels declined into negative territory all through the second half of the observation period. On the other hand, the main asset holding level is concentrated in the zero to three asset owning households. These households constitute up to 98 percent of the observations, while only one asset holding households are 51 percent of the total sample. The disturbance in income in the 2003 to 2012 period can also be observed in the distribution of total assets. The share of no asset holders hiked up to 38 percent from 30 percent and one asset holders declined to 43 percent from 56 percent, with a gradual trend. (Table 2.16)

Table 2.16 Share of Households* by Asset Ownership

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
No Asset	29.9	30.0	28.0	31.3	30.5	32.0	34.0	34.9	36.7	37.9	32.3
1 Asset	56.0	54.4	53.8	51.3	55.1	49.3	45.5	44.2	44.3	42.7	50.4
2 Assets	9.8	11.2	12.7	12.4	10.0	12.6	12.7	13.5	12.4	12.4	11.6
3 Assets	2.6	2.9	3.0	3.1	2.8	3.8	4.6	4.4	3.9	4.0	3.4
4+Assets	1.7	1.5	2.5	1.9	1.6	2.3	3.2	3.0	2.7	3.0	2.2

** Share of households in the total observation for the number of assets owned.*

The share of more than one asset holders has all grown, which shows that there is a clear divergence from the one asset holding group to no asset holding group and only a small fraction to more than one asset holders. The shift from the one asset holding to no-asset holding group is clearly significant and shows that the number of households to get their first house is getting fewer or becoming discouraged. They choose to consume instead of purchasing an asset, which could result in lower saving levels in the longer term. Owning one asset is getting harder. You either own no asset or move to a higher income level and increase your assets. Rising asset prices is effective for this development and it is safe to assume that this trend should have strengthened after 2012, as real estate prices have also elevated. Since we do not have any information about the amount of financial assets of these households, they might have also preferred to stay in liquid financial assets instead of real estate assets.

The level of home ownership of the households was declining all through our observation period. (Table 2.17) The households owning their houses in the total yearly

observations was as high as 67.7 percent in 2003, while the level declined to 52.6 percent in 2012. The share of these households began to decline significantly after 2007. Home ownership began to decline with the rising credit facilities of the banking sector with the rising global liquidity conditions in the very same period when asset prices began to hike significantly. The importance of home ownership is also effective in saving levels. The homeowners have the highest level of savings in the observations. Their saving level also declined from 19 percent to 9 percent but still constitutes most of the total saving for the observations. There is an important sub reason for the homeowners having higher a saving level, the age factor. The average age of homeowners is 44 to 45 years old, while the average age of tenants is 38 years old. So, homeownership status should be considered after controlling for the age factor.

Table 2.17 Share of Households* by Home Ownership

%	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Home Owner	67.7	67.1	67.4	64.5	64.6	60.9	56.8	56.4	55.4	52.7	62.0
Renter	25.1	25.5	24.7	25.6	25.7	26.1	24.8	25.5	26.8	27.8	25.7
Lodging	1.7	0.9	1.2	1.2	1.7	1.8	3.1	2.8	2.7	2.9	2.0
Other	5.5	6.4	6.7	8.7	8.0	11.1	15.3	15.4	15.1	16.6	10.3

** Share of households in the total observation for their homeownership status.*

The second most populated group is tenants, whose saving level declined from 12 percent to 0 percent level in the 2003 to 2012 period. The saving level of lodging households was also high, and nearly the same as for homeowner households. However, this group of households had a low share in the total observations.

We will be giving extra importance to wealth effects on saving behavior. As we have stated before, wealth level effects saving levels both through liquidity constraints as detailed in the literature part and also through income level. Real estate income is important for Turkish households. On average, 10 percent out of the total household heads have real estate incomes. The level is as low as 1 percent in the 20 to 25 year old households, while the level is at 13 to 15 percent level after 45 years old. Real estate income becomes an important part of the households' income at later ages. Real estate income constitutes about 25 percent for households which have real estate incomes.

2.6. CONCLUSION

HBS is one of the main nationwide surveys to observe the socio-economic structures, living standards, income and consumption patterns of households. Survey observation selection is performed to contain all the possible segments in the population and takes the address based national population census data as the base for the selection of the observations. Data is in the form of cross-sectional pooled data and lacks the information required for a time series structure. In my thesis, I used the data on an individual basis and household basis for the period of 2003 to 2012.

The main suggestions in the descriptive analysis can be categorized in three segments as demographics, wealth to income dynamics and debt effects.

In the analysis for demographic indicators, the results suggest that demographics play an important role in saving determination. Firstly, the age profile of Turkey is clearly still young and the analysis shows that the younger generations tend to have lower savings mostly due to their impatient nature. In the income / age relationship, it is observed that both income and consumption tend to rise with age and decline at older ages. However, the fall in consumption is even sharper than falling income and indicates a precautionary saving motive for older subjects and excess sensitivity as well. Older households do not tend to save less, which is against the standard LCH proposals, and may be a result of larger family structures. The younger population can be one of the main reasons for the low saving dynamics in the country. Another demographic indicator, the household type status shows parallel results to dependency theories and saving level declines with the rising number of children in the house. Families with no children and patriarchal families are observed to have higher savings. The synergy in consumption and insurance for dependency in large families could be an important reason for the higher saving preferences of patriarchal families.

Educational status is in line with the other education related TURKSTAT surveys, and indicates that the share of no schooling and primary school graduates constitute up to 60 percent of household heads observed, while university graduates were only 10 percent at the beginning of the observation period. However, there is a clear development in the educational status of Turkish households and the share of the lower educated segment declined to 50 percent and university graduates rose up to 18 percent by 2012. The descriptive results suggest that income and saving level rises with education. The

educational level of households performed a strong upward trend, while the occupational status of these households was not moving in line with educational status. In the observation period from 2003 to 2012, the less educated labor force tended to move from the agriculture sector to low skilled labor jobs and sales related jobs, while service and sales is also perceived to be the mostly available occupation for all educational levels, even for university graduates. The newly generated educated households could not be utilized in more professional jobs and the rising educated labor force is again used in the service sector, and the real estate sector was one of the main choices within the service sector. On employment choices, the main shift was from the self-employed and entrepreneur category to the employee category. Employers are natural savers and the reduction of their share in the economy can also be another important reason for the lowering savings for the whole economy.

In the income and wealth dynamics, the observations indicate that income distribution is highly distorted and skewed. The high share of low income segments suggests that the liquidity constraint segment of the observations could be really high, leaving less room for saving opportunities. Income level can be one of the main determinants of saving, as the saving level of the high income quintiles is significantly higher than for low income segments. The share of the lowest income segment for the total observations tends to decline in the observation period indicating that there might have been a slight rebalancing in income distribution for the 2003-2012 period. However, the rise is concentrated in again the mid to low income segments and the saving of the low to mid income levels all declines significantly in the observation period. The same situation is also viable for the wealth indicator. Higher wealth levels also indicate higher saving preferences. When the rising asset prices and the declining possible ability of the new generations to own assets is taken into consideration, along with rising living costs, the declining saving trend can be expected to continue and even elevate for the next generations.

Debt is one of the indicators to generate an additional precautionary saving motive in times of rising uncertainty. However, this effect is observable when the household has the ability to save and is not liquidity constraint. The debt indicator in HBS is only for debt on the residential home and observations suggest that mortgage debtors do save more than those who are not debtors. However, as mortgage debt is mostly available

above a certain income level, households can be considered as not liquidity constraint and they have the ability to induce more precautionary savings when they are in debt. So, although the debt indicator can be analyzed as creating some of the precautionary saving motives, it is not capable of indicating the saving response of those households having consumer loans or credit cards.

CHAPTER 3

HOUSEHOLD SAVING, PRECAUTIONARY SAVING AND DEBT EFFECTS

In the empirical part of my thesis, the main model will be the determination of saving, using income, demographic indicators, wealth, debt, liquidity related indicators and a predicted risk indicator to define the precautionary saving motive. The income level declared in the HBS has drawbacks, as some of the observations may have a bias to report their income lower. In order to overcome this data problem, I will employ the Heckman Selection Model and generate the permanent income for the individuals depending on their demographics, occupation related indicators and sources of income other than labor income. The permanent income will then be aggregated to the total family income and used in the model. In order to detect the precautionary saving motive, I will use the risk of unemployment as it is also defined in the buffer-stock saving model. (Carroll, 1992) Due to lack of time series data structure, I will introduce the unemployment risk, modeling it through a probit model that will depend on demographic indicators. The risk of unemployment will be calculated for only the household heads and the risk probabilities will then be interacted with the earned income to form the labor income risk indicator. Permanent income and labor income risk indicators will then be employed in the saving model with demographics and liquidity condition related variables, including debt status data.

3.1. UNCERTAINTY AND LABOR INCOME RISK

There have been many measures used to predict uncertainty in the literature. However, the most appropriate empirical measure of uncertainty is not obvious. Some studies use the household's income as proxy for uncertainty, while some used the variability in consumption. (Carroll, 1994, Dynan, 1993). On the other hand, Lusardi (1998) has stressed that variability measures may be poor proxies for uncertainty, as they may contain other controllable determinants in them. For example, a legal counselor in the legal sector may have higher volatility of income as he/she will be paid for cases of

his/her interest only. However, an advisory service may be required even in times of recession, while a bank clerk working in the private sector with alower income volatility may be subject to lay-offs in times of recession. So instead of the volatility factor, the unemployment risk depending on the demographic situations of the individual like his age, education, occupation or the sector they work in may be more important factors to determine their status of uncertainty. Lusardi (1998) uses measures of the probability of job loss in his analyses and finds significant precautionary wealth accumulation using the household's reported perception of job-loss risk. The probability of becoming unemployed can be interacted with the precautionary saving motive, as the chance of unemployment possesses a direct risk on expected income and results in an additional precautionary saving motive. However, the unemployment risk in workers and entrepreneurs should be studied separately, as entrepreneurs are subject to additional risks on the expected income that are different than the workers. The demographic indicators determining unemployment risk are important for entrepreneurs as well, while they also have to deal with the return on their investments and all kinds of market volatility. On the other hand, the unemployment risk of workers can mostly be attributable to growth in the economy, the sector they work in and their demographic indicators like education level. Unemployment risk is only related with labor income and other kinds of income like capital income and rent income are not related with unemployment risk. The interaction of unemployment risk with labor income should generate future labor income risk. On the other hand, the risks to non-labor income should not be related with unemployment risk and be considered to be reliant on other indicators like global economic performance. Non-labor income can fluctuate in time, but the risks depending on this income may not be measured with general demographic indicators and risk factors like the possibility of unemployment.

Determinants of the uncertainty regarding the unemployment risk may be misleading, as more risk avert individuals may tend to hold more precautionary wealth and also work in jobs with lower unemployment risk. If we include precautionary wealth but do not include the occupation of the individuals, then analyses will be biased. To overcome this shortcoming, the analysis should include all available determinants of unemployment risk to the analysis. The educational status and sector of the individual can also be considered to have the same problems. Analyses using the instrumental

variable approach are sensitive to the problems that are mentioned above and should be handled with extreme care so as to use the variables both in unemployment risk determination and the resulting equation as well. The volatility of the wealth indicator sometimes works as an inadequate determinant of precautionary saving. In normal times, individuals with high unemployment risk should hold higher assets to buffer their risks, if liquidity constraints are not binding. However, when the risk is realized, they would use these assets to compensate for consumption smoothing. If the analysis is performed during such a period of high unemployment, households with higher unemployment may be observed to hold a lower level of assets than the less risky households. This effect may pose a bias on the analysis and result in adverse effects for wealth. The time frame of ten years used in the study is perceived as adequate to limit this risk factor for the analysis, as it will cover different periodical effects. And aside from setting the income variation on the unemployment risk, the wealth factor should also be considered in determining the probable saving behavior of the households as well.

The impact of labor income uncertainty depending on unemployment risk will be the main item to analyze in the initial part of this empirical research chapter. This sort of income risk will surely be important for wage and salary earners, while we will also include this unemployment risk effect on entrepreneurs as well. As workers are subject to direct future labor income loss, their unemployment risk will be more crucial to set the uncertainty. However, demographic factors like education and age are also respectable indicators in setting disposable income and so the ability to save. On the other hand, HBS does not provide the job status of the individuals, whether they are workers or entrepreneurs, unless they are employed. So, the unemployment risk to be calculated will not be able to measure the unemployment risk factor of entrepreneurs and workers separately. The variance in income is interacted with the unemployment risk and a risk variance is generated following Lusardi (1998) for the US in the 1995 to 1998 period and Ceritoğlu (2009) for Turkey in the 2003 to 2004 period. The expected labor income of the individual will be the multiplication of the unemployment risk (*p*) and foregone income and (1-p) with the income.

$$EI_i = p_i * (1-p_i)*I^2 ,$$

where, i denotes that the expected income is for individuals.

Analysis to be used for the estimation of the unemployment risk will be a probit model, where the status of the individual is 1 if unemployed and 0 if the individual is employed. I will be mainly considering the unemployment risk probability of household heads using the probit model. Considering the households for unemployment risk limits our sample to 85,375 household observations out of the total 231,428 individual observations in the age range of 20 to 60 years old. In the total individual sample of 231,428 observations, nearly 30 percent of the individuals declare themselves as housewives and 5.4 percent are retirees. However, these shares change dramatically in the household analysis. Out of 85,375 household heads, 4.2 percent declare themselves as housewives and 10.8 percent declare themselves as retirees. The rise in the retiree sample for household heads indicates that the declaration of the household head has a bias to state the oldest person in the house to be the household head. However, the declared household head should hold decision power over consumption and saving decisions. Income generation is also another important factor for the setting of the household head. A dramatically declining share of the housewives indicates that these families preferred to consider another member of the house as the household head other than the housewife member. Although retirees constitute an important share in the total household observations, they may not be outside the labor force. In this study, nearly 32 percent of the retirees were still working, and the status of being a retiree is not a reason to stay away from the labor market in Turkey due to the low pension payments to retirees. The employed share of the retirees may even be higher, when we consider the unregistered work probabilities. So, they are also subject to the unemployment risk to their income. For the sake of accuracy of the determinants, retired individuals will be included in the unemployment risk determination part of the research. The other important situation is the inclusion of housewives in the unemployment estimation process. The considerably lower share of housewives in the household head sample limits its negative effects over the estimation process of unemployment risk. Out of 85,375 household heads in our sample, only 3,632 of them declare themselves as housewives. Although the inclusion of the housewives may pose some variability in the

analysis for unemployment risk, the usage of the housewives should also be considered for the accuracy of all household heads' views of unemployment risk.[2]

The dummy variable for unemployment is regressed on the demographic indicators: age, gender, household size and education. Here the year's dummies are also included in the analysis as the selected years include the global financial crisis, which could affect unemployment level due to a global or countrywise economic volatility.[3]

One important factor observed mostly in less developed economies is that household members do reduce their unemployment risk or the fluctuation in their income by living with their families. They share income and consumption with other household members, generate economies of scale and maintain their consumption at minimum level even if they become unemployed. The number of household members increases up to 30 in the extreme case in 2009, with an average of 4.1 members. The size of the family can sometimes be considered as an insurance against the unemployment risk and the loss of income for consumption. Family size could also generate an effect to influence the basic factors that limit the unemployment risks. Family size indicator will also be included as a factor to influence the perception of the family members against the unemployment risks.

In the probit model, the education level of the individual will be one of the main criteria to influence the unemployment risk. The average schooling level of the individuals in the 20 to 60 years old range was really low at the beginning of the observation period. Illiterate or primary school graduates constituted up to 63 percent of the observations, while this ratio declined to a still high level of 55.8 percent by 2012. On the other hand, the ratio of secondary school graduates also declined to 8 percent from the 9.9 percent level, while high school graduation level stood at approximately 20 percent for the whole observation period. On the other hand, the share of university graduates or a higher level of education inclined to 15.3 from 7.6 percent. This observation indicates that the average years of schooling of the individuals in the observation increased

[2] The result of the probit regression and the future income risk generated with the inclusion of the housewives results in a lower coefficient for the saving regression to be given by the end of our analysis and a lower level of precautionary saving. The coefficient of the precautionary saving indicator rises by 10 percent when the unemployment risk of the individuals is restricted to the individuals who are in the labor market only.

[3] All the dummy variables for the years in 2003-2012 range were used and coefficient level declined gradually in the mentioned period. The coefficient surged in 2008 with the global financial crisis as expected.

significantly, especially at university graduation level. Initial presumption indicates that the higher education level could result in a lower unemployment level for university graduates, while the lower level of schooling could lead to unemployment risks. Dummy variables for the education status are in five different categories. The illiterate individuals and the ones that did not attain any schooling process is the base category. Primary school, secondary school and high school graduates are categorized as one, two and three in categorization, respectively. University and higher level of education is the fourth category.

Household heads and married individuals are not included in the analysis for the determination of unemployment risk. The status of being married is mostly related with being employed. So, these variables should have a high correlation and inclusion of both of these indicators in the probit model should generate endogeneity problems for the variable. The study only concentrates on household heads and household head status is also excluded from the variable set. (These individuals might have to work due to their responsibilities in low profile jobs due to safety requirements). Their preferences for being employed may be obligatory and their preferences may be highly biased.)

The model to be employed to determine the risk of unemployment is:

$$U = \beta_1 \text{Age} + \beta_2 \text{Age}^2 + \beta_3 \text{Female} + \beta_4 \text{HHSize} + \beta_{5i} \text{Educ}_i + \beta_{6j} \text{Yj} + \beta_7 \text{City} + c,$$

where, the U is 1 if the household head is unemployed and 0 if the household is employed. The education dummy is for primary, secondary, high school and university graduations. Y is the dummy for the years from 2003 to 2012.

According to the probit model (Table 3.1), age and unemployment has a U-shaped relationship. The signs of both the age and age squared indicators are in line with the literature and state that unemployment probability declines as the subject gets older, while effect loose power due to the positive sign of the age squared coefficient.

The status of being female, as expected, elevates the risk of unemployment with a significant power. I have also tested for the effects of the inclusion of the housewives and looked at the probit model excluding housewives and found that the power of the indicator only declines slightly, while the sign is still positive. So, being female results in an elevated unemployment risk for our sample.

Table 3.1 Probit Model for the Probability of Being Unemployed

	Prob. Of Being Unemployed
Variables	**Coefficient**
Age	-0.125*
	(0.005)
Age Squared	0.002*
	(0.000)
Female	1.429*
	(0.018)
Household Size	-0.016*
	(0.003)
Primary School	-0.061*
	(0.021)
Secondary School	-0.023
	(0.026)
High School	-0.079*
	(0.024)
University	-0.464*
	(0.027)
Dummy 2004	0.184*
	(0.022)
Dummy 2005	-0.032
	(0.022)
Dummy 2006	-0.064*
	(0.022)
Dummy 2007	0.003
	(0.022)
Dummy 2008	-0.024
	(0.022)
Dummy 2009	-0.081*
	(0.021)
Dummy 2010	-0.082*
	(0.022)
Dummy 2011	-0.155*
	(0.022)
Dummy 2012	-0.163*
	(0.022)
City	0.422*
	(0.013)
Constant	0.107
	(0.107)

Number of obs	85,375
LR chi2(17)	22,353.53
Prob > chi2	0.0
Log Likelihood	-34,259.02
Pseudo R2	0.246

* represent statistical significance level of 1%.

The probit regression model was performed using Stata program and the dependent variable is the dummy for the state of unemployment, 1 for unemployed and 0 for employed status.

The predicted unemployment risk will then be interacted with the labor income of the household head and used as the Labor Income Risk in the saving model.

Secondary effects come from educational status and calendar year effects. Educational status, starting from primary school to university graduation all has negative effects with an increasing momentum on unemployment risk.

University graduation reduces the unemployment risk the most, as could be expected. Former studies for Turkey (Ceritoğlu, 2009) indicate that education level is positively related to unemployment, as job opportunities for highly educated individuals and their acceptance in the labor force should be higher. However, as we have seen in the descriptive analysis of the data, the labor force of university graduates tended to move from more qualified jobs to lower qualifications. So, including these factors, we observe that education level reduces the risk of unemployment. As we have set the base category at uneducated individuals, primary school graduates also have a high coefficient for being not unemployed. The negative and significant sign for primary school graduates could be their work preferences for low skilled labor requiring jobs. These individuals might mostly work in no-education-required sectors with low skills, and they have a higher probability of finding jobs, especially in the fast growing construction sector. Although the effect diminishes as education level rises to university graduation, the calendar year effect is again important for the effect of education. The coefficient changes as we change the year constraint on the probit model.

Table 3.2 Marginal Effects after Probit Model

	Prob. Of Being Unemployed
Variables	**dy/dx**
Age	-0.027*
	(0.001)
Age Squared	0.000*
	(0.000)
Female	0.308*
	(0.003)
Household Size	-0.003*
	(0.001)
Primary School	-0.013*
	(0.004)
Secondary School	-0.005
	(0.006)
High School	-0.017*
	(0.005)
University	-0.100*
	(0.006)
Dummy 2004	0.040*
	(0.005)
Dummy 2005	-0.007
	(0.005)
Dummy 2006	-0.014*
	(0.005)
Dummy 2007	0.001
	(0.005)
Dummy 2008	-0.005
	(0.005)
Dummy 2009	-0.018*
	(0.005)
Dummy 2010	-0.018*
	(0.005)
Dummy 2011	-0.033*
	(0.005)
Dummy 2012	-0.035*
	(0.005)
City	0.091*
	(0.003)

* represent statistical significance level of 1%.

** dy/dx is for discrete change of dummy variable from 0 to 1

The marginal effects were attained using the marginal effects command under the post estimation command in Stata program.

Omitted variables for the education status are uneducated household heads, and Dummy 2003 for the year dummies.

The other important effect mostly relies on the year dummies, which are in line with the economic environment in the years analyzed. In the post 2001 crisis period, when the economy grew at high levels and the unemployment rate was declining, the year dummies had a negative effect on unemployment risk. The years 2005 and 2006 were years of high growth, with over 9 percent growth rate and the lowest unemployment levels within the analysis period. The year dummies for the 2007 to 2008 period are insignificant, and these years of global crisis was followed by negative values for the year dummies in 2009 and 2010. However, as the economy began to develop strongly again in the 2011 to 2012 period, the year dummies became negative again with a rising momentum, indicating the rising job opportunities in the economy due to strengthening economic dynamics. So, economic developments seem to be quite important for unemployment risk. The negative effects of the 2008 crisis were observed throughout the general economy and the unemployment rate did not return to the levels before the 2008 crisis. The relationship between the change in unemployment risk and the effect of the year dummies and the global economic cycles do indicate that there is a significant relationship between unemployment risk and the economic environment, as can be expected. The year dummies reflect the economic environment and the employment possibilities for individuals in this period.

The indicator of household size is statistically significant and reduces the unemployment risk of the household head. A higher number of household members could be a factor to encourage the household head to generate income even if the economic environment in negative. This tendency may be a factor for the household head to choose a less risky and probably a lower salaried job.[4]

[4] However, only after 2004 is that the household size could affect the unemployment rate with a positive sign, indicating a higher bias to lower education or job finding ability due to the lack of sources in the family. The family home could demotivate individuals from being more eager to find jobs as well.

Living in a city is positively related with unemployment risk. The high level of workers in the family business, or agricultural activity in the rural areas, could be the reason for an elevated unemployment risk for the people living in cities.

Individual labor income is interacted with the probability of unemployment to predict the labor income risk of unemployment. The household head labor income risk approximations are used in the final saving regression as a factor to determine the precautionary saving motive, depending on income variability in turn depending on unemployment risk.

3.2. DETERMINATION OF THE PERMANENT INCOME

3.2.1. Household Budget Survey and Sources of Income

HBS mostly focuses on the consumption side and there are significant obstacles for the income side. Data for the income segments are not detailed, especially for capital income, and the level of financial assets of the household members is not quantified. The level of financial assets could have been an indicator to derive the exact income level of the household members aside from the given responses to the HBS. The data issues also arise for the financial integration of individuals to the financial system. We do not know whether their loan applications were turned down or approved at a limited level, or the level of their credit card usage and their limits. So, we have no objective data for their liquidity status. The data issues can also be more fundamental, as individuals are apt to report their income level lower than the actual level. The motivation to underreport income level could be to benefit from social benefits like free healthcare or tax issues. So, detailed data could be more appropriate to analyze in further studies. The job level of the working individuals and their income levels are also subject to criticism, as this can also favor the idea that the real income level of the individuals could be underreported.

There are 431,461 individual observations in TURKSTAT's HBS data for the 2003-2012 period. A total of 231,428 of these observations are in the 20-60 years age category, which I use as the main data pool for my thesis. In my data pool, only 108,891 individuals have a positive income, while 122,537 of these individuals in the data pool do not have any income. The results indicate that a significant portion of working age individuals do not have any income. Some of these individuals can be categorized as

family workers, but not all of them. Here we should also pay attention to the labor force indicators. Out of 231,428 individuals in the data pool, only 134,243 are in the labor force, while 97,185 individuals are not in the labor force as they have justifications like being a retiree or being a housewife and other reasons like disability or personal problems. The number of people in the labor market is higher than the ones reporting positive total income, indicating that there are individuals with job but no income.

Table 3.3 Income By Sources

	Observations	**Mean**	**Std. Dev.**	**Min**	**Max**
Labor Income	81,460	5,739	5,569	1	150,000
Entrepr. Income	19,132	10,331	16,187	-5,184	463,902
Agric. Income	17,997	4,549	6,482	-25,024	192,650
Capital Income	23,325	15,983	50,503	-20,995	2,039,215
Social Transfers	50,652	4,178	2,332	1	36,059
Foreign Income	1,348	4,991	5,670	1	68,939
Total Income	172,043	6,494	8,670	-30,462	463,902

As a result, the individuals outside the labor force do also have income, and a significant portion of the data pool observations report zero or negative income. This should surely be an indicator of the underreporting habit of the data pool.[5] In Table 3.3., we can see that Labor Income, Social Transfers and Foreign Income, consisting of pension and capital income from other countries can also be reported at low levels. The main income segment is labor income, while social transfer and capital income are also important sources of income for a significant portion of our observations. Although capital income is earned by a considerably higher proportion than expected, due to the low financial integration of Turkish citizens, most of this capital income comes from the rent income from real estate owned by individuals. A total of 12,232 individuals out of 23,325 capital income earners get their capital income from rent income. This figure

[5] I looked at the dataset in 2003-2012 HBS for all individuals in the total ages as some of the below 20 age individuals may have income and individuals above the age 60 may have effects over the analysis. However, the rest of the research will be maintained within the 20-60 age profile as we consider the saving preferences of the rest of the individuals and household heads in general would not be effective for the whole analysis.

indicates that nearly 7.1% of the total income earners have rent income, also that real estate is considered as a means of capital accumulation by respondents. A total of 10,907 individuals of the total income earners have interest income from bank deposits or fixed income instruments. The rest of the capital income earners, which are very low observationwise, raise their capital income from dividends and trading activities on the stock market. The low level of interest income earners or stock market income earning individuals also gives a significant clue about liquidity and risk preferences of individuals in Turkey. As the observations are more liable to get rent incomes and depend on fewer liquid assets rather than interest income generating highly liquid assets, the general tendency of the observations could be considered as more risk averse with lower liquidity. The possibility of the presence of "wealthy hand to mouth" people is significantly high in the Turkish case.

When we look at change in the sources of income in the 2003-2012 period, the changing outlook gives clear evidence of changes in labor force preferences and overall economic performance. In this period, youth becomes more educated and the share of university graduates increases, and occupational demand moves to wage labor, and the share of entrepreneurs in total observations diminishes. The share of labor income earners increased to 48 percent in 2011 from 46 percent in 2003. However, the share rose significantly in 2012 to a 57 percent level. The share of entrepreneurs declined to 9 percent in 2011 from 12.7 percent in 2003. On the other hand, the share of individuals living on other income sources declined gradually, except for social transfer receivers. The share of social transfer receivers was stable at a 30 percent level all through the observation period. The share of capital income earner individuals experienced an even sharper fall to 9.8 percent in 2012 from around 15 percent in 2003, potentially indicating the rising difficulty in owning assets due to the elevation in asset prices or lower interest rates discouraging savings. On the other hand, the average income of individuals from different sources of income diverged significantly within this period. The cumulative annual growth rate of mean labor income rose by 3.23 percent, while the elevation was as high as 35 percent for capital income. The capital income hike is the result of deviation in capital income due to real estate - rent income. The rest of the capital income sources were mostly stable and even declined, as in the case of interest rate income from banking accounts, with a 4.8 percent annual decline rate. The

conclusion of this trend is that the sharp rise in capital income and also the volatility coming with this trend is mostly due to rising real estate-rent capital income. The increase in real estate-rent income is largely observed starting from 2004, with a second phase increase in the 2009 and onwards period. Real estate-rent income is highly dependent on the economic situation, while other sources of capital income tend to present a lower volatility.

Income level and employment status do not move in parallel for a significant portion of our observations. Out of 231,427 individual observations in the 20 to 60 years old segment, 17,368 individuals reported that they had a job but no income, which constitutes 7.5 percent of the total observations. These observations are considered as family workers, whose implicit income level is contained in total family income. On the other hand, 32,017 individuals reported that they were not working but had positive income, which constitutes 13.9 percent of the total observations in this segment. We know that labor income is not the sole source of income, and the individuals may have been consuming out of their capital, social transfers or other kinds of income sources, including private transfers. There is clear evidence that the status of being occupied in a job as a worker or an entrepreneur may be misleading to determine the income level of the individual.

The high level of the capital income earners, Table 4.3., especially in the real estate-rent segment indicates that income does not only depend on labor income. What's more, the capital income of individuals can also constitute a really high portion of the income earned. In our observations, out of 172,043 income earners, 23,325 individuals have capital income and of these capital income earners, 12,250 individuals have no labor income but capital income. In addition to this, 2,054 individuals have no other income but their capital income to consume, so 1.2 percent of the population lives solely on their capital income earnings. A total of 6,487 individuals do live on their capital income in addition to their social transfers - pension payments, which indicates that nearly 13 percent of the social income earners and 19 percent of the retirees have capital income in terms of mainly housing income-rent.

The significance of different sources of income for individuals cannot be ruled out and they are sources used in consumption or saving and as can be seen in the capital income level of retirees, capital income is a part of their permanent income levels.

3.2.2. Permanent Income Estimation

Determination of permanent income, as stated by Friedman (1957), requires a panel data status, where the average of the income of former periods or the level of consumption could set the ground for determining permanent income. HBS includes both individual base and household base data for the income. However, the total income data are available for the individual base only, and household data include only disposable income and consumption data. In order to determine permanent income, the focus will be on total income. The individual database is restructured to include individuals in the age range of 20 to 60, as the same age group is used for the determination of the income risk of unemployment in the former stage, and also in the saving model to be implemented in the following part. There are 231,428 individual based observations in the dataset satisfying our restrictions. Permanent income predictions for individuals will then be compiled for the total household / family and used in the saving model in logarithmic form.

The demographics: age, education, gender and family related indicators, may be effective in determining labor income level. However, these indicators will not be able to predict the permanent income of an individual, as capital income, social transfers and entrepreneur income constitute a significant portion of the total income for our observations. What's more, the difference between labor force participation and income earning status also gives clear evidence of misreporting situations. So, I will consider that there are misleading working status and income level indicators in the dataset, and suggest that there is sample selection bias in the estimation process of permanent income, as also stated by Ceritoğlu (2009). Here, I will follow the procedure of Ceritoğlu to determine permanent income level with the Heckman two step selection model (Heckman, 1979) with statistically useful variations. The model is constructed in two steps, which initially observes for the presence of positive income of the individual, and then determines the level of permanent income for the individual.

In the first part of the Heckman selection model I will utilize a probit model for the presence of positive income for the individuals. (Table 3.4) The model to be employed to determine the risk of unemployment is:

$$\textit{Positive Income} = \beta_1 \text{Age} + \beta_2 \text{Age}^2 + \beta_3 \text{ Female} + \beta_4 \text{HHSize} + \beta_5 \text{ Housewife} + \beta_{6i} \text{ Educ}_i + \beta_7 \text{ Multiple Earners} + \beta_8 \text{ Laborforce} + \beta_9 \text{ City} + \beta_{10} \text{ Retiree} + \beta_{11} \text{ Wealth} + c,$$

where the dependent variable Positive Income Dummy is 1 for positive income status and 0 for negative income status. The education dummy is for primary, secondary, high school and university graduations.

The model uses a probit model to determine positive income depending on demographics: age, gender, family status and education. In the Heckman selection model, there should be at least one indicator used in the first stage but not in the second stage of the analysis. These indicators should have strong relations to determine the positive income probability at the first probit stage of the analysis. Being married, having health insurance and being household head are again estimated to be factors to be highly integrated with the positive income. These indicators are realized when the individual has positive income. So, we have eliminated these indicators at the first probit stage of the Heckman Selection model. Being in the labor force is included as the instrumental variable, which should have a strong relation with having positive income. Multiple earners status in the house is also considered as a factor for an individual to have positive income, as we are limiting the household members to the age band of 20 to 60 years old. Age, gender and education are included as demographic indicators. Retiree status and number of assets are included in the first stage, as these indicators also bring natural income. These indicators are all found to be significant in the probit model part of the Heckman selection model. As housewives are included in the positive income determination, being female does have a negative coefficient. In the restricted observations, 93,126 out of 231,427 individuals reported no individual income and 65 percent of these individuals are housewives. Although the inclusion of housewives may have some drawbacks, as I am trying to determine the general household income level, the inclusion of these members is crucial. The housewife indicator has a negative coefficient for the statement of the positive income.

Table 3.4 Permanent Income Estimation with Heckman Selection Model

First Stage - Probit Model for The Probability of Having Positive Income

	Probability of Having Positive Income
Variables	**Coefficient**
Age	0.152*
	(0.002)
Age Squared	-0.002*
	(0.000)
Female	-1.072*
	(0.009)
Household Size	-0.085*
	(0.002)
Housewife	-0.633*
	(0.013)
Primary School	-0.063*
	(0.011)
Secondary School	0.092*
	(0.015)
High School	0.058*
	(0.013)
University Graduates	0.333*
	(0.017)
Multiple Earners	0.000**
	(0.000)
Being in Labor Force	1.025*
	(0.012)
City	0.351*
	(0.008)
Retirees	3.632*
	(0.227)
No of Wealth	-0.110*
	(0.007)
Constant	-2.489*
	(0.045)
Number of Observations	85,375

*, ** represent statistical significance level of 1% and 5%, respectively.

In the second part of the Heckman selection model, I utilize a linear regression for the determination of the total income through the positive income probability generated in

the first part of the Heckman selection model for the individuals. (Table 3.4) The model to be employed to determine the risk of unemployment is:

$$\textit{Total Income} = \beta_1 \text{Age} + \beta_2 \text{Age2} + \beta_3 \text{Female} + \beta_4 \text{ HealthInsurance} + \beta_5 \text{ Married} + \beta_6 \text{ HouseholdSize} + \beta_7 \text{ Housewife} + \beta_8 \text{ HouseholdHead} + \beta_{9i} \text{ Educ}_i + \beta_{10j} \text{ Occupation}_j + \beta_{11k} \text{ Employment}_k + \beta_{l2t} \text{ Sector}_t + \beta_{13} \text{ Cap.Income} + \beta_{14} \text{ Soc.Income} + \beta_{15} \text{ City} + c,$$

where the dependent variable Total Income is the total income of the individual at 2003 base year prices.[6] The education dummy is for primary, secondary, high school and university graduations. The occupation dummy is for professionals, asst. professionals, office workers, service/sales workers, agriculture, craft/trade workers and machine operators. The employment dummy is for regular employees, casual employees, employers and self-employed. The sector dummy is industry, construction and service.
For this analysis, differentiating from former studies, I used real total income in nominal terms rather than the logarithmic formation, which resulted in a higher Rho result for the analysis. As the Rho indicates, the relation between the first and second stages of the Heckman selection model, its sign and level are crucial for the analysis. The negative Rho should state that having a positive income and the level of the income are negatively correlated, which may show the problems within the structure of the model setting. So, differentiating from former studies, usage of real income in nominal terms generated a positive relation between positive income and the income level.
In the first stage, age and squared age variables have the expected positive and negative coefficients, respectively. (Table.3.4.) All the education indicators, except for primary school graduation have positive coefficients for the positive income. Being a retiree and living in the city also have positive coefficients, while the number of assets does have a negative effect on positive income. Here, one reason could be the underreporting of income. As these assets should most probably be generating income, the coefficient is unexpected. However, as stated in the descriptive analysis of the dataset, the status of owning more than one asset is available to only a limited portion of the observations.

[6] The determination of the Permanent Income is also realized by using simple regression analysis and the results are given in Appendices A.1.

Second Stage - OLS Regression for Total Income	
	Total Income
Variables	**Coefficient**
Age	393.7*
	(18.9)
Age Squared	-3.9*
	(0.2)
Female	-1,529.4*
	(87.7)
Health Insurance	1,117.1*
	(60.8)
Married	315.7*
	(62.0)
Household Size	-8.3*
	(12.4)
Housewives	-1,144.2*
	(173.5)
Household Heads	1,767.1*
	(63.7)
Primary School	872.9*
	(82.3)
Secondary School	1,875.0*
	(100.9)
High School	2,925.2*
	(95.2)
University Graduates	6,308.7*
	(114.1)
Legislator Senior Officials	5,670.8*
	(109.0)
Professionals	3,336.7*
	(124.9)
Ass. Professionals	2,578.8*
	(118.1)
Office Workers	1,033.6*
	(118.5)
Salesmen	812.1*
	(93.4)
Agriculture/Farmers	799.3*
	(163.3)
Skilled Workers	969.6*

	(88.3)
Operators	1,529.1*
	(96.7)
Regular Employees	1,652.0*
	(83.6)
Casual Employees	188.6*
	(108.2)
Employers	10,216.0*
	(145.9)
Self Employed	1,919.6*
	(100.2)
Industry	-86.1*
	(166.2)
Construction	273.0*
	(169.6)
Services	-172.8*
	(151.7)
Capital Income Earners	3,541.2*
	(64.0)
Social Income Earners	1,460.5*
	(72.0)
City	609.7*
	(52.6)
Constant	-9,819.1*
	(407.6)
Number of observations	231,428

Wald Chi2(28): 44,641.29;

*, ** represent statistical significance levels of 1% and 5%, respectively.

Mills lambda	1,248.91	rho	0.162
	(138.632)	sigma	7,705.61

Heckman Selection Model is attained using the Heckman selection model (ML) under the sample selection model in Stata program. Dependent variable is total income of the individual at 2003 prices. Omitted variables for the education status are the uneducated household heads, and Dummy 2003 for the year dummies, unskilled workers for the occupation status, unpaid family workers for the Employment Status and the Agriculture Sector for the economic activity sector.

Dependent variable is the total income of the individual at 2003 prices. Total income variable predicted with the Heckman selection model for individuals is added up for the total family income to be used as permanent income of the family. The variable will be used in the logarithmic form in the saving model.

And having one asset, the residential home, may not be an indicator for positive income generation. So, the result is considered to indicate the low asset formation in the household sector. Another negative effect comes from the household size indicator. As mentioned earlier, the increasing household size also generates economies of scale within the family, and may result in reluctance for the other family members to have positive income and even to work.

The results of the second stage are mostly in line with expectations. The second stage of the Heckman Selection Model is an OLS function, where we analyze the relationship between the level of income and demographics, job status indicators of the individual, generally human capital. Demographic indicators like age and gender have the expected signs, while the power of the gender coefficient is high. The age indicator is positive, and the square of the age is negative for both stages of the analysis, indicating that the possibility that having a positive income and the level of income rise with age, while the rising trend loses momentum with age. Female gender is a factor to reduce both positive income probability and income level. As the housewife indicator is included in the analysis, the effect of this state is controlled for, and the negativity of the gender indicator for female status indicates that females do tend to have less probability of having positive income or a lower income level, even if we control for housewife status. Housewife status significantly reduces the probability of having a positive income, and the indicator is also statistically significant for the determination of income level. Presence of health insurance, indicating that the individual does work in a formal sector, has the expected positive and indicates higher income. Being married has a positive sign with a lower coefficient than our expectations. However, the inclusion of housewives in the analysis should be pressurizing this effect of the indicator, as can also be seen from the strong negative coefficient of the housewife indicator. Being a household head elevates the responsibilities of the individual and results in a positive coefficient for both positive income and the level of income, while the magnitude of the coefficient seems to decline in the determination of total income level. All the variables for the levels of education have the expected positive sign, and also increase with the rising level of education, as expected.[7] [8]

[7] As an alternative view, permanent income determination has also been realized with the standard OLS regression. Results are found to be in line with the Heckman selection model. (See Appendices)

According to the sector distribution of the individuals, only individuals from the construction sector have higher income than the ones in the agricultural sector. As we have controlled for the occupation and status of being an employer or an employee, sector income differentiation could be misleading, while this shows the high income in construction and comparatively lower income in other sectors. What's more, as the agricultural sector is present on a larger scale than it was in the past, the rise in income level should be the result of a more capitalized agriculture sector. When we compare within these sectors, individuals from the construction sector tend to be the highest income earners, which can be considered the result of the rising share of the construction sector in total GDP in the observation period. In addition to sector distribution, all the occupations receive higher incomes than the unskilled workers, our base group, while legislators/senior officials and professionals have the highest income levels in the total occupational distribution, as formerly expected. Employment status at work is also a very important indicator in terms of income level. All the employment status levels have higher income than unpaid family workers, whereas employers do have a significantly higher coefficient for income formation in the second stage. The income level of employers is higher, as can be expected, and we consider this trend to be effective in the rest of our analysis, especially in the saving determination part of the analysis.

The last two independent variables included in the analysis to control for are social transfers, pension income and capital income as sources of income, other than labor income, and they are found to be statistically significant. These two income indicators have positive income effects for the individuals that are included in the analysis. Capital income variable has a higher indication power, as income from this source can be significantly higher than all other incomes sources, as we have seen earlier in our analysis. The effect of the number of assets was negative in the positive income determination segment, while the effect of capital income is significantly high for the level of income. This result is in favor of my expectation that only a small portion of the

[8] As a variation from the Ceritoğlu's study, the total income level used in the second stage of Heckman Selection Model is not based on natural logarithm form but rather in real values deflated with the inflation (base year of 2003). The contribution of the usage of real values rather than the natural logarithm values is to have a positive and normal relation between the positive income possibility and the income level, which is a strong and expected relation. Natural logarithm usage for total income results in negative rho (negative relation between positive income and income level) and to eliminate this problem the total income value setting has varied from the Ceritoğlu's study.

observations have more than one asset, and that one asset status does not generate additional income probabilities. On the other hand, the magnitude of social transfers is also quite high, giving these individuals additional income power.

The regression coefficient of the Mills Ratio (lambda) is statistically significant, confirming the application of the Heckman two-stage least squares estimation technique. (Table 3.4)

The Heckman Selection Model is implemented for the individuals and the predicted permanent income levels of these individuals are added up, to be used for the total household permanent income level.

3.3. SAVING

3.3.1. Household Budget Survey and Saving

TURKSTAT's HBS data is composed of income levels on an individual basis, while disposable income and consumption levels are given only for the whole families. So, although we can estimate the permanent income on the individual basis, we have no consumption data for the individual base and as a result for the individual saving level. The saving for each family is determined as the disposable income of the family that is not spent on consumption or spent on transfer payments that can generate future disposable income. (Table 3.5) Transfer payments include expenditures other than consumption expenditures and regular transfers in terms of aid given to other households. The saving level of households declined significantly in the 2003-2012 period. The household saving level declined to 6.21 percent in 2012 from 17.5 percent in 2003. In the details of household savings, 34,636 out of 85,375 household observations for household heads in the 20-60 year old age category had negative savings. So, 40 percent of households had negative savings, considerably lower than the 60 percent of individuals in the 20 to 60 years category with non or negative income levels, indicating that the income of the household was coming from other members of the household. This result is an expected one, as the number of housewives is still high and female participation in the labor market is low in the Turkish household structure.

Table 3.5 Distribution of Income, Consumption and Saving

Variable	Obs	Mean	Std. Dev.	Min	Max
Disposable Income	85,375	12,855.4	12,667.7	0.0	399,912.2
Consumption	85,375	11,503.3	9,418.5	339.3	251,551.9
Saving	85,375	1,352.2	9,679.3	-197,656.8	363,946.6

Education is observed as a strong indicator of income and is also a significant indicator of saving level. The highest level of saving ratio is observed in university graduates. Aside from high school graduates, all the other levels of graduation have considerably low savings. The education level of the household head may however be misleading, as the household is mostly determined by the oldest individual in the household, but this may not be the individual to determine the saving preferences. This shortcoming of the HBS limits the importance of the education level of the household head.

The occupational status of the household head also seems to be important, as senior officials', professionals' and associate professionals' saving ratios are significantly higher than those of other occupations, with the exception of farmers. Due to the structure of the agriculture sector, farmers should be more liable to the "saving for rainy days" habit, and this result can clearly be observed in the saving and occupation relationship. The sector distribution of the household head's occupation gives less consistent results. The finance, real estate, health and transportation/communication sector workers are likely to save more due to their higher income levels, as was mentioned in the income determination process. The other expected relationship is with the occupational status of the household head and gives clear evidence that employers tend to save more due to the nature of the job status. Employees are subject to lower unemployment risks and lower level of income volatility, so they tend to save less. The health insurance and pension system payments coming with employee status and the agreements with employers protect the employees, and they are less induced to save for future uncertainties. What's more, the financial system requires income status levels to be reported for the usage of consumer loans, which makes it fairly easy for employees to report, as they have payrolls and that's why they are less liable to be liquidity constraint, as long as they maintain their jobs. On the other hand, employers may not have too much desire to report their income and may tend to have less desire to use

consumer loans, giving them some sort of liquidity constraint. Employers are subject to the volatility in the financial and real markets, and their household income and commercial income relation is high. Although their considerably higher mean income level is also effective, they are also "savers for rainy days". One important result of the changing saving level in the 2003-2012 period is that employers and self-employed household heads reduced their saving levels at the highest pace in this period. The release of liquidity constraints could be effective in this trend.

As we move from demographic and occupation related indicators to wealth related variables, we observe that wealth indicators are also highly effective for saving level. First of all, income distribution should be clearly analyzed, as income level is the main criterion for the households' ability to save. The households in the lowest 30 percentile of the income level are natural dissavers, as they have very low or no reported income. This segment constitutes about 56 percent of our total household observations. Households in the highest 30 percentile of the income level constitute only 10 percent of the total observations, while they generate 87 percent of the total savings in our household dataset. As we analyze the highest 10, they are a mere 2 percent of the observations, while they make up to 44% of the total savings. As can be clearly seen from the data, the income distribution is highly distorted. The skewness in income and saving distribution is mostly observed all through the observation period. Although the number of households in the 10 percentile levels of the income distribution is stable, their share in total saving level changed. Dissaving of the lower income segments elevated significantly, and as a result the saving of the highest 30 percent of the income earners increased to 87 percent from 68 percent of the total observations, indicating that the deterioration in income distribution resulted in even lower saving opportunities for the lower income segments, and that the higher income segments now carry more weight in the total saving capacity of Turkey. On the other hand, aside from the sharp decline in the saving ratios of lower income levels, the saving ratio declined even for the highest income segments. Declining interest rates and the considerably lower capital income of these segments could be factors in reducing their saving as well.

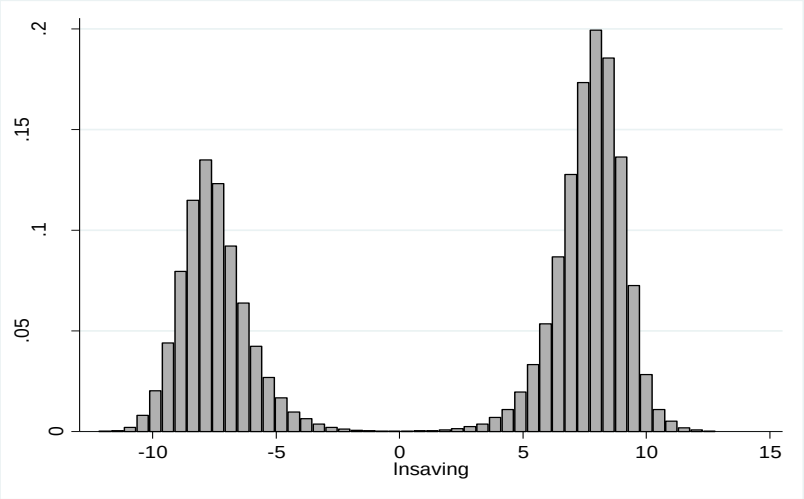
The wealth criterion is not well determined or reported in the HBS. We can observe the capital income level of the individuals and so the household, while the data for the total value of assets are absent. In order to overcome this problem, we have generated a

wealth indicator, which takes the number of assets of the household into consideration. Land, houses, summer houses and all sorts of real estate are taken into account, and their accumulated levels generate our wealth indicator for the households/families. The wealth variable is clearly an indicator of income and saving level. The indicator could be perceived as a considerably weaker one in comparison with the real value of the assets. Having one piece of real estate, which is the residential home, does not generate a wealth effect, as the asset will not generate any capital income. On the other hand, if the household has more than one asset, the household can generate capital income. In the observation period between 2003 and 2012, the saving ratio of one or no asset possessing households is only 25 to 50 percent of the saving ratio of the higher than one asset possessing households. More than one asset owning households constitute 18 percent of the total household observations, in line with the low share of the high disposable income level households.

Formerly in the descriptive analysis, I mentioned that housing was considered as a source of capital accumulation, and 93.5 percent of capital income consisted of real estate income. Of the total income level in the individual base, about 31 percent of total income is generated by real estate income. So aside from labor income, real estate income is also an important determinant of disposable income and saving level as well. On the other hand, we do not have information about the total value of housing investment, while we have the information whether there is debt related to the home of the household mostly as collateral for housing debt. However, the debt may not be only related to housing loans, but can also be collateral for consumer loans or the commercial loan of the household if they are entrepreneurs.

As there are significant numbers of negative saving households, and the exclusion of these observations from the dataset can generate a major loss in the number of observations, I decided to use these observations in the analysis. (Graph 3.1) Following Ceritoğlu (2009), the natural logarithm process problem for negative savings of the households was solved by taking the negative values of the natural logarithm of absolute values for the negative savers. The process resulted in two distributions for positive and negative savers.

Chart 3.1 Histogram of LnSaving



3.3.2. Determination of Saving with Labor Income Risk

Permanent income and labor income risk indicators were estimated in the previous stages using the Heckman Selection Model and probit regression analysis. The first stage variables were dependent on demographic and occupation related indicators. The results of the initial stages are found to be statistically significant. In order to discard the correlation between the explanatory variables the used two-stage regression method is required. However, the introduction of the generated variables, labor income risk and permanent income result in additional correction requirements for the saving analysis that will be performed.

As was mentioned earlier, the permanent incomes of the households are introduced to the model by taking their natural logarithms, and the labor income risk is the natural logarithm of labor income, interacted with the results of the probit model for the probability of unemployment. Although these indicators are forceful in determining income and the risk of income for the saving model, households may reduce the probability of becoming unemployed via raising the number of working individuals in the household. As the income risk for unemployment was given for the household heads only, the introduction of multiple income earners to the saving model could represent the innate household effects on unemployment risk or the household head insurance against unemployment. The introduction of the multiple earner dummy variable to the saving model is expected to limit the coefficient of the permanent income and labor

income risk categories, which are directly related to the income level and income risk for the household. [9]

Two demographic and occupation related indicators are the ones that are introduced to control for the effect of the presence of the working status for the household head, the presence of health insurance, and the number of children in the household below the age of 18. As was mentioned earlier, the household head determination can be done by solely naming the oldest member of the family as the household head. However, the oldest member of the household can be an elderly and retired grandparent, living with their children's family, and this can be less effective on the saving and consumption decisions of the household. On the other hand, the presence of an elderly grandparent in the family and the status of being a large family can also elevate the older dependency ratio for the household, resulting in lower saving opportunities. So, the introduction of the working status of the household head, along with the health insurance indicator, is expected to generate a difference between these kinds of large families or the ones represented in the HBS by an elderly grandparent, and the ones that have a smaller family size and are represented by the decision maker in the household. The indicator to be used for this aim is the dummy for having health insurance. The status of a larger family is expected to limit the saving opportunities for the family, while the introduction of health insurance could result in a positive effect on the saving equation. Household types will illustrate the family size related effects on saving preferences. The other family related indicator is the number of children below the age of 18. The number of small children is the main indicator for the young dependency level of the family, and is expected to limit saving opportunities. Consumption rising with the number of children should limit saving possibilities and the level of the young dependency in society should be less saving friendly than a higher old dependency ratio. Although the health insurance and the number of children indicators were used as variables for the determination of the permanent income of the household, the effect of these indicators on mandatory consumption decisions and saving as a result should also be considered. So, we also contained these variables in the saving model as well. In

[9] Multiple earner indicator was initially determined by using the ratio of income generated by the household members to the income of the household head. However, the ratio was not found to be statistically significant, which is expected to be the result of the lower income level of the other income earners than the household head. Presence of multiple earning status in the household was generated as a dummy variable.

addition to these demographic related variables, the education level of the household head was also taken into consideration. Aside from contributing to the permanent income and the unemployment risk, high-level education is expected to be more related with financial asset usage and the desire to accumulate wealth. Higher level of education should produce more financially integrated individuals and the level of saving could be higher. [10]

The final demographic related indicator is the household type of the family. Aside from the dependency ratio, age and education level indicators, family type should also be effective on the saving decision. The household type is closely related to the cultural issues of the family, and also affects the saving preferences. The main effect will be the preference of living in a patriarchal family or the decision of a family to have children or not. I expect patriarchal families to be more likely to save with a high family size, and the synergy generated in big families, especially in consumption related tendencies. On the other hand, households with children should also be apt to save less for a significant part of their lifetime due to young dependency related higher consumption effects. The household type should indicate the preferences of the households to setting their income and consumption relation in the long run. Aside from the standard income and consumption level analysis, the preferences depending on the choice of household type also determine their choices for compulsory consumption and their lifestyles. Household type indicators were found to be effective on the saving preferences earlier in the descriptive part of the thesis.

The remaining indicators are related with the wealth and debt level of the households. The wealth indicator as determined earlier with the number of assets and mainly real estate related assets will also be used in the saving analysis. The wealth level, aside from generating capital income, is also a major indicator of the availability of loans in order to smooth consumption in times of income volatility. The higher level of wealth and assets could generate additional collateral for the household to use for consumer loans and would also result in higher income through capital income generation facilities. The wealth indicator is expected to be more effective above the level of one asset, as the residential home may not be preferred to be used for the aim of

[10] Studies have also indicated that the highly educated individuals at younger ages may be tempted to save less with the expectation that they are less subject to unemployment risks and that they have higher permanent incomes

collateralization or capital income generation. The effect of the wealth indicator could be negative if the presence of wealth reduces the liquidity constraints on the individual. The indebtedness of the household is also expected be another and a significant indicator for the saving equation. Under normal circumstances, the presence of debt could result in lower disposable income and so lower saving opportunities. However, the debt indicator is given for the debt on the residential home of the household. And instead of paying rent, they could be paying off their mortgages and the effect on disposable income could be limited, once they manage to finance the down payment. In accordance, with the growing mortgage market and housing loans in general, households have a higher level of debt on their homes nowadays. The share of people with debts on their houses increased sharply in the observation period between 2003 and 2012. Although home ownership level declined in the period mentioned, the share of debt on residential homes elevated.[11] The share of residential home owners in the total household observation dataset declined gradually to 56 percent from 70 percent in the 2003 to 2012 period. On the other hand, indebted households, determined by having debt on their residential homess, surged to 10 percent from 2 percent in the total observations and to 17 percent from 3 percent in the observations of home owners. The rising availability of loans through housing loans in terms of cost and collateral requirements, and the surge in house prices during this period were the main reasons for the significant development and attractiveness of the housing sector during this period. What's more, government led growth policies also promoted the construction sector and mainly the housing sector. The presence of housing debt could be perceived as another reason for accumulating precautionary savings, which stems from the fact that households with mortgages do not only have to smooth consumption on the volatility of their total income but also on their disposable income. The household would have to pay the debt even if the household does not have any income. The introduction of the dummy variable for the presence of debt on the residential home of the household might limit the effect of the precautionary saving introduced with the labor income risk indicator. Debtor status may generate additional saving behavior in the individual. On the liquidity side, debtors may also have less room for additional loan facilities in times

[11] Observation for the home ownership level depends on the HBS, while the same levels may not be observed in the official TURKSTAT analysis.

of rising income risk and the loss of liquidity during these periods. The resulting effect could be challenging to interpret, while the precautionary saving effect could be more distinctive than the liquidity constraint effect, as the house debt of the middle class households would contain a higher level of observations due to the skewness of income distribution. What's more, the introduction of permanent income in the saving equation will control for income level and the effect of house debt should be limited to the precautionary saving motive of an indebted household.

The liquidity constraints issue is analyzed in detail in the literature review chapter, and the Turkish economy experienced a huge increase in consumer loans, and liquidity constraints were relieved significantly during the study period. The effect of this trend will be hard to include in the analysis, as we have no exact data for the presence of liquidity constraints in the households. In the literature review, some analysis of liquidity constraints uses objective criteria like the responses to being turned down for a loan application, or responses from the households about their loan levels. (Gross and Souleles, 2002). The absence of subjective data and the requirement to use the effects of liquidity constraints in the saving equation for a period of rising financialization, especially in the consumer loan and mortgage markets, resulted in the use of dummy variables for the year effects. Especially after the 2008 crisis, rising global liquidity due to the quantitative easing preferences of the Central Banks of the Developed Countries have reduced the liquidity constraints on consumers and resulted in a desire to consume more and save less, especially in Developing Countries. The consequences were lower interest rates and the elevation in the current account imbalances for Developing Countries. Lower interest rates diminished capital income through interest income but the effect on total capital income was limited as capital income is mostly received through real estate related income. As we have already controlled for income risk, demographics and wealth, the introduction of the year dummies is expected to contain the changes in the economic structure during the 2003 to 2012 period and the changing expectations, as well. As we have controlled for the available indicators for determining household saving, the effect of the year dummies could be expected to be effective mostly on the constant term, the coefficient of the estimated permanent income as the sole indicator of income and expectations and to a lesser extent of labor income volatility subject to the unemployment risk. The final variable that we have included in

the saving equation will be the status of being an employer. Descriptive analysis has already indicated that employer/self-employed or entrepreneur status, as will be given in the equation, is important in the determination of household saving. The income level of employers is generally higher than that of employees in our observations, with a presumed volatility, and is also considered in the determination of the permanent income of the household. Employers are counted in the employed category, while their education and other demographic indicators may not always fit well with the general observations. However, they are subject to economic risks, with all their disposable household income and not only their commercial activities. Their status also gives more motivation to "save for a rainy day". So, we will include the employer effect on the saving equation, with the "entrepreneur" variable to include these additional saving motives. A positive bias towards saving will be the expected result of the introduction of the employer variable to the saving analysis.

3.3.3. Econometric Results

In the saving analysis, although we are looking at the observations on the household level, some of the indicators of the household head will also be used. However, these indicators will be used as they are expected to give some intuition about the general perception of the family. The education level of the household head, entrepreneurship, and the presence of health insurance, are all indicators showing in the individual base, but are expected to be highly influential over the general perception of the total family. In the descriptive analysis, I observed that the individual income level increases when you are a household head. However, this divergence declines with the level of education, and the positive income effect of being a household head is more limited when you are a university graduate. So, although university graduation generates a higher income level for the individuals, the gap is smaller for the household heads. The inclusion of the education variable in the saving model is expected to analyze this effect. On the entrepreneur effects, I assume that these individuals should have lower risk aversion levels due to their job and household process relationship, and they may be less biased towards making precautionary savings. The risk aversion effect is also an important indicator of saving preferences rather than income effects. To include this effect, I will also use the entrepreneur effect. However, the inclusion of entrepreneurs

does have some shortcomings. Although entrepreneur status may also bring higher asset formation and income capabilities for some of the observations, the status may not be true for an artist or craftsman. So, the heterogenous status within the entrepreneur variable, depending on the size of their job and their asset relation, may limit the effectiveness of this indicator. Income volatility depending on the unemployment risk will be the only individual base indicator. Although the indicator is on an individual base, the effects of income risk are also expected to be highly influential over the total income profile of the family. So, we also consider this indicator to be a family wide effective indicator.

In the model, the dependent variable, saving, is introduced with the logarithmic transformation to overcome the variation in the nominal saving values of the household observations. Permanent income and labor income uncertainty are also the values that are used with logarithmic transformation in the model. The resulting model indicates that nearly all the explanatory variables are statistically significant. (Table 3.6)

The model to be employed to determine saving preferences is:

$$LnSaving = \beta_1\ \text{LnPermIncome} + \beta_2\ \text{LnLaborIncomeRisk} + \beta_3\ \text{NoChild18} + \beta_4\ \text{HealthInsurance} + \beta_{5i}\ Y_i + \beta_{6j}\ \text{Educ}_j + \beta_7\ \text{Wealth} + \beta_8\ \text{Debt} + \beta_9\ \text{Multiple Earner} + \beta_{10}\ \text{Employment}_{\text{Employer}} + \beta_{11t}\ \text{DebtY}_t + \beta_{12u}\ \text{HHTYPE}_u + c$$

where, Y is the dummy for the years from 2004 to 2012, the education dummy is for primary, secondary, high school and university graduations. DebtY is the interaction dummy for the debt status and years. HHTYPE is the dummy for the household types from 1 to 7.

Household permanent income is found to be a significant indicator to determine the saving level of the households. (Table 3.6) The sign of permanent income is positive and its coefficient is strong, as could be expected.

Table 3.6 Pooled OLS Regression of Household Saving on Income Risk, Debt

OLS Regression For Ln Saving	
	LnSaving
Variables	**Coefficient**
Permanent Income	0.076*
	(0.009)
Labor Income Risk	0.107*
	(0.006)
No of Child<18	-0.256*
	(0.023)
Health Insurance	0.790*
	(0.075)
Dummy 2004	-0.109
	(0.103)
Dummy 2005	-0.529*
	(0.124)
Dummy 2006	-0.716*
	(0.104)
Dummy 2007	-0.060
	(0.104)
Dummy 2008	-1.974*
	(0.106)
Dummy 2009	-2.134*
	(0.101)
Dummy 2010	-2.179*
	(0.101)
Dummy 2011	-2.082*
	(0.103)
Dummy 2012	-2.206*
	(0.104)
Primary School	0.407*
	(0.106)
Secondary School	0.648*
	(0.126)
High School	0.998*
	(0.119)
University	2.277*
	(0.129)
No of Wealth	0.509*
	(0.025)
Household Debt	0.984*
	(0.336)
MultiEarners	1.009*
	(0.056)

Entrepreneurs	2.170*
	(0.067)
HHDebt*2004	-0.312
	(0.679)
HHDebt*2005	-0.889
	(0.759)
HHDebt*2006	0.182
	(0.557)
HHDebt*2007	0.561
	(0.621)
HHDebt*2008	1.027**
	(0.522)
HHDebt*2009	0.986**
	(0.475)
HHDebt*2010	1.013**
	(0.472)
HHDebt*2011	1.276*
	(0.452)
HHDebt*2012	1.004**
	(0.438)
Household Type 1	0.386*
	(0.097)
Household Type 2	0.286*
	(0.083)
Household Type 4	0.148
	(0.122)
Household Type 5	0.928*
	(0.090)
Household Type 6	0.743*
	(0.124)
Household Type 7	0.675*
	(0.236)
Constant*	-1.406*
	(0.162)
Number of Observations	85,375

R-squared: 0.0561;

* and ** represent statistical significance levels of 1% and 5%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables for the education status are uneducated household heads, and Dummy 2003 for the year dummies, Household Debt interacted with year Dummy 2003 and Dummy Household Type3 - Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving level stated as the difference between disposable income and the consumption of the family, all at 2003 prices.

A 10 percent increase in the permanent income level also elevates saving by 0.72 percent at mean levels. The effect is lower than in former studies (Ceritoğlu, 2009), and indicates that the MPC out of income is higher in comparison with studies in earlier periods. Aside from permanent income, labor income uncertainty is the second major indicator to affect saving level. As the logarithm of labor income is associated with unemployment risk, this indicator also carries a value related to income level and is found to be statistically significant.[12] The results indicate that there is a clear precautionary habit for the households in Turkey.[13]

Households tend to elevate their saving level as labor income uncertainty is observed, and the effect is significant. However, despite labor income risk, the precautionary effect on saving is significantly lower than in former studies and should also be analyzed for the sub periods in the study period, which will be performed in the following parts. Another important, however indicative variable on the negative side is the number of children below the age of 18. As could be expected, the variable shows that the young dependency ratio is the major indicator which limits and reduces the saving level. The number of children in the household is clearly an additional consumption criterion for the household, and the result is declining savings.

Health insurance has a positive and significant effect on saving level. Household heads with health insurance are expected to be working, as these two criteria go hand in hand. As the health insurance indicates a need for insurance for the household head, and the insurance policy may also contain other family members, the effect would not be only on the household head but on the whole family. What's more, having insurance limits additional health expenditures, and the resulting disposable income could be used to save. Dummy variables for the level of education are found to be statistically significant

[12] Aside from the permanent income predicted for the Heckman selection Model, I also predicted the income level using a simple OLS regression with the same variables. A saving regression using these predicted income levels with simple regression are given in Appendix A.1. The coefficients of the indicators are effected only slightly, while the coefficient of the indicator for the logarithm of income rose sharply. This effect is compensated with also a sharp decline in the constant term. As my indicators of concern, labor income risk, year dummies and the debt indicator are not much effected from this change, I rather utilized the permanent income generated with the Heckman Selection Model.

[13] A Tobit Regerssion for Saving on the same independent variables is also run and the tobit regression results are given in Appendix B. The results also sugget the significance of a precautionary saving motive with a slightly lower coefficient for the labor ıncome uncertainty and a lower one for the household debt indicator. For the indication of liquidity, the coefficient for the year dummies are lower. The liquidity effect is less powerfull with this regression.

for all graduation levels, except for primary school graduates. The effect gets bigger as the graduation level increases, as expected.

Although some of the studies indicate that university graduation could also be a reason to lower the saving habit, as these people would find themselves to be less subject to the risk of unemployment, the results indicate that a higher level of education does promote saving, as it was also observed that university graduation also elevates income level. The effect is even higher for university graduates than the health insurance indicator, which was also perceived as a variable to indicate the working status of the household head. One of the strongest effects comes from the wealth indicator. Although the indicator does not indicate the absolute value of the wealth of the household, it shows the number of assets under the control of the household. The variable mostly consists of the number of houses owned by the households, and an additional house results in an approximately 66 percent rise in the saving level of the household. The wealth of the households in the observation averages out at a 0.95 level, indicating that most of the households have their own houses. If the household moves from a tenant to home owner status, their saving could rise as high as 66 percent and as the number of houses elevates, the saving level hikes at even more significant levels. The wealth level of the households could be perceived as the main and probably the most important determinant of the household saving possibilities with its significant effect. The status of having multiple earners in the households and the employment status of the household head determined by the entrepreneur variable are also found to be important indicators for the determination of the household saving level.

Entrepreneur status brings a huge saving difference to the saving habit. The entrepreneur variable is significant and has the highest coefficient in the dummy variables. Entrepreneurs tend to save 7.5 times more than the standard employees, as might be expected. The entrepreneur status effects will be analyzed in detail in the following sub chapters.

One of the most important indicators for our analysis is household debt, which is the dummy variable for having a debt on the residential home of the family. The structure of the debt on the house is not determined in the HBS. However, the dummy is perceived as an indicator to show the status of having a mortgage for the household in my analysis. The effect of the debt indicator is statistically significant, and the power of

the coefficient is strong, as can be observed in Table.IV.6. The debt status is mostly observed in the mid to high income segments of the income distribution. On the other hand, in the analysis, I have already controlled for the income and wealth criteria. So, the resulting effect shows that, even if we control for income and wealth, having a debt or mortgage results in additional saving for the households with timing preferences. The literature review indicates that housing wealth was perceived as precautionary wealth, while the risk tolerance of indebted households was liable to fall sharply in times of rising risk perception. (Cagetti, 2003; Dynan, Edelberg, 2013) What's more, the elasticity of consumption with respect to income is significantly higher in households with high levels of debt. (Baker, 2014) So, the introduction of household debt criteria should be interacted with the changing risk perception of the households. In my saving model, I used the year dummies to interpret the changing economic conditions, and the effects are found to be significant as indicators to determine changing perceptions towards saving. The interaction of the household debt criterion with the year dummies shows that the indicator did not tend to promote saving level until the crisis period of 2008. The interaction dummies are not even statistically significant in the years before the 2008 crisis. However, starting with the Global Crisis, the coefficient became statistically significant for all the years. The effect of the interaction dummies is strong, and the saving level of the indebted household tends to rise during the crisis and the post crisis periods. The significance of the debt indicator is strong and gives results in line with the Dynan and Edelberg (2013), Dynan (2009), Mian, Rao and Sufi (2013) and many more studies, showing that debt results in additional bias against risk tolerance and results in lower consumption and higher savings. These are the factors to limit economic growth and the resulting negative effects of recessions. Indebted households tend to generate another source of precautionary saving behavior in times of negative economic outlook. Like the rising unemployment risk and elevation in labor income risk, any negative economic development also results in concerns regarding negative shock for the households in debt. I have already determined that HBS observations were in line with the precautionary saving theory. In addition to this development, indebted households do also tend to stimulate this precautionary saving even further. The economic situation is strongly effective and important for this additional precautionary

saving motive, as the effect is clearly interacted with the year dummies and found to be significant after the 2008 crisis.

This study only applied to housing debt and does not take other sources of debt into consideration. Having credit card debt or consumer loan debt could be expected to result in similar precautionary behaviors for the indebted households. However, income level also has important side effects on the precautionary behavior of the household. "Hand to mouth" households could not be expected to show significant precautionary saving behaviors due to the lack of income sources. Their debt is mostly related to liquidity issues, like substituting credit card limits for low income and exactly for this reason, they may not perform precautionary saving behaviors due to their low income. As a result, the precautionary saving effect of debt could be observed mainly in housing debt, while other consumer loans and credit card debt may not result in precautionary saving motives in times of rising uncertainty.

Aside from our main findings of the debt indicator, dummies for the year effects to include the economic situation of each year are also effective on saving level with a negative sign. All the year dummies, apart from the 2004 and 2007 dummies, are found to be statistically significant. The coefficients of the years 2005 and 2006 perform at lower levels of effectiveness on the saving level, while the coefficient becomes stronger in magnitude starting from the year 2008. The general economic environment and global liquidity conditions during this period are also in line with the findings and give clear evidence of the rising negativity of the coefficients starting from 2008. The main reason is the additional liquidity conditions stemming from the record level of liquidity injections coming from the Central Banks of Developed Economies. The rising global liquidity not only results in declining interest rates, which also generate similar effects to additional liquidity conditions, but also loosened the lending conditions of the supplier, the banking system. Loose global liquidity conditions are found to be important indicators to promote the banking sector's loan utilization performance. This development is not unique to the Turkish case, but similar effects were also observed in other developing economies. Favorable liquidity conditions not only stimulate the loan usage of the consumers, but are also effective on the financial markets and mainly the FX markets. The rising global liquidity resulted in additional appreciation of the local currencies in Developing Countries, which in turn was a motive for households to

consume more of the highly import dependent consumer goods in Turkey, and most of the developing economies experienced similar trends as well. According to research performed by the Central Bank of Turkey, 80 percent of the total household consumption contained in the establishment of the CPI indices is influenced by movements in TRY's value. Not all the 80 percent of the total household consumption is from imported goods, but they are produced using imported intermediary or capital goods. The high imported goods dependency of the manufacturing sector also indicates such a relationship. Especially in times of appreciating TRY, consumers increase their imported good demand, which is mostly concentrated on durable goods. This was also a factor to promote the significantly negative level of the coefficients for the year dummies starting from 2008.

In order to analyse the year effects in detail, the data is separated into two different periods: one containing the 2003-2007 period and the other one for the 2008-2012 period. [14]

In order to analyze the effects of liquidity saving behavior, I focused on the two sub periods covered by the 2008 crisis. The effects of rising global liquidity resulted in additional liquidity availability also for Turkish consumers through the banking sector and consumer loans. The saving regression is run for both the pre-crisis and post-crisis periods. All the variables other than the interaction variables between year and household debt are kept in the equation. (Table 3.7)

The model to be employed to determine saving preferences in pre-crisis and post-crisis periods:

$$LnSaving = \beta_1\ \text{LnPermIncome} + \beta_2\ \text{LnLaborIncomeRisk} + \beta_3\ \text{NoChild18} + \beta_4\ \text{HealthInsurance} + \beta_{5i}\ Yi + \beta_{6j}\ Educ_j + \beta_7\ \text{Wealth} + \beta_8\ Debt_{Mortgage} + \beta_9\ \text{MultipleEarner} + \beta_{10}\ \text{Employer} + \beta_{11k}\ HHTYPE_k + c$$

where, Y is the dummy for the years from 2003 to 2012, Education dummy is for primary, secondary, high school and university graduations. HHTYPE is the dummy for the household types from 1 to 7.

[14] Crisis years of 2008-2009 are also analyzed by separating the 2008-2012 period into two, but the regression results for the crisis and post-crisis periods are in line. That's why the crisis and the post-crisis periods are included together in the analysis.

Both the permanent income and the precautionary saving indicators of labor income risk to unemployment are statistically significant, as can be observed in Table 3.7. Permanent income coefficient variation, although it is at a low level, shows that in the post crisis period, saving out of income rises. A 10 percent rise in permanent income results in a 0.6 percent rise in saving in the pre-crisis period, while the effect is 1.00 percent in the post crisis period. For the precautionary saving motive, the post crisis period could be expected to indicate a higher level of uncertainty, and so a higher level of the precautionary saving motive. However, the availability of liquidity in the post crisis period with surging global liquidity became a bigger factor and even lowered the precautionary saving behavior slightly in the post crisis period. Although there were bigger global uncertainties and even a surging unemployment rate in the Turkish economy, easier liquidity conditions let the households live in a more securely felt environment. The coefficient of the precautionary saving indicator, labor income risk mostly stayed stable in the pre and post crisis periods. On the other hand, when we focus on the years to follow 2010, the precautionary saving motive tends to decline even further.

The maintenance of the precautionary saving motive in the pre and post crisis periods requires additional attention, depending on the nature of these two periods. Although economic conditions were deteriorating, credit conditions were easier and cheaper, and the precautionary saving motive did not tend to increase but stay flat.

Table 3.7 Pooled OLS Regression of Household Saving in Pre Crisis and Post Crisis Periods

OLS For Ln Saving for Pre Crisis and Post Crisis Periods		
Variables	**Pre Crisis**	**Post Crisis**
	Coefficient	**Coefficient**
Permanent Income	0.061*	0.097*
	(0.011)	*(0.019)*
Labor Income Risk	0.108*	0.104*
	(0.008)	*(0.009)*
No of Child<18	-0.230*	-0.300*
	(0.029)	*(0.038)*
Health Insurance	0.937*	0.563*
	(0.089)	*(0.137)*
Dummy 2004	-0.112	
	(0.098)	
Dummy 2005	-0.535*	
	(0.119)	
Dummy 2006	-0.690*	
	(0.099)	
Dummy 2007	-0.061	
	(0.100)	
Dummy 2008		
Dummy 2009		-0.168
		(0.126)
Dummy 2010		-0.227***
		(0.126)
Dummy 2011		-0.113
		(0.127)
Dummy 2012		-0.262**
		(0.127)
Primary School	0.541*	0.215
	(0.135)	*(0.168)*
Secondary School	0.936*	0.276
	(0.164)	*(0.197)*
High School	1.246*	0.682*
	(0.154)	*(0.186)*
University	2.271*	2.184*
	(0.171)	*(0.197)*
No of Wealth	0.530*	0.496*
	(0.036)	*(0.035)*
Household Debt	0.981*	2.042*
	(0.204)	*(0.152)*

Multi Earners	0.848*	1.199*
	(0.076)	*(0.084)*
Entrepreneurs	2.519*	1.719*
	(0.088)	*(0.103)*
Household Type 1	0.347*	0.402*
	(0.124)	*(0.155)*
Household Type 2	0.407*	0.119
	(0.106)	*(0.134)*
Household Type 4	0.255	0.014
	(0.159)	*(0.191)*
Household Type 5	0.821*	1.038*
	(0.114)	*(0.145)*
Household Type 6	0.588*	0.893*
	(0.165)	*(0.190)*
Household Type 7	-0.277	0.844*
	(0.425)	*(0.301)*
Constant	-1.666*	-3.013*
	(0.197)	*(0.295)*
Number of Observations	46,581	38,524

Pre Crisis: (R-Squared: 0.0509); Post Crisis: (R-Squared: 0.0497)

*, ** and*** represent statistical significance levels of 1%, 5% and 10%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables: for the education status are the uneducated household heads, and Dummy 2003 for the year dummies and the Dummy Household Type3 - Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving level stated as the difference between the disposable income and the consumption of the family, all at 2003 prices.

The effect containing liquidity conditions in the precautionary saving motive may have a significant effect. The effect could be a liquidity relief dependent comfort for the households as mentioned, while the resulting change in the relationship may be a result of the rising number of "hand to mouth" consumers in the household observations as well. Further disturbance in income inequality might have left more consumers without the ability to save and promoted them to further consume.

As an indication for the liquidity effects to be recognized, the wealth factor is used to separate liquidity constrained and the non-liquidity constrained households. As owning one asset does not generate a buffer for collateral purposes, I have included the no asset and one asset ownership status as not wealthy status. Two and more asset ownership is

categorized as wealthy status. The usage of the wealth is not generally studied in the literature, but I suggest that it could be effective. As mentioned earlier, the status of owning a house to be lived in could not be subject to collateral status. On the other hand, if the household owns more than one house or other kinds of real estate, the household could be earning capital income. The status of having capital income should be promoting the saving ability of the household. The isolation of the wealth factor to determine liquidity constraint status could be considered as a less effective factor, while the absence of the panel data status for the observations leaves no available real indicator to determine liquidity issues. (Table 3.8)

The model to be employed to determine the saving preferences of wealthy and not wealthy households, differentiated by the number of assets is:

$$LnSaving = \beta_1\ \text{LnPermanentIncome} + \beta_2\ \text{LnLaborIncomeRisk} + \beta_3\ \text{NoChild18} + \beta_4\ \text{HealthInsurance} + \beta_{5i} Y_i + \beta_{6j}\ \text{Educ}_j + \beta_7\ \text{Debt}_{\text{Mortgage}} + \beta_8\ \text{MultipleEarner} + \beta_9\ \text{Employment}_{\text{Employer}} + \beta_{10k}\ \text{DebtY}_k + \beta_{11t}\ \text{HHTYPE}_t + c$$

where, Y is the dummy for the years from 2004 to 2012, Education dummy is for primary, secondary, high school and university graduations. DebtY is the interaction dummy for the debt status and years. HHTYPE is the dummy for the household types from 1 to 7.

Separate regression results for the "wealthy" and the "not wealthy" households are quite different for nearly all independent variables. The coefficient of the labor income risk shows a slight increase for the wealthy households, but the difference is statistically insignificant. My expectations for the labor income risk and precautionary saving ability of the wealthy, or for example not liquidity constraint households, was a significantly higher coefficient from the liquidity constraint households.

Table 3.8 Pooled OLS Regression of Household Saving for "Wealthy" and "Not Wealthy" Households

OLS For Ln Saving for Not Wealthy and Wealthy Households		
Variables	**Not Wealthy**	**Wealthy**
	Coefficient	**Coefficient**
Permanent Income	0.071*	0.268*
	(0.010)	*(0.046)*
Labor Income Risk	0.102*	0.117*
	(0.007)	*(0.013)*
No of Child<18	-0.292*	-0.084*
	(0.025)	*(0.065)*
Health Insurance	0.788*	1.173*
	(0.079)	*(0.234)*
Dummy 2004	-0.153	0.091
	(0.111)	*(0.273)*
Dummy 2005	-0.606*	-0.039
	(0.136)	*(0.311)*
Dummy 2006	-0.724*	-0.769*
	(0.113)	*(0.265)*
Dummy 2007	-0.076	0.025
	(0.111)	*(0.284)*
Dummy 2008	-2.138*	-1.349*
	(0.116)	*(0.264)*
Dummy 2009	-2.315*	-1.456*
	(0.112)	*(0.246)*
Dummy 2010	-2.217*	-2.149*
	(0.112)	*(0.244)*
Dummy 2011	-2.123*	-2.125*
	(0.113)	*(0.257)*
Dummy 2012	-2.152*	-2.665*
	(0.114)	*(0.2589*
Primary School	0.335*	0.496*
	(0.112)	*(0.321)*
Secondary School	0.520*	0.834**
	(0.135)	*(0.364)*
High School	0.904*	0.985*
	(0.127)	*(0.344)*
University	2.229*	2.153*
	(0.140)	*(0.355)*
Household Debt	1.287*	0.329
	(0.367)	*(0.831)*
Multi Earners	1.034*	0.969*
	(0.062)	*(0.139)*
Entrepreneurs	2.244*	2.302*
	(0.075)	*(0.153)*

HHDebt*2004	0.031	-1.479
	(0.754)	*(1.585)*
HHDebt*2005	-0.919	-0.611
	(0.862)	*(1.645)*
HHDebt*2006	0.043	1.036
	(0.621)	*(1.279)*
HHDebt*2007	0.944	-1.236
	(0.681)	*(1.524)*
HHDebt*2008	1.016***	1.246
	(0.590)	*(1.168)*
HHDebt*2009	0.999***	1.207
	(0.536)	*(1.070)*
HHDebt*2010	1.045**	1.248
	(0.529)	*(1.077)*
HHDebt*2011	1.294*	1.810**
	(0.506)	*(1.041)*
HHDebt*2012	1.253*	1.099
	(0.492)	*(1.007)*
Household Type 1	0.294*	0.554**
	(0.106)	*(0.250)*
Household Type 2	0.235*	0.297
	(0.090)	*(0.223)*
Household Type 4	0.122	0.411
	(0.136)	*(0.289)*
Household Type 5	0.959*	1.069*
	(0.099)	*(0.224)*
Household Type 6	0.618*	1.275*
	(0.133)	*(0.342)*
Household Type 7	0.416	1.525**
	(0.254)	*(0.639)*
Constant	-0.840*	-2.854*
	(0.170)	*(0.570)*
Number of Observations	70,609	14,766

Not Wealthy: (R-Squared: 0.0486); Wealthy: (R-Squared: 0.0482)

*, ** and*** represent statistical significance levels of 1%, 5% and 10%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables for the education status are the uneducated household heads, and Dummy 2003 for the year dummies, Household Debt interacted with year Dummy 2003 and the Dummy Household Type3 - Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving, level stated as the difference between the disposable income and the consumption of the family, all at 2003 prices.

However, the difference is very small and does not indicate that the liquidity constraint households and the ones that are not liquidity constrained do not differ in their precautionary saving motive. The effect rises as the wealth level of the family increase, while the change in this effect is still noticeably weak.

As we are controlling for income and debt, the precautionary saving habits of the non-liquidity constraint consumers do not tend to differentiate from the liquidity constraint ones. The "wealthy hand to mouth" situation can be another for the lack of difference in precautionary saving preferences or availability of the two categories. As the liquid asset accumulation level of Turkish citizens is limited and most of the wealth is preferred to be kept in real estate investments, the precautionary saving habit of households could well be in line with that of the liquidity constraint consumers.[15]

In the literature review, the main difference between liquidity constraint and not constraint is found to be mostly effective on income effects on their savings. Liquidity constraint consumers tend to be affected at low levels or even negatively, from a rise in their permanent income. The rise in income results in further positive expectations for the future, and effectively leverages consumption, leaving less room for saving. The results of the saving regression depending on wealth level also indicate a significant differentiation in income effects on saving. However, the coefficient of permanent income on saving fails to be negative in our analysis. Even when we limit the liquidity constraint restriction to no asset owners, the income coefficient does not tend to change much and stays positive. In the comparison of wealthy and not wealthy households, while the "not wealthy" households do increase their saving by 0.8% due to a 10% rise in their permanent income, wealthy households tends to elevate their saving by 3% with the same rise in their permanent income level. The wealthy households have already satisfied their consumption needs, and the rise in income is transferred to saving and investment opportunities at a significantly higher level than for the presumed liquidity constraint households. However, the "not wealthy" are still allocating a significant part of their additional income to consumption and their tendency to save out of their permanent income is significantly smaller than that of their wealthy peers. The negative effect of having children younger than the age of 18 is not statistically significant for the

[15] The status of "wealthy hand to mouth" households could disturb the coefficients of the independent variables. However as we do not have any other clue for the liquidity status we cannot exclude these households from the other wealthy households.

wealthy households. The interfamily insurance effects and the young and old dependency issues tend to be important for the "not wealthy" households, while the "wealthy" households do not get affected much by these indicators. The effect of education level is quite important for the "not wealthy" households. The coefficients of education levels are considerably lower for the "wealthy" households. On the other hand, household type is more effective for the wealthy households. In both the wealthy and not wealthy households, the household types other than families with three or more children tend to save more. Wealthy households tend to save more than all the other household type categories.

The debt owners constitute 4 percent of the "not wealthy" households, while the rate is at 7 percent for the "wealthy" households. However, house debt does not tend to be statistically significant for the wealthy households. A probable reason can be that wealthy households may have enough reserves and save enough out of their income to overcome the secondary precautionary effects of debt. So, it can be normal for these households not to relate saving with the debt on their residential home. On the other hand, debt is significantly effective for the not wealthy households. As they have at most one available asset and they will be highly affected by volatility, in the case of a risk to their incomes, they tend to save more when they have debts.

Entrepreneur status is significant and strong for both the asset wise wealthy and not wealthy households. In the descriptive comparison between entrepreneurs and workers, 23 percent of the entrepreneur household observations are in the wealthy category, while the share of wealthy workers stays at 15 percent. In a detailed comparison, when we exclude retirees, the wealthy share of entrepreneurs is at 20 percent, while the share is at 10 percent for workers. Although the number of entrepreneurs is considerably lower than that of workers, as they only constitute 28 percent of the total observations, their saving habit is significantly higher, as was observed in the general saving analysis.

The year effect has been important for our main analysis and it turns out that it is also important for the separation of the wealthy and not wealthy status. The year effects tend to be statistically significant, starting with the year 2008. The crisis period of 2008-2010 was more negative for the saving preferences of the "not wealthy" households than for the wealthy households. The effects tend to reverse in the years 2011 to 2012, and the year effects tend to reduce the saving preferences of the wealthy households even more.

The shifting year effects are notably small and the effects are not strong in the results of our analysis.

The separate saving analysis for employers/entrepreneurs and employees, results in additional details for the entrepreneurs. (Table 3.9)

The model to be employed to determine the saving preferences of entrepreneurs as employers and self-employed household heads and workers is:

$$LnSaving = \beta_1\ \text{LnPermanentIncome} + \beta_2\ \text{LnLaborIncomeRisk} + \beta_3\ \text{NoChild18} + \beta_4\ \text{HealthInsurance} + \beta_{5i}\ Y_i + \beta_{6j}\ \text{Educ}_j + \beta_7\ \text{Wealth} + \beta_8\ \text{Debt}_{\text{Mortgage}} + \beta_9\ \text{MultipleEarner} + \beta_{10k}\ \text{DebtY}_k + \beta_{11t}\ \text{HHTYPE}_t + c$$

where, Y is the dummy for the years from 2004 to 2012, Education dummy is for primary, secondary, high school and university graduations. DebtY is the interaction dummy for the debt status and years. HHTYPE is the dummy for the household types from 1 to 7.

The entrepreneurs' dependence on the volatility of income and the economic environment is much sharper than that of the employees and they are not comparable with the employees, especially in terms of their demographic requirements. Although effective, much of the determinants for the economic status of an employee may not be, and as observed are not significant for an employer. The status of being a worker, although it may not contain affiliation to a labor union, does bring some security through labor laws. On the other hand, the unemployment risk of an entrepreneur can be determined by just one wrong decision. Elevated uncertainty results in higher risk perception and entrepreneurs save a higher portion of their income.

Table 3.9 Pooled OLS Regression of Household Saving for Entrepreneurs and Workers

OLS For Ln Saving for Workers and Entrepreneurs		
Variables	**Workers**	**Entrepreneurs**
	Coefficient	**Coefficient**
Permanent Income	0.071*	0.094*
	(0.011)	*(0.020)*
Labor Income Risk	0.110*	0.092*
	(0.006)	*(0.061)*
No of Child<18	-0.278*	-0.201*
	(0.029)	*(0.038)*
Health Insurance	0.708*	0.988*
	(0.099)	*(0.116)*
Dummy 2004	-0.085	-0.195
	(0.123)	*(0.188)*
Dummy 2005	-0.450*	-0.729*
	(0.147)	*(0.232)*
Dummy 2006	-0.599*	-0.990*
	(0.122)	*(0.196)*
Dummy 2007	0.147	-0.589*
	(0.122)	*(0.197)*
Dummy 2008	-1.819*	-2.380*
	(0.124)	*(0.203)*
Dummy 2009	-1.820*	-2.919*
	(0.120)	*(0.188)*
Dummy 2010	-1.938*	-2.810*
	(0.118)	*(0.195)*
Dummy 2011	-2.003*	-2.263*
	(0.120)	*(0.201)*
Dummy 2012	-1.866*	-3.111*
	(0.121)	*(0.207)*
Primary School	0.116	1.051*
	(0.128)	*(0.187)*
Secondary School	0.284***	1.506*
	(0.151)	*(0.230)*
High School	0.649*	1.952*
	(0.141)	*(0.225)*
University	2.050*	2.492*
	(0.150)	*(0.275)*
Wealth	0.513*	0.485*
	(0.032)	*(0.041)*
Household Debt	1.040*	0.840
	(0.400)	*(0.614)*
Multi Earners	1.194*	0.505*
	(0.065)	*(0.109)*

HHDebt*2004	-0.033	-1.212
	(0.781)	*(1.381)*
HHDebt*2005	-0.765	-1.347
	(0.901)	*(1.403)*
HHDebt*2006	0.194	0.060
	(0.644)	*(1.113)*
HHDebt*2007	1.145	-1.505
	(0.714)	*(1.269)*
HHDebt*2008	1.097***	0.760
	(0.608)	*(1.022)*
HHDebt*2009	1.293**	0.155
	(0.561)	*(0.890)*
HHDebt*2010	0.945***	0.966
	(0.547)	*(0.947)*
HHDebt*2011	1.460*	0.244
	(0.520)	*(0.961)*
HHDebt*2012	1.491*	-0.977
	(0.512)	*(0.855)*
Household Type 1	0.439*	0.331***
	(0.116)	*(0.181)*
Household Type 2	0.283*	0.378**
	(0.099)	*(0.154)*
Household Type 4	0.093	0.355
	(0.147)	*(0.219)*
Household Type 5	1.168*	0.570*
	(0.113)	*(0.150)*
Household Type 6	0.919*	-0.221
	(0.142)	*(0.287)*
Household Type 7	0.500***	1.588**
	(0.257)	*(0.646)*
Constant	-1.286*	0.391
	(0.195)	*(0.291)*
Number of Observations	61,695	23,680

Workers: (R-Squared: 0.0539); Entrepreneurs: (R-Squared: 0.0475)

*, ** and*** represent statistical significance* levels of 1%, 5% and 10%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables for the education status are the uneducated household heads, and Dummy 2003 for the year dummies, Household Debt interacted with year Dummy 2003 and the Dummy Household Type3 - Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving level stated as the difference between the disposable income and the consumption of the family, all at 2003 prices.

Like the effect on wealthy households, the income effect is crucial on entrepreneurs. In the event of a 10 percent rise in their income, entrepreneurs increase their savings by 1.1 percent, while workers only increase their savings by 0.83 percent. The result is in line with our expectations, but the labor income risk is quite different. The response of entrepreneurs to a change in labor income risk is not statistically significant. On the other hand, the labor income risk response of workers is both significant and considerably higher than that of the total observations. The standard saving motive of entrepreneurs stems from their job status, and they are more subject to volatilities. Although they are naturally saving more than the other categories, their habits towards risk are not as strong as those of employees. I attribute this situation to their risk perception and unemployment risks. They are natural risk takers, and they tend to make a lower or insignificant response to risk. On the other hand, their demographic and other occupation related indicators are not applicable to standard unemployment risk.

So, the data do not suggest that their unemployment risk could be standardized with the general information, and the income risk of unemployment may be a misleading variable for this category. However, in the separate analysis, I observed that global liquidity or the changing economic environment all through the observation period was more effective in reducing their saving levels than it was for employees. Education on the other hand, was more effective for entrepreneurs and resulted in higher saving levels for them as education level increased. House debt is not significant for entrepreneurs. Their higher asset owning status could be expected to be a factor to make the debt criteria insignificant for this category. So, it can be said that the precautionary saving of the total household observations is mostly determined by the workers. The differentiation of the unemployment risk to the entrepreneurs and their risk taking behavior leads this category in the standard unemployment risk measurement criteria. However, as also stated in the descriptive analysis, their savings level is higher and dependent on income and the general economic environment.

3.4. CONCLUSION

The theoretical background of the consumption theory indicates that the risk perception of consumers is crucial for their saving and consumption preferences. The higher level of risk aversion, predicted by the Arrow-Pratt measure, results in a higher level of the

precautionary saving motive for consumers. According to the empirical results, Turkish households tend to conform to a precautionary saving motive in line with the Ceritoğlu (2009) study on Turkey for the 2003 to 2004 period. Like Kennickel and Lusardi (2005), Guiso, Jappelli and Terlizzese (1992) and Kimball, Sahm and Shapiro (2005), we found evidence for a considerably lower but significant precautionary saving motive for our household observations in the 2003 to 2012 period. However, labor income uncertainty is not the only source of the precautionary saving motive. Aside from labor income uncertainty led risks, my main finding is that the status of having a debt also indicates an important precautionary saving motive for indebted households. The uncertainty regarding indebted households is effective in periods of rising economic volatility, and is in line with the post crisis experiences of developed countries and mainly The US. Indebted households tend to elevate their saving preferences with a significant momentum. Although the saving motive of indebted households rises in times of rising uncertainty, the precautionary saving motive of households does not tend to go in parallel with the same uncertainty trend. When the observation period is separated into two periods, as in the pre-crisis and post-crisis periods, the precautionary saving motive is observed to stay the same between these two periods.

Standard precautionary saving theory indicates that households do tend to postpone their consumption in times of rising uncertainty and elevate their savings, which is not in line with my findings. In a detailed analysis of the year on year development of the precautionary saving motive, I observed that the precautionary saving motive tended to decline, especially starting from 2010.

These results are more understandable when the changing liquidity conditions in the Turkish economy are considered. In the post-crisis period, when global liquidity elevated, the financial system reduced the conditions demanded on loans, consumer loans surged and the perceived liquidity constraints of consumers fell significantly. Lower real interest rates and loan opportunities for consumers enabled them to reach liquidity easily, which could be expected to get harder in a normal post-crisis period. The stagnant labor income risk seems to be offset by the favorable liquidity conditions set by global liquidity conditions. The year dummy variable used to determine this liquidity effect and the general availability in the loan market indicates a significantly lower saving trend in the post-crisis period and supports my view of effective change in

liquidity conditions. As the HBS is not in panel data form, I cannot figure out the exact change in liquidity level, or diversion between the liquidity constrained and not constrained households. However, HBS data give information on the amount of assets per household, but not their values. The wealth indicator, which takes the number of assets owned by the households, is used as the factor to separate liquidity constrained households from the not constrained ones. The analysis performed on the "wealthy" and "not wealthy" households indicates that the wealthy households tend to save a higher portion of their income, while the precautionary saving motive of these households does not differentiate much from that of the not wealthy or liquidity constrained households. Their elevated buffer stocks should have enabled them to show a lower precautionary saving motive. However, as the main asset formation is based on the housing sector, and the liquid asset formation is considerably low for Turkish households, this result is more reasonable. The results of the "not wealthy" households are clearly in line with the "hand to mouth" consumer behavior, where the precautionary saving motive is not low and the general saving level is low due to low income generation. Using the wealth indicator to look at the observations through a liquidity constraint scale is promising, and the follow-up analysis should be concentrated on the liquidity conditions of households, whenever the structural data are available. Comparison of the debt effect on the wealthy and not wealthy indicates the expected result, as the debt indicator is not statistically significant for the wealthy households. As these households have more than one asset, having debt does not generate additional saving habits for these household categories. The last detail of the analysis is the difference between entrepreneurs and workers. According to the literature, the nature of being an entrepreneur leaves the entrepreneur households more open to risks, related with income volatility and economic uncertainties, while the workers are more protected against such risks. Analysis performed separately of households with their head being an entrepreneur or a worker clearly indicates that entrepreneurs do save more than workers out of their permanent income. However, the precautionary saving indicator, set as income risk, is not statistically significant, as was also observed in the Ceritoğlu (2009) findings. Most of the same indicators to determine saving level in the former analysis were found to be not statistically significant for entrepreneurs. Although they do save more out of their income, unemployment risk or having a debt on their residential home does not affect

their saving preferences. Precautionary saving and saving due to the status of being indebted is effective for the workers/employees, who are less open to risk than the employers. The only significant indicator for the entrepreneurs is that they did start to save less than the employees and this can be the result of their additional ability to reach the loan market through their companies in the post-crisis period. This result indicates that entrepreneurs/employers used debt more, and the saving reducing effect of this liquidity relief was more effective in these households.

The liquidity situation of households, as observed in the "wealth" indicator analysis and the lower precautionary saving motive for households in the post-crisis period, do signal the importance of liquidity in the analysis. The results indicate that the analysis of precautionary saving should also take a close look at liquidity issues, and that the results should be reconsidered taking liquidity issues into consideration. The high level of "hand to mouth" households in the observations and the change in the Turkish financial system/loan market during our observation period into a more liquid one is strongly effective on our results.

The analysis performed in this model for the presence of the precautionary saving motive is restricted to the unemployment risks interacted with labor or entrepreneur income. On the other hand, the financial status and the wealth levels of the households in nominal terms require clarification, once the liquidity status of the households is also considered.

CONCLUSION

Motivation

Household saving preferences is a key subject for analysis. Risk factors and the introduction of the precautionary saving motive is complementary to the former saving literature and all of these hypotheses depend on the intertemporal allocation of consumption and the consumption smoothing trends of individuals or households. Liquidity constraints were also an important factor in promoting the precautionary saving motives and determining the saving level of the community, depending on the share of constraint consumers. Zeldes (1989) and Deaton's (1989) contributions to the liquidity constraints issues are significant to introduce into the precautionary saving literature the financialization process, liquidity constraints and rising global inequality issues. The analysis regarding developed economies results in the importance of the precautionary saving motive and liquidity conditions on saving decisions, while the effects are more limited for developing economies with a highly distorted and skewed income distribution. The high level of "rule of thumb" households in developing economies results in low or negative saving trends, and leaves no room for precautionary savings. Turkey is also found to show similar tendencies to developing economies, with a significant share of negative savings and rising consumption demand in times of relieving liquidity conditions.

Turkey was subject to a significant restructuring in the aftermath of the 2001 crisis, and the results were rising economic confidence and the interest of the global capital markets for TL assets. The secondary effects on the local economy are extra relief in liquidity conditions, loan growth within the country and higher levels of debt. Although the short-term growthwise effects were positive, local savings declined. Declining savings are also another reason for the ongoing dependence on foreign savings and debt. The transformation of the dynamics within this period is subject to analysis, but these are mostly related to the public sector debt and savings. There is very little ousehold and firmwise analysis, due to the lack of detailed data, and this indicates the importance of precautionary savings. (Van Rijckeghem and Üçer, 2009; Ceritoğlu, 2009) However, the post 2001 crisis period is also worth analyzing for the liquidity effects and changing

dynamics in the household debt market. In addition to the analysis of the observation period, the effects regarding the pre- and post- 2008 Global Crisis periods do also demonstrate a huge shift for the households. Global studies indicate that precautionary saving and general saving tends to rise in a post crisis period, while the effect is balanced by rising liquidity conditions mostly in the developing economies. Turkey is a perfect example to analyze for these precautionary saving trends and changing liquidity conditions and these relations in a period of changing local and global economic structure.

Turkey, as a newly financialized developing economy, demonstrates most of the drawbacks for a small country like financialization taking place mostly in the banking sector and the loan market rather than the stock markets and the fixed income markets, to generate less costly finance for the productive sectors.

In my thesis, I follow the analysis methods of former studies, (Ceritoğlu, 2009) indicating the importance of the precautionary saving motive, while liquidity and debt related effects are also introduced in the empirical analysis. The search for liquidity conditions evolved with the analysis of the observations for the year effects and the wealthy and not wealthy categorization of the analysis. In addition to this differentiation, the pre- and post-2008 Global Crisis and entrepreneur effects are also analyzed in this thesis.

Empirical Findings

In the descriptive analysis of the thesis, I observe that the younger subjects tended to reduce their savings levels further during the observation period. So, the young generation in Turkey already shows a bias towards lower saving levels. In terms of education, the average number of schooling years increased in the observation period, while a significant portion of the observations is still at low levels of education. The considerably younger population, rising cost of living conditions and asset prices, resulting in impatience and a higher consumption demand, also leaves less room for saving.

In addition to this factor, household type is also an effective indicator of saving, and having children is found to be a factor in reducing savings. Patriarchal families are

found to be the highest saving household type, which can use inter-household economies of scale.

Another fact about the Turkish economy, as seen in the descriptive analysis of the HBS, is that labor preferences are significantly changing away from the employer status to employee status. The latest separate analysis of the status of being an entrepreneur/employer shows that the precautionary saving motive does not work for entrepreneurs. Entrepreneurs are natural risk takers and they save a higher portion of their income, but they do not show precautionary saving motives. The declining entrepreneur status is also observed to be another reason for declining saving levels.

Empirical findings indicate that precautionary saving is present for the Turkish households, in line with the findings of former studies on Turkey. However, the introduction of liquidity effects and the changing economic structure, including the debt effect, are found to have been effective all through the observation period. Saving level declines as liquidity conditions ease, especially after the 2008 crisis. The relief in liquidity conditions, observed through the year effects is a significant indicator of reduced household saving. Liquidity conditions are mostly effective on the "hand to mouth" consumers, and their significant share in the total observations is one of the main reasons for the declining saving levels. As living conditions get harder to finance with income and with asset prices rising, inequality of income and wealth distribution is becoming a bigger problem. The disappointed consumers, who fall short of down payment ability with rising asset prices, can lose hope of ever owning assets, and this can result in higher consumption preferences or they are already obliged to get into debt to finance their consumption needs.

Liquidity conditions are indicators of the low income and low saving status for Turkish households, and this status could be expected to be associated with debt problems, leading to a liquidity trap for these households. However, the debt status for the debt on residential property gives contrary results. Aside from the standard precautionary saving motive, one the main findings of my thesis is that the debt status of households generates an additional precautionary saving motive for the Turkish household sector. The variable generated for the presence of household debt is statistically significant with a positive sign. The interacted variables for debt and year effects are also in line with this finding, and show an increasing momentum in the period post the Great Recession.

The declining consumption of the indebted households is found to be an important motive in the aftermath of the Great Recession for mid to high income households, as is also observed in the US and developed countries. (Hall, 2011; Mian and Sufi, 2015) In line with former studies, my results indicate a time variant effect of debt over consumption and agree with research that the household debt overhang holds back consumption for these households.

The financial transformation of the Turkish economy focused on the banking sector and loans generated to the non-government sector. The resulting effect generated a higher indebted household and firm structure with less ability to save and potential growth in the long run. Unless this inefficient structure is reversed, the vicious low saving and indebted status of the households cannot be broken.

In separate analysis of the pre- and post-Global crisis periods, the precautionary saving motive is found to be at similar levels, while the change within these periods can be attributed to liquidity effects. The declining precautionary saving motive is observed only in the last two years of the observation period, 2011 and 2012. Further separate analysis of the search for liquidity conditions indicates that wealthy households can demonstrate a slightly higher precautionary saving motive. So, the ability to save is the main criterion for the presence of precautionary savings, and if the share of the low income segment constitutes a bigger portion of the total observations, precautionary saving motives recedes for the total economy. On the other hand, debt status is not significant for the wealthy households. The debt overhang problem is important for the Turkish households, especially in the mid to high income, but at lower asset levels.

Policy Implications and Further Studies

In line with the results of my descriptive and empirical analysis of the household sector in the 2003-2012 period, I suggest that the ongoing dynamics do not indicate a higher saving level potential for the Turkish household. The saving level can rise with the ageing population and the saturation of consumption in the long run. But there are no easy and quick solutions to the low savings problem in the household sector. The problems with income distribution result in a higher share of "hand to mouth" individuals, and these individuals lack the ability to save even in times of volatile economic conditions. They are the ones to consume all the cash in hand. It would not be

an easy task to reform income distribution, but as long as the high share of these households is maintained, additional savings for the total economy cannot come from the household sector. The relief of liquidity conditions even lets the problem get bigger, as liquidity constraint consumers find new sources to finance their consumption and accumulate debt. So, easier liquidity conditions are a reason for declining saving in the household sector and may not be reversed easily for subjects with liquidity constraints. The relief of liquidity conditions in the economy should be directed to more productive sectors or projects, rather than for consumption purposes, and macro prudential measures should be implemented to ensure limitations for households' liquidity search.

In the descriptive analysis of the demographics for Turkish households, I observe that the rising number of children generates an additional young dependency ratio and limits the saving potential of the families. The average number of children in a family declined only slightly in our observation period, and this trend may be a supportive factor to higher savings in the future. What's more, the average age of Turkey's population is getting older, which may result in a declining share of young and impatient households, and increase savings in the total household sector. On the other hand, this trend may have some drawbacks for the social security system in the long run.

Changing occupational opportunities, rising asset prices and a higher cost of living leave no motivation for the younger generations to save and accumulate assets. Asset prices depend on global dynamics, so there is no easy way for millennials to prefer saving and accumulate assets. However, financial stability for the longer-term perspective and the possibility of longerterm financing for these households may be factors to promote the saving of these households. What's more, financial stability can induce the households to also prefer also liquid assets for their long-term investments. This trend can also limit the housing preferences of households and influence the savings in more productive investments, not only for the households but for the economy as a whole.

An important observation in the descriptive analysis is that the share of university graduated households is increasing, and the average years of schooling are rising significantly in Turkey. However, these graduates are mostly employed in the service and sales sectors, which can limit further productivity frontiers for the economy in the long run. What's more, a large share of the workforce is employed in the construction

sector, which again generates limited productivity potential. Long term growth potential could be at risk as long as productivity is not promoted. Changing occupational and educational preferences of our individual subjects do not match, and adequate jobs cannot be generated for the university graduates, leading to lower productivity. Strategies can be generated to promote productive sectors, and a rising educated workforce is there to be used for this strategic restructuring.

The results of the empirical analysis indicate that the precautionary saving motive is present for the household sector, as mentioned before. The workers exhibit a higher motive to make precautionary savings and they are already encouraged to save more with the voluntary and publicly-sponsored Individual Pension System. The efficiency of this system could be enhanced, and a higher level of participation from the workers could be promoted. In addition to these factors, the observation for the declining share of the entrepreneur status strictly limits natural saver potentials in the economy. Entrepreneurial preferences could be promoted for the Turkish situation, as in the case of easing conditions for SMEs and entrepreneurs.

The main shortcoming of the HBS data is the absence of a panel series status, which limits the formation of permanent income and liquidity condition settings. Once the data are produced, further studies may analyze the effects of liquidity conditions and permanent income levels and shifts in detail for the post 2001 crisis period.

The second and also important shortcoming of the HBS is that debt status is only given for debt on residential homes. Due to this reason, our analysis is limited to debt on houses, which we perceive as mortgage debt. However, the effects of other consumer loans and credit card debt should also be analyzed in detail. Mortgage debt is available for households with higher income profiles, while consumer loan and credit card usage could be used for the replacement of lack of income or rising cost of living requirements. So, liquidity constraint status can be analyzed in more detail once consumer loan and credit card usage or availability is observable. I presume that the analysis of other sources of debt on saving could show further evidence for the liquidity constraint effects and problems in income distribution. Further studies should also include debt effects other than mortgages.

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APPENDICES

APPENDIX A

A.1. Determination of Permanent Income With Regression

OLS Regression for Determination of Individual Income

	Total Income
Variables	**Coefficient**
Age	163.4*
	(9.4)
Age Squared	-1.6*
	(0.1)
Female	-678.6*
	(42.4)
Health Insurance	609.5*
	(34.1)
Married	415.6*
	(37.9)
Household Size	41.1*
	(6.1)
Housewives	-102.0**
	(45.8)
Household Heads	2,405.1*
	(42.7)
Primary School	269.6*
	(40.8)
Secondary School	871.5*
	(55.3)
High School	1,541.5*
	(50.8)
University Graduates	4,274.9*
	(66.5)
Legislator Senior Officials	5,972.2*
	(78.1)
Professionals	4,370.6*
	(90.1)
Ass. Professionals	3,135.8*
	(87.0)
Office Workers	1,527.9*
	(86.9)
Salesmen	790.5*

	(65.0)
Agriculture/Farmers	502.0*
	(110.4)
Skilled Workers	895.7*
	(64.2)
Operators	1,503.9*
	(70.8)
Regular Employees	2,269.9*
	(50.8)
Casual Employees	636.5*
	(74.59)
Employers	10,803.8*
	(105.0)
Self Employed	2,557.2*
	(58.3)
Industry	222.9***
	(120.0)
Construction	534.9*
	(124.3)
Services	182.8***
	(107.5)
Capital Income Earners	3,946.8*
	(49.4)
Social Income Earners	2,267.3*
	(48.2)
City	250.4*
	(29.6)
Constant	-4,756.9*
	(202.3)
Number of Observations	231,428
R-Squared : 0.4219	

*, ** and*** represent statistical significance levels of 1%, 5% and 10%, respectively.

Permanent Income determination is performed with n OLS regression in Stata program. Dependent variable is total income of the individual at2003 prices.

Omitted variables for the education status is the uneducated household heads, and Dummy 2003 for the year dummies, unskilled workers for the occupation status, unpaid family workers for the Employment Status and the Agriculture Sector for the economic activity sector.

Dependent variable is the total income of the individual with 2003 prices. Total income variable predicted with the OLS regression for individuals is summed up for the total family income to be used as permanent income of the family. The variable will be used in the logarithmic form in the saving model.

A.2. Saving Regression Depending on Predicted Income with Regression (Rather Than Heckman Selection Model)

OLS Regression For Ln Saving With Ln Income - Regression	
	Ln Saving
Variables	**Coefficient**
Permanent Income	0.467*
	(0.032)
Labor Income Risk	0.101*
	(0.006)
No of Child<18	-0.260*
	(0.023)
Health Insurance	0.703*
	(0.074)
Dummy 2004	-0.114
	(0.103)
Dummy 2005	-0.404*
	(0.124)
Dummy 2006	-0.708*
	(0.104)
Dummy 2007	-0.073
	(0.104)
Dummy 2008	-1.943*
	(0.106)
Dummy 2009	-2.101*
	(0.101)
Dummy 2010	-2.143*
	(0.101)
Dummy 2011	-2.050*
	(0.103)
Dummy 2012	-2.161*
	(0.104)
Primary School	0.398*
	(0.104)
Secondary School	0.593*
	(0.124)
High School	0.881*
	(0.117)
University	1.976*
	(0.130)
No of Wealth	0.478*
	(0.025)
Household Debt	0.997*
	(0.335)
Multi Earners	0.900*
	(0.057)

Entrepreneurs	2.046*
	(0.068)
HHDebt*2004	-0.323
	(0.679)
HHDebt*2005	-1.012
	(0.758)
HHDebt*2006	0.142
	(0.556)
HHDebt*2007	0.536
	(0.620)
HHDebt*2008	0.996***
	(0.522)
HHDebt*2009	0.980**
	(0.475)
HHDebt*2010	0.983**
	(0.471)
HHDebt*2011	1.255*
	(0.452)
HHDebt*2012	0.979**
	(0.438)
Household Type 1	0.373*
	(0.097)
Household Type 2	0.268*
	(0.083)
Household Type 4	0.172
	(0.122)
Household Type 5	0.896*
	(0.089)
Household Type 6	0.818*
	(0.124)
Household Type 7	0.746*
	(0.236)
Constant	-4.749*
	(0.295)
Number of Observations	85,375

R-squared: 0.0577;

*, ** and ** represent statistical significance levels of 1%, 5% and 10%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables for the education status are the uneducated household heads, and Dummy 2003 for the year dummies, Household Debt interacted with year Dummy 2003 and the Dummy Household Type 3-Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving level stated as the difference between the disposable income and the consumption of the family, all at 2003 prices.

APPENDIX B

Tobit Regression of Household Saving on Income Risk, Debt

Variables	Ln Saving Coefficient
Permanent Income	0.076*
	(0.009)
Labor Income Risk	0.107*
	(0.006)
No of Child<18	-0.256*
	(0.023)
Health Insurance	0.790*
	(0.075)
Dummy 2004	-0.108
	(0.103)
Dummy 2005	-0.529*
	(0.124)
Dummy 2006	-0.716*
	(0.104)
Dummy 2007	-0.060
	(0.104)
Dummy 2008	-1.974*
	(0.106)
Dummy 2009	-2.134*
	(0.101)
Dummy 2010	-2.179*
	(0.101)
Dummy 2011	-2.082*
	(0.103)
Dummy 2012	-2.206*
	(0.104)
Primary School	0.407*
	(0.106)
Secondary School	0.648*
	(0.126)
High School	0.998*
	(0.119)
University	2.277*
	(0.129)
No of Wealth	0.509*
	(0.025)
Household Debt	0.984*
	(0.336)
Multi Earners	1.009*
	(0.056)

Entrepreneurs	2.170*
	(0.067)
HHDebt*2004	-0.312
	(0.679)
HHDebt*2005	-0.889
	(0.759)
HHDebt*2006	0.182
	(0.557)
HHDebt*2007	0.561
	(0.621)
HHDebt*2008	1.027**
	(0.522)
HHDebt*2009	0.986**
	(0.475)
HHDebt*2010	1.013**
	(0.471)
HHDebt*2011	1.276*
	(0.452)
HHDebt*2012	1.004*
	(0.438)
Household Type 1	0.386*
	(0.097)
Household Type 2	0.286*
	(0.083)
Household Type 4	0.148
	(0.122)
Household Type 5	0.928*
	(0.090)
Household Type 6	0.743*
	(0.124)
Household Type 7	0.675*
	(0.236)
Constant	-1.406*
	(0.161)
Number of Observations	85,375

R-squared: 0.0084; Sigma: 7.381

* and ** represent statistical significance levels of 1% and 5%, respectively.

Saving Model is attained using the Linear Regression model in Stata program.

Omitted variables for the education status are the uneducated household heads, and Dummy 2003 for the year dummies, Household Debt interacted with year Dummy 2003 and the Dummy Household Type 3-Nuclear Family with 3 or more children.

Dependent variable is the logarithm of the saving level stated as the difference between the disposable income and the consumption of the family, all at 2003 prices.

CURRICULUM VITAE

Personal Information
Name Surname: SERDAR ŞENOL
Place / Date of Birth: 01/01/1978 / KOCAELİ

Education
Under Graduation: İSTANBUL TECHNICAL UNIVERSITY
Graduation: BİLGİ UNIVERSITY
Languages: ENGLISH

Professional Experience

ALTERNATİFBANK A.Ş.	2004 Sept.-…
ŞEKERBANK A.Ş.	2003 Jan.-2003 June
BANKEKSPRES A.Ş.	1999 Sept.- 2003 Jan.

Contact Information
Phone: 0 532 350 74 30
E-mail: serdarssenol@gmail.com